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INTERNATIONAL SOCIETY FOR
RENAL RESEARCH

Cardio Metabolic Congress

4th Cardio Metabolic Congress 2025

27th–28th September, 2025 | **Hotel Hilton, Chennai, India**

4th ANNUAL MEETING OF INTERNATIONAL SOCIETY FOR RENAL RESEARCH CMC 2025

Cardio Metabolic Congress

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Preface

This book reports the Proceedings of "4th Cardio Metabolic Congress" held on 27th & 28th September 2025 at Chennai, India. The publishing department has received more than 250 abstracts. After a peer review of the submitted abstracts, 135+ abstracts were accepted for publication in the Conference Proceedings. We would like to thank all the participants for their contributions to the conference and the proceedings. Reviewing papers of the Cardio Metabolic Congress was a challenging process that relies on the good will of Faculties involved in the field.

We would like to thank all the reviewers for their time and effort in reviewing the abstracts. Finally, we would like to thank all the Cardio Metabolic Congress editorial committee members who with much dedication have given their constant support and priceless time to bring out the proceedings in a grand and successful manner. I am sure Cardio Metabolic Congress will be a credit to a large group of people, and each one of us should be proud of its successful outcome.

Dr. S. Chandrasekar
Organizing Secretary
4th Cardio Metabolic Congress,
Chennai, India

About CMC 2025

4th Cardio Metabolic Congress is a gathering of global experts, serves as a vital forum addressing paramount issues in the field which is scheduled to be held in Chennai on 27th and 28th September 2025. This event comprises expert lectures, panels, workshops, and hands-on sessions, focusing on cutting-edge research and treatments for conditions like diabetes, obesity, and heart disease. Attendees gain proficiency in translating advanced medical research into practical clinical strategies for preventing, delaying, diagnosing, treating, and managing the entire spectrum of cardiorenal metabolic diseases. Beyond knowledge exchange, the congress fosters networking and collaboration among industry professionals, academics, and policymakers. Join us in person for an event where leading experts converge to explore the latest advancements in cardiovascular and metabolic health.

Vision:

- To lead the global interventional cardio-Metabolic community through education, advocacy, research, and quality patient care.

Mission:

- Providing quality evidence-based scientific knowledge to develop healthcare on preventive , promotive and rehabilitative aspects of diabetes and cardiac diseases.

Core Committee

4th Cardio Metabolic Congress welcomes you all !

Dear Colleagues,

It is a pleasure to present Cardio Metabolic Congress on the 27th & 28th September 2025 at Hotel Hilton, Chennai. In order to keep with the phase of the scientific Technology and knowledge exposure in the field of Diabetology and to help the practitioners to bridge the knowledge gap.

After Creating a successful impact on healthcare community last year, we are excited to host a series of scientific discussions aimed at inspiring young physicians, medical graduates, Health care practitioners, and Cardio Diabetic medicine consultants. This scientific program will also serve as a valuable opportunity for aspiring students to showcase their work through oral and poster presentations.

This Conference features a blend of keynote sessions, panel discussion, Case discussions, workshops and many more with the expert speakers and accomplished faculties from throughout India to share their expertise and practical knowledge.

The venue is at the Hotel Hilton, Chennai which is known for its rich heritage, culture and so much more. We invite you all to be a part of this mega event. Hope this will bring out the latest and best practices in Cardiology and Diabetology.

Core Committee

4th Cardio Metabolic Congress 2025

Dr. K. Shanmugam
Patron

Dr. K. Kannan
Organizing Chairman

Dr. S. Chandrasekar
Organizing Secretary

Dr. B. Vinod Kumar
Scientific Committee Chairman

Abstract's Index

Acute Paraplegia as the Sentinel Presentation of a Lethal Acute Aortic Syndrome: A Case Report

Devanathan Vassou
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Manokaran Chinnusamy
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Abstract

The rising global prevalence of Metabolic Syndrome, characterized by risk factors including hypertension and insulin resistance, has amplified the burden of complex atherosclerotic vascular disease. While cardiovascular sequelae are well-documented, atypical presentations can obscure the diagnosis of life-threatening complications like Acute Aortic Syndrome (AAS), a devastating sequel of advanced vasculopathy. This report details the clinical trajectory of a 45-year-old male whose AAS manifested not with classic chest pain, but with the sentinel event of acute paraplegia, posing a significant diagnostic challenge. Initial investigations revealed a systemic insult with multi-organ injury, including acute kidney injury, myocardial injury with positive troponins, and liver dysfunction. Multimodal imaging was critical; a spinal MRI explained the paraplegia by revealing anterior spinal artery thrombosis from spinal cord ischemia, while a brain MRI showed an acute right frontal infarct. The definitive diagnosis was established by a CT aortogram which demonstrated a complex Acute Aortic Syndrome of the ascending aorta, complicated by an intramural hematoma and hemopericardium causing widespread malperfusion. Despite emergent surgical intervention, the patient experienced a fatal outcome. This case powerfully reinforces that AAS must be included in the differential diagnosis of acute, non-traumatic paraplegia, highlighting how metabolic dysfunction can progress to profound structural vasculopathy with catastrophic consequences and underscoring why a high index of suspicion is imperative for timely management.

Keywords

Acute Aortic Syndrome, Paraplegia, Metabolic Syndrome, Spinal Cord Ischemia, Hypertension, Aortic Dissection.

ISBN : 978-93-92106-81-1

A Cross Sectional Study of Correlation between Myocardial Strain by 2-D Speckle-Tracking Echocardiography and Angiographic Findings by Coronary Angiogram in Stable Angina Patients

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Chettinad Academy of Research & Education, Chennai, India

Abstract

This study intends to see if Myocardial strain value correlates with the angiographic findings in patients with stable angina. It helps in assessing whether myocardial strain can predict the presence of coronary artery disease (CAD) in stable angina patients. This cross-sectional study was carried out on 64 stable angina patients with no previous cardiac history and normal LV function undergoing coronary angiogram for guideline-based indication. After careful history, clinical examination and investigations, including conventional echocardiography, selected participants underwent 2-D speckle tracking echocardiography for measurement of myocardial strain by automated functional imaging. All participants underwent coronary angiogram and stenosis >70% was considered significant. Gensini score was calculated. The myocardial strain value and Gensini score were correlated. Global longitudinal strain (GLS) was significantly lower in patients with significant CAD than those with non-significant CAD (-16.1±2.6% vs -19.4±2.2%; $p < 0.001$). The optimal cut-off value of GLS, which discriminated between patients with and without significant coronary artery disease, was -18.05% (sensitivity=81.8% and specificity=85%).

Keywords

2-D speckle tracking echocardiography, myocardial strain, global longitudinal strain (GLS), coronary artery disease (CAD) stable angina, Gensini score.

ISBN : 978-93-92106-81-1

Study of Prevalence and Predictors of Renal Artery Stenosis in Coronary Artery Disease Patients undergoing Coronary Angiography with hypertension

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Abstract

Background: Atherosclerotic renovascular disease is a frequently overlooked condition and potentially correctable disease. It is estimated that approximately 1-5% of people have renovascular disease as an underlying cause of hypertension. It is also associated with decreased renal function. The *Atherosclerotic RAS* is one of the most common causes of secondary hypertension and its prevalence in hypertensive patients undergoing coronary angiography is low, but substantially higher in patients with established peripheral (50%) and/or coronary artery disease (30%), and elderly population. The purpose of this study is to evaluate the prevalence and predictors of RAS among CAD patients with hypertension who underwent coronary angiography.

Methodology: This is a hospital based cross sectional study which *included 60 patients presenting to department of cardiology, Chettinad academy of research & education between 1st July 2024 and 30th May 2025* with a diagnosis of coronary artery disease with Hypertension and who underwent Coronary angiography (CAG). After completion of CAG, Renal angiography (RAG) was done selectively using the same Judgkins right catheter.

Conclusion: In the present study(n=60), the prevalence of Renal artery stenosis was significant (19%) where unilateral involvement was seen in 14% and bilateral RAS in 5%. In our study, patients' age ranged from 32 to 76 years. Mean age was 53.8 ± 8.15 years. In our study, the majority (59%) were males and 41% were females. Males were higher (68%) when compared to females (38%) in patients with RAS. Among the risk factors, smoking and dyslipidemia were higher in patients with RAS, when compared to patients with normal renal arteries, though not statistically significant. The percentage of patients with Diabetes and obesity were similar in both groups. In our study, the presence of stage 2 hypertension and resistant hypertension are independent variables for the presence of renal artery stenosis in CAD with hypertension patients. The presence of age more than 50 years, stage 2 hypertension at presentation, resistant hypertension and triple vessel disease on coronary angiography serve as independent predictors for renal artery stenosis with statistically significant parameters in patients with coronary artery disease and hypertension in our study. Renal angiography is recommended to screen for ARAS in hypertensive patients with multiple risk factors and multivessel disease to prevent ischemic nephropathy, a reversible cause of chronic renal failure.

Keywords

Atherosclerotic Renal Artery Stenosis (ARAS), Coronary Artery Disease (CAD), Hypertension (HTN), Renovascular Hypertension (RVHT).

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Case of Complicated Myocardial Infarction

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Abstract

Introduction: Accurate blood pressure (BP) assessment is crucial for the effective management of hypertension. While clinic blood pressure measurement (CBPM) remains the standard method in clinical practice, it is susceptible to phenomena such as white-coat hypertension and masked hypertension, potentially leading to misclassification. Ambulatory blood pressure monitoring (ABPM), which records BP over 24 hours in real-world settings, is increasingly recognized as a more accurate tool for evaluating true blood pressure patterns.

Aim: To compare ambulatory blood pressure monitoring (ABPM) with clinic blood pressure measurement (CBPM) in previously diagnosed hypertensive individuals and evaluate the clinical utility and diagnostic discrepancies between the two methods.

Discussion: In this comparative study, a cohort of previously diagnosed hypertensive patients underwent both CBPM and 24-hour ABPM. Preliminary findings revealed that a significant proportion of patients displayed discordance between clinic and ambulatory readings. Notably:

- White-coat hypertension was observed in individuals with elevated CBPM but normal ABPM.
- Masked hypertension was identified in individuals with normal CBPM but elevated ABPM.

ABPM also provided critical insights into nocturnal dipping patterns, morning surge, and blood pressure variability, which are known predictors of cardiovascular risk but are not captured by CBPM.

These findings emphasize the limitations of CBPM in capturing dynamic BP changes and support ABPM as a more comprehensive tool for risk stratification and treatment adjustment.

Conclusion: ABPM offers superior diagnostic accuracy compared to clinic BP measurements in hypertensive individuals by identifying white-coat and masked hypertension and providing additional prognostic information. Its routine use, especially in cases of treatment resistance or diagnostic uncertainty, can enhance individualized hypertension management and reduce the risk of cardiovascular events.

Keywords

Ambulatory Blood Pressure Monitoring, Clinic Blood Pressure, Hypertension, White-Coat Hypertension, Masked Hypertension, Blood Pressure Variability, Nocturnal Dipping.

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The Metallic Masquerade: Mercury-Induced Peripheral Neuropathy Revealing NELL-1 Membranous Nephropathy

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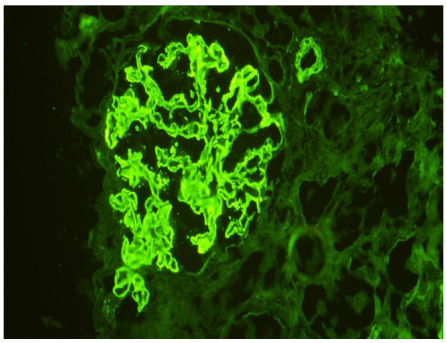
Abstract

Peripheral neuropathy with concurrent sub-nephrotic range proteinuria is an unusual presentation, often posing diagnostic challenges. We report a rare case of dual neuro-renal toxicity secondary to mercury exposure following the use of traditional Siddha medicine. A 66-year-old woman presented with acute onset quadriparesis following diarrheal illness, diagnosed clinically and electrophysiologically as immune-mediated peripheral neuropathy. She underwent plasmapheresis with partial neurological recovery. Persistent hypoalbuminemia and rising creatinine prompted nephrology evaluation. Investigations revealed a 24-hour proteinuria of 2874 mg/day. Renal biopsy demonstrated features of membranous nephropathy with acute tubular injury and positive NELL-1 immunofluorescence staining. History revealed recent intake of Siddha medications for a skin rash. Toxicological analysis confirmed elevated mercury levels in urine 73.84 mcg/L and blood 18 mcg/dL. She was treated with DMSA chelation and high-flux hemodialysis, with eventual renal and neurological improvement.

NELL-1–associated MN accounts for approximately 10–15% of PLA2R-negative MN cases, and only a limited number of mercury-induced NELL-1 MN cases have been reported worldwide. Indian data (KidneyMed, 2024) shows that among patients with MN linked to traditional medicine use, 88% were NELL-1 positive, underscoring an emerging clinical pattern. Coexistence of peripheral neuropathy and NELL-1 MN from mercury exposure is exceptionally rare and possibly under-recognized. This case highlights the importance of careful history-taking, early nephrology referral in unexplained proteinuria, and consideration of heavy metal screening in relevant clinical contexts. It also gently reinforces the value of increased awareness regarding the potential systemic effects of alternative therapies, encouraging thoughtful integration of traditional and modern medical practices.

Keywords

Peripheral Neuropathy, Membranous Nephropathy, Mercury Toxicity, NELL-1.



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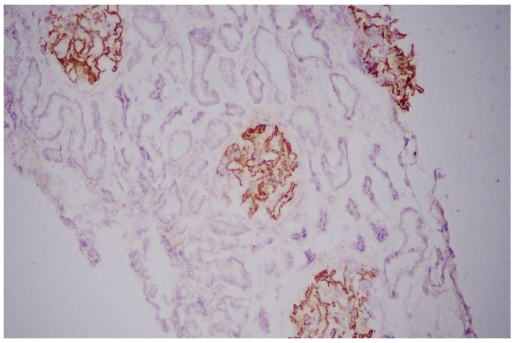

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Study of Echocardiographic Parameters of Left Ventricular Dysfunction Before and After Initiation of Maintenance Hemodialysis in End Stage Kidney Disease

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Abstract

Introduction: Chronic kidney disease is a global health issue wherein cardiovascular complications prove to be a significant contributor to mortality. In patients with end stage renal disease, on maintenance hemodialysis, the risk is approximated to be three times higher. This study was done to assess the change in cardiac parameters after initiating patients on maintenance hemodialysis.

Objective: To study the alterations in echocardiographic parameters, before and after initiation of maintenance hemodialysis in patients with ESRD via bedside 2D Transthoracic Echocardiography.

Methodology: Cross sectional observational study involving patients above 18 years, attending SRMC, fulfilling KDIGO criteria for CKD stage 5, requiring maintenance hemodialysis.

Results: 57 patients were included in the study of which 53 patients (93%) were hypertensives and 44 patients (77.2%) also had diabetes. Mean left ventricular end systolic diameter was 32±3mm (pre HD initiation) as compared to 31±3.3, three months post HD initiation, similarly mean ejection fraction pre HD was 42% to 48% after 3 months of HD.

Conclusion: Improvement in echocardiographic parameters was noted in patients on maintenance hemodialysis with improvement in quality of life and reduced risk of cardiovascular diseases. As a prognosis monitoring factor for cardiovascular diseases, Echo screening should be warranted before initiation and post adequate hemodialysis.

Keywords

CKD, Cardiovascular complications, Echostudy and changes, Dialysis.

ISBN : 978-93-92106-81-1

Echocardiographic Predictors of Pulmonary Hypertension in Patients with Chronic Kidney Disease: A Cross-Sectional Study

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Abstract

Background: Pulmonary hypertension (PH) is one of the prominent and also an under-recognized complication commonly presented in patients with chronic kidney disease (CKD), particularly for those individuals who are approaching the end-stage renal disease. Early detections on the PH using non-invasive tools such as echocardiography may facilitate towards critical prognostic insights and guiding for timely interventions as well. The current study intends to aim towards identification of echocardiographic predictors of PH in CKD patients and further assessment governing with clinical correlations with presentation of CKD and its severity.

Methods: This cross-sectional investigation was conducted for 110 adult CKD patients (Stage 3–5), with or without dialysis, at the tertiary care center. Comprehensive transthoracic echocardiographic evaluation was performed, which includes evaluation on pulmonary artery systolic pressure (PASP), right ventricular (RV) and right atrial (RA) dimensions, left ventricular diastolic function parameters and tricuspid regurgitation velocity (TRV). PH was determined on the basis of PASP >35 mmHg. Patient demographics followed by clinical and laboratory data were recorded for conducting statistical analysis.

Results: Among the total 110 CKD patients evaluated with predominant cases reported with PH from the evaluated echocardiographic findings. PH prevalence was found to be significantly higher among patients especially on Stage 5 CKD and among those patients who were on maintenance hemodialysis ($p<0.01$). From the Multivariate logistic regression revealed furthermore that from the elevated TRV followed by the increased RA diameter and left ventricular diastolic dysfunction were observed as independent echocardiographic predictors for determination of PH. In addition, anemia and volume overload was found to be in positive correlation for patients with presence of PH.

Conclusion: The study concluded that pulmonary hypertension poses to be a common comorbidity among CKD patients. This in particular was found with advanced stages for those on dialysis. Echocardiographic parameters namely –RA size, TRV, and diastolic dysfunction served to be of valuable non-invasive predictors. Routine echocardiographic screening of the high-risk CKD patients can likely facilitate for earlier detection and can aid for devising suitable intervention plans. This could potentially aid the patients to improve their cardiovascular outcomes and their quality of life greatly.

Keywords

Pulmonary hypertension, Chronic kidney disease, Echocardiography, Diastolic dysfunction, Tricuspid regurgitation velocity, Hemodialysis.

ISBN : 978-93-92106-81-1

Assessment of Regional Ventricular Systolic Function Using Tissue Doppler Imaging in Chronic Stable Angina Patients Before and After Revascularization: A Prospective Observational Study

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Abstract

Background: Chronic stable angina (CSA) is characterized by transient myocardial ischemia that may cause subtle myocardial dysfunction undetectable by conventional echocardiography. Tissue Doppler Imaging (TDI) provides a sensitive modality to assess regional myocardial function.

Objectives: To assess the regional left ventricular (LV) systolic function using TDI in CSA patients before and after coronary revascularization.

Methods: This prospective observational study included 100 patients with CSA undergoing revascularization (PCI or CABG). Regional systolic myocardial velocities (S′) of basal and mid-segments of LV walls were measured using TDI before and 4 weeks post-revascularization. Statistical analysis was conducted using paired t-tests.

Results: The mean age of participants was 58.4 ± 9.2 years; 68% were male. Pre-revascularization S′ velocities were significantly reduced in the affected territories (mean S′: 5.2 ± 1.1 cm/s). Post-revascularization, a statistically significant improvement was noted in S′ velocities across anterior, lateral, inferior, and septal walls (mean S′: 7.1 ± 1.2 cm/s; $p < 0.001$).

Conclusion: TDI effectively detects regional systolic dysfunction in CSA patients. Revascularization significantly improves regional myocardial velocities, highlighting TDI's utility in monitoring myocardial recovery.

Keywords

Chronic stable angina, tissue Doppler imaging, revascularization, regional systolic function, myocardial velocity.

ISBN : 978-93-92106-81-1

Assessment of Correlation Between Mean Arterial Pressure and Left Ventricular Mass with Left Atrial Volume Index in Hypertensive Patients : A Prospective Observational Study

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Abstract

Background: Hypertension is a leading cause of cardiovascular morbidity, often resulting in structural and functional cardiac alterations. Left atrial volume index (LAVI) serves as a sensitive marker of chronic diastolic dysfunction and left ventricular filling pressure. This study evaluates the correlation between mean arterial pressure (MAP), left ventricular mass (LVM), and LAVI in hypertensive patients.

Methods: A prospective observational study was conducted on 120 hypertensive patients over 12 months at a tertiary care center. Patients underwent blood pressure monitoring and transthoracic echocardiography for assessment of MAP, LVM, and LAVI. LVM was indexed to body surface area (BSA). Pearson correlation coefficients were used to analyze the relationship between MAP, LVM, and LAVI.

Results: The mean age of participants was 56.8 ± 10.2 years, with 52% males. A significant positive correlation was found between LVM and LAVI ($r = 0.65$, $p < 0.001$). MAP also showed a modest but significant correlation with LAVI ($r = 0.38$, $p = 0.001$). Multivariate regression analysis revealed LVM as an independent predictor of increased LAVI ($\beta = 0.62$, $p < 0.001$).

Conclusion: Increased LVM and elevated MAP are positively correlated with LAVI, highlighting the role of ventricular remodelling and sustained pressure load in left atrial enlargement. LAVI may serve as a useful echocardiographic parameter in assessing diastolic burden and guiding management in hypertensive heart disease.

Keywords

Left atrial volume index, Mean arterial pressure (MAP), Left ventricular mass (LVM), Hypertension.

ISBN : 978-93-92106-81-1

Right Hand Compartment Syndrome Following Transradial Coronary Angiography in a Male Patient: A Rare but Devastating Complication

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Abstract

Background: Transradial access (TRA) has become the preferred route for coronary angiography due to lower access-site complications compared to femoral access. However, rare but serious events such as acute compartment syndrome (ACS) of the hand can occur, often due to arterial injury, hematoma, or bleeding in the setting of anticoagulation.

Case Presentation: A 64-year-old male with hypertension and type 2 diabetes underwent diagnostic coronary angiography via the right radial artery. The procedure was technically uncomplicated. Approximately 3 hours later, the patient complained of severe, worsening pain in the right hand, along with progressive swelling, numbness, and decreased finger mobility.

On examination, the right hand was tense with shiny overlying skin, significant tenderness on passive extension of fingers, and reduced capillary refill. Sensory loss was noted in the median nerve distribution. Radial pulse was diminished.

Compartment pressures were elevated (>35 mmHg in thenar and volar compartments). Emergent fasciotomy of all hand compartments was performed, revealing extensive hematoma tracking from the radial sheath insertion site with ongoing arterial bleeding.

Discussion: ACS of the hand after TRA is extremely rare, but when present, constitutes a surgical emergency. Potential contributors include inadvertent arterial perforation, excessive manipulation during catheterization, or bleeding exacerbated by antiplatelet and anticoagulant therapy. Pain out of proportion to the clinical findings and tense swelling are key early signs; pulse presence does not exclude diagnosis.

Prompt diagnosis, aided by clinical suspicion and compartment pressure measurement, followed by immediate surgical decompression, is essential to preserve hand function and prevent permanent disability.

Conclusion: This case underscores the need for vigilance following transradial coronary procedures. Although uncommon, compartment syndrome of the hand can occur and must be recognized early to avoid catastrophic outcomes. Post-procedure monitoring should include detailed neurovascular assessments, especially in high-risk individuals.

Keywords

Compartment syndrome, transradial access, coronary angiography, hand ischemia, vascular complication, fasciotomy, radial artery.

ISBN : 978-93-92106-81-1

From Gut to Heart: An Unusual Case of Left Atrial Compression

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Abstract

Background: Extracardiac structures can occasionally present as masses adjacent to cardiac chambers on transthoracic echocardiography, posing diagnostic challenges.

Case Summary: During routine echocardiographic evaluation, a well-defined extracardiac mass measuring 2.5 x 2.3 cm was identified compressing the posterior wall of the left atrium. There was no evidence of obstruction to pulmonary venous inflow. The mass was in anatomical relation to the esophagus, descending thoracic aorta, vertebral column, and pericardium. Differential diagnoses considered included esophageal masses, aortic pathology (e.g., aneurysm or dissection), paraspinal or spinal tumors, pericardial cysts, and mediastinal masses.

Investigations & Outcome: Subsequent endoscopy revealed a mid-esophageal growth. Histopathological examination confirmed the diagnosis of squamous cell carcinoma. The final diagnosis was **mid-esophageal carcinoma presenting as a left atrial compressive mass**.

Conclusion: This case highlights the importance of comprehensive anatomical correlation in echocardiographic assessments. Recognition of extracardiac causes of apparent cardiac masses is crucial to avoid misdiagnosis and to guide appropriate management.

Keywords

Echocardiography, Extracardiac mass, Left atrium, Esophageal carcinoma, Cardiac imaging.

ISBN : 978-93-92106-81-1

Double Vision, Triple Threat: The Story of Miller Fisher Syndrome

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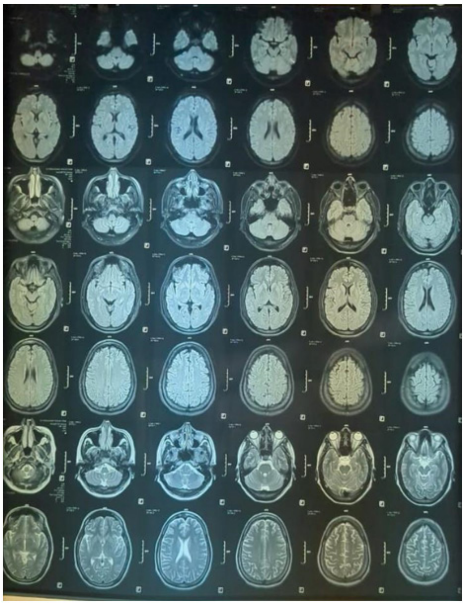
Abstract

Miller Fisher Syndrome (MFS) is a rare, immune-mediated neurological disorder first described by Dr. Charles Miller Fisher in 1956. It is now recognized as a regional variant of Guillain-Barre Syndrome (GBS), accounting for approximately 5% of GBS cases worldwide. MFS is characterized by a distinct clinical triad of ophthalmoplegia, ataxia, and areflexia.

We report a case of 45-year-old previously healthy female who presented with sudden-onset diplopia, numbness of the upper and lower limbs, and unsteadiness while walking. The patient reported a upper respiratory tract infection 10 days prior. Neurological examination revealed bilateral ophthalmoplegia, ataxia, and areflexia. Notably, there was no limb weakness. Cerebrospinal fluid (CSF) analysis was within normal limits. MRI of brain and spine were unremarkable. Nerve conduction studies showed evidence of demyelinating polyradiculoneuropathy. However, serum testing revealed strongly positive anti-GQ1b antibodies confirming the diagnosis of MFS. This case emphasizes the importance of recognizing the hallmark features of MFS, especially in the context of a recent viral illness. Timely diagnosis and immunotherapy can lead to excellent outcomes.

Keywords

Miller Fisher Syndrome, Ophthalmoplegia, Ataxia, Anti-GQ1b antibodies.



ISBN : 978-93-92106-81-1

Legs in Chains: Spasticity and Strength Loss in Adrenoleukodystrophy

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Sri Muthukumaran Medical College Hospital and Research Institute, Chennai, India

Abstract

A 26-year-old male with a 18 years history of Addison's disease- currently on glucocorticoid and mineralocorticoid therapy, presented with 1 year history of spastic paraparesis, gait disturbances and urinary urgency with a family history of one maternal uncle with similar complaints.Over 1year, the neurological status of the patient progressively detoriated presenting with increasing falls, muscle cramps, anxeity and insomnia. On physical examination: hyperreflexia of the lower limbs with bilateral Babinski positive response. MRI study of the brain showed Symmetrical B/L non-enhancing white matter hyperintensity along the occipital forceps, splenium of corpus callosum, crus cerebri & paramedian aspect of pons.No DWT restricted signals.On MR spectroscopy- ch:NAA Ratio is elevated. DD-white matter neurodegenerative disorder. Elevated levels of very long chain fatty acids (VLCFA) (which includes: C26:0, C24/22, C26/22) establishes the diagnosis of X-linked adrenoleukodystrophy in its adrenomyeloneuropathy variation or phenotype with cerebral involvement.

ALD is an X-linked neurodegenerative disease caused by ABCD1 gene mutations affecting approximately 1 in 18,000 males worldwide.

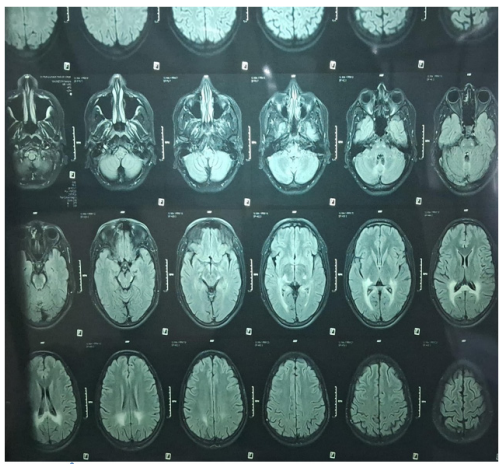
Accumulation of very long-chain fatty acids leads to nerve damage and adrenal insufficiency.

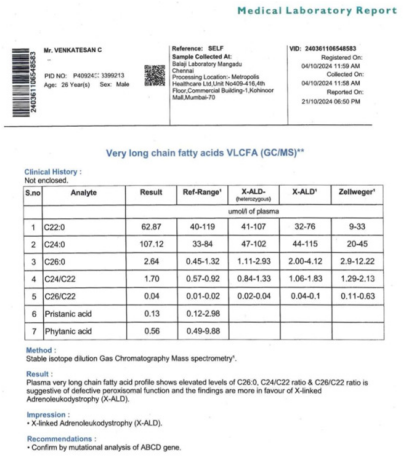
Early Detection, detailed examination helps in

Unraveling the genetic and clinical complexities of ALD and offers hope for future breakthroughs.

Keywords

Addison's *disease, VLCFA, X-linked adrenoleukodystrophy, MRI brain.*





Medical Laboratory Report

Mr. VENKATESAN C

Reference: SELF
Sample Collected At:
Balaji Laboratory Mangadu
Chennai
Processing Location:- Metropolis Healthcare Ltd,Unit No409-418,4th Floor,Commercial Building-1,Kohinoor Mall,Mumbai-70

VID: 240361106548583
Registered On: 04/10/2024 11:59 AM
Collected On: 04/10/2024 11:58 AM
Reported On: 21/10/2024 06:50 PM

Very long chain fatty acids VLCFA (GC/MS)**

Clinical History :
Not enclosed.

S.no	Analyte	Result	Ref-Range¹	X-ALD-(heterozygous)	X-ALD¹	Zellweger¹
		umol/l of plasma				
1	C22:0	62.87	40-119	41-107	32-76	9-33
2	C24:0	107.12	33-84	47-102	44-115	20-45
3	C26:0	2.64	0.45-1.32	1.11-2.93	2.00-4.12	2.9-12.22
4	C24/C22	1.70	0.57-0.92	0.84-1.33	1.06-1.83	1.29-2.13
5	C26/C22	0.04	0.01-0.02	0.02-0.04	0.04-0.1	0.11-0.63
6	Pristanic acid	0.13	0.12-2.98			
7	Phytanic acid	0.56	0.49-9.88			

Method :
Stable isotope dilution Gas Chromatography Mass spectrometry².

Result :
Plasma very long chain fatty acid profile shows elevated levels of C26:0, C24/C22 ratio & C26/C22 ratio is suggestive of defective peroxisomal function and the findings are more in favour of X-linked Adrenoleukodystrophy (X-ALD).

Impression :
• X-linked Adrenoleukodystrophy (X-ALD).

Recommendations :
• Confirm by mutational analysis of ABCD gene.

ISBN : 978-93-92106-81-1

Clot Chronicles and Tales from the Venous Side: Clinical Cases of CVT

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Abstract

Cerebral venous thrombosis (CVT) is an uncommon and often underdiagnosed cause of stroke, resulting from thrombosis of cerebral veins or dural venous sinuses. It accounts for about 0.5–1% of all strokes and is more common in young adults, especially women, due to risk factors like pregnancy, puerperium, and oral contraceptive use. Clinical presentations vary—headache is most common, but seizures, focal deficits, visual disturbances, and even psychosis can occur.

Case Series:

Case 1: A 32-year-old woman, 14 days postpartum, presented with sudden-onset involuntary movements of the right upper limb, eye up-rolling, tongue bite, and loss of consciousness. She had no headache or systemic symptoms. Imaging showed hyperdensity in the superior sagittal sinus. Diagnosed with postpartum CVT, she was treated with anticoagulants and antiepileptics.

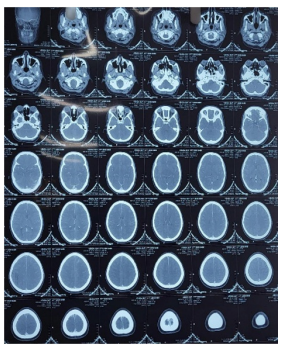
Case 2: A 24-year-old male with chronic alcohol use presented with sudden headache, nausea, and vomiting. No seizures or trauma were reported. Neurological exam showed mild bilateral abduction restriction. CT venogram revealed thrombosis in multiple sinuses and the right internal jugular vein. He was managed with anticoagulants and thiamine.

Case 3: A 30-year-old male presented with four episodes of generalized seizures, tongue bite, and eye up-rolling. Neurological exam was normal. Imaging showed a filling defect in the anterior superior sagittal sinus and a left frontal venous infarct. He received anticoagulants and antiepileptics.

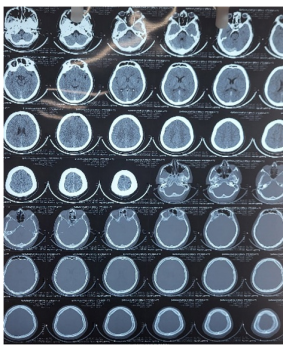
Conclusion: CVT should be suspected in young patients with seizures, headache, or atypical symptoms. Early imaging and prompt anticoagulation are critical for favorable outcomes.

Keywords

Cerebral venous thrombosis, seizures, headache, CT brain, Anticoagulants.



Case 1



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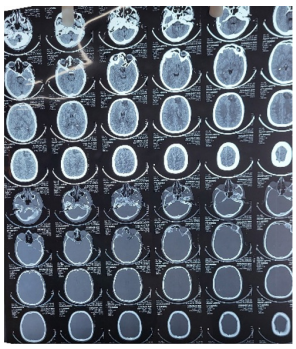

Case 3

ISBN : 978-93-92106-81-1

From Cutaneous Clues to Catastrophic Crisis: A Case Series on SLE

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Abstract

Systemic lupus erythematosus (SLE) is a systemic autoimmune disease with multisystemic involvement. The condition has several phenotypes, with varying clinical presentations from mild mucocutaneous manifestations to multiorgan and severe central nervous system involvement. Several immunopathogenic pathways play a role in the development of SLE.

Its prevalence is higher in women of childbearing age.

Case 1: Autoimmune Hemolytic Anemia (AIHA)

A 24 year old female, K/C/O Hypothyroidism presented with complaints of exertional dyspnoea, palpitations, yellowish discolouration of skin and urine since 1month with past history of blood transfusion.

Pedal edema present.

Low hemoglobin, high Indirect bilirubin and LDH with splenomegaly on Ultrasonography and DCT positive, points towards AIHA. ANA titres: ANA: (Hep 2: 3+), Anti-dsDNA: 3+

Symptomatic management along with pulse steroid therapy, Hydroxychloroquine and azathioprine were given.

Case 2: Recurrent Pregnancy Loss

26years old female married for 7 years had 2 miscarriages with eclampsia in both her pregnancies. History of DVT in 2019 with Anemia and thrombocytopenia.

ANA(Hep2) -heterogenous 3+

Anti-dsDNA 3+

Anti-Histone 3+

Case 3: Lupus Nephritis

23 year old female Presented with bilateral pitting pedal edema, decreased urine output, hematuria × 15days.

Renal biopsy: focal proliferative lupus nephritis (class III)

ANA titres: ANA hep 2: homogeneous 4+

Anti dsDNA 3+

Anti Histone 3+

Case 4: Lupus Panniculitis

34year old female following a dental extraction, complained of atrophy of right side of face (Right facial lipodystrophy)

ANA(Hep2): 4+

Anti-dsDNA:3+

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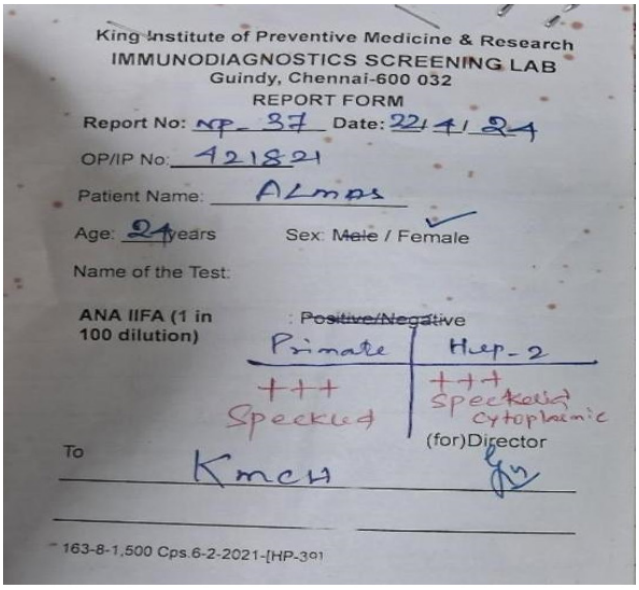
All above patients were diagnosed with SLE and improved symptomatically with treatment. Through these cases we highlight the importance of considering SLE in differential diagnoses for varied multisystemic symptoms. Vigilance for these symptoms and presentations can facilitate timely intervention and prevent irreversible complications.

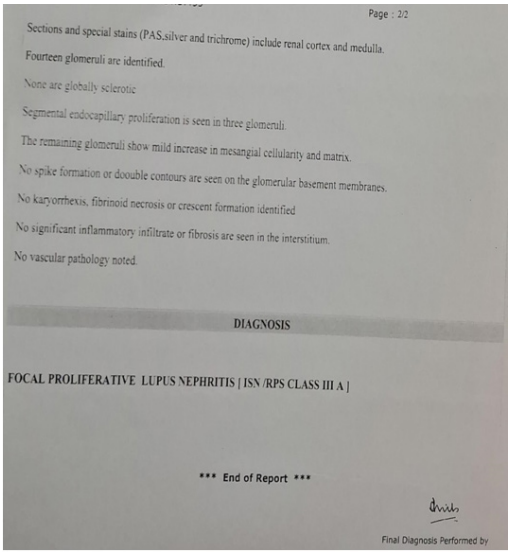
Keywords

lupus nephritis, panniculitis, ANA, AIHA.

Case 1



Case 2



Case 3

Case 4

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A Case Report on Myasthenic Crisis in Thymoma-Associated Myasthenia Gravis

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Abstract

Introduction: Myasthenia gravis (MG) is a neuromuscular autoimmune disorder characterized by fluctuating weakness of skeletal muscles. Myasthenic crisis (MC) is a potentially life-threatening complication of MG, often triggered by infection, medications, or stress, and requires mechanical ventilation. Thymoma is strongly associated with acetylcholine receptor antibody-positive MG and increases the risk of crisis.

Aim: To present a case of myasthenic crisis in a patient with thymoma-associated MG, and to highlight the clinical approach and successful management strategies that led to favorable outcomes.

Discussion: A 57-year-old male with known MG and thymoma presented with acute breathlessness, dysphagia, and limb weakness. On examination, he was hypotensive, hypoxic, and had a GCS of 7/15. ABG showed respiratory acidosis (pH 7.09, $PaCO_2$ 95 mmHg). A Tensilon test confirmed worsening MG. Imaging revealed a mediastinal mass suggestive of thymoma. He was diagnosed with MC and managed in the ICU.

Conclusion: Myasthenic crisis, although rare, requires immediate recognition and intervention. The presence of thymoma in MG increases the risk of crisis. Multimodal ICU care, including plasmapheresis and cautious use of anticholinesterases, can ensure a favorable prognosis.

Keywords

Myasthenia gravis, Myasthenic crisis, Thymoma, Respiratory failure, Plasmapheresis.

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Clinical Study of Gastrointestinal Symptoms in Patients with Type2 Diabetes Mellitus on Oral Anti-Diabetic Drugs

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Abstract

Gastrointestinal (GI) symptoms are frequently reported among patients with Type 2 Diabetes Mellitus (T2DM), often attributed to the side effects of oral anti-diabetic drugs. The differentiation between spontaneous symptoms and those induced by medication remains challenging, especially given the influence of multiple confounding factors such as age, BMI, psychological comorbidities, and duration of diabetes. This study aimed to evaluate the prevalence and pattern of gastrointestinal symptoms among T2DM patients on oral hypoglycemic agents, and to correlate these symptoms with the class of medication, duration of disease, and glycemic control. A descriptive, cross-sectional observational study was conducted at Sri Ramachandra Medical College, from April to May 2025. Forty adult patients with T2DM on oral anti-diabetic drugs were enrolled after informed consent. Patients with known acid peptic disease or on medications causing gastritis were excluded. Relevant biochemical investigations including HbA1c and fasting/postprandial blood glucose were assessed. Among the 40 participants, 50% had diabetes for more than 10 years and elevated HbA1c levels, with a majority experiencing GI symptoms while on metformin (500 mg or 1000 mg). Additional symptoms were noted among those on alpha-glucosidase inhibitors and other oral agents such as GLP-1 receptor agonists, DPP-4 inhibitors, and SGLT2 inhibitors. Notably, symptoms like bloating, nausea, and altered bowel habits were more prevalent among patients with poor glycemic control and longer disease duration. In conclusion, GI symptoms represent a significant but under-recognized morbidity in T2DM, especially among patients on metformin and those with longstanding disease and elevated HbA1c. Clinical awareness and individualized treatment adjustments are essential to improve patient comfort and adherence to therapy.

Keywords

Type 2 Diabetes Mellitus, Gastrointestinal Symptoms, Oral Anti-diabetic Drugs, Metformin, HbA1c, Glycemic Control.

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A Rare Duo: Acute Pancreatitis with Tubercular Arthritis - Diagnostic Challenge

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Abstract

Introduction: Tuberculosis (TB) remains a global health concern, with extrapulmonary TB accounting for up to 20% of cases. Osteoarticular TB, particularly involving the knee, is a rare form that often mimics other joint disorders and may lead to delayed diagnosis.

Acute pancreatitis is an acute inflammatory condition of varied etiology, typically unrelated to TB. The simultaneous occurrence of TB arthritis and acute pancreatitis is exceptionally rare and diagnostically challenging, especially in young, otherwise healthy individuals.

This poster presents a rare case of tuberculous monoarthritis coexisting with acute pancreatitis, emphasizing the need for high clinical suspicion and awareness of atypical systemic presentations in endemic areas.

Aim: To present a rare case of tuberculous monoarthritis of the knee coexisting with acute pancreatitis, and to highlight the diagnostic challenges, clinical approach, and importance of considering extrapulmonary tuberculosis in patients presenting with chronic monoarthritis, even in the absence of pulmonary involvement.

Discussion: Tuberculous arthritis is a rare form of extrapulmonary TB, usually presenting as chronic monoarthritis of large joints like the knee. It often occurs without pulmonary involvement and can mimic other joint diseases, leading to delayed diagnosis. In this case, synovial biopsy confirmed TB despite normal chest imaging.

Acute pancreatitis is typically unrelated to TB and commonly results from gallstones, alcohol, or metabolic causes. In this patient, common ethologies were excluded, and pancreatitis occurred before starting anti-TB therapy, suggesting a coincidental occurrence.

This rare combination highlights the need for a broad diagnostic approach and high suspicion for extrapulmonary TB in endemic regions, even when pulmonary signs are absent.

Conclusion: This case highlights a rare and diagnostically challenging co-presentation of tuberculous monoarthritis and acute pancreatitis in a young patient. It underscores the importance of maintaining a high index of suspicion for extrapulmonary tuberculosis, even in the absence of pulmonary involvement, particularly in TB-endemic regions.

Additionally, clinicians should be vigilant for coexisting systemic conditions, as overlapping or unrelated pathologies may complicate the clinical picture. Early recognition, appropriate imaging, and definitive diagnosis via synovial biopsy are key to initiating timely anti-tubercular therapy and improving patient outcomes.

Keywords

Tuberculous arthritis, Monoarthritis, Extrapulmonary tuberculosis, Acute pancreatitis, Synovial biopsy, Knee joint tuberculosis, Diagnostic dilemma.

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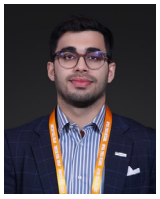

The Heart FIBs: Prevalence and Clinical Impact of MASLD and Fibrosis Scores in Patients Hospitalized with Chronic Heart Failure

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Abstract

Background: Metabolic dysfunction–associated steatotic liver disease (MASLD), the hepatic manifestation of cardiometabolic risk, frequently coexists with heart failure (HF), yet remains under-recognized in HF management paradigms.

Aim: To determine the prevalence of MASLD and liver fibrosis in patients hospitalized with chronic HF, and assess their impact on early outcomes.

Methods: This prospective observational study included 300 adults hospitalized with chronic HF at a tertiary centre. MASLD was diagnosed via hepatic ultrasound and metabolic risk criteria, after exclusion of other liver diseases. Fibrosis was staged using FIB-4, FIB-5, NAFLD Fibrosis Score, and APRI. FibroScan was performed in 60% of patients. Primary outcomes were length of stay, 90-day HF readmission, and mortality.

Results: MASLD was identified in 45% (n=135). MASLD patients were younger (59 vs 64 years, p=0.01), had higher BMI (30.1 vs 26.8, p<0.001), and greater diabetes prevalence (60% vs 37%, p=0.002). Significant fibrosis (≥F2) was present in 26%; 12% had advanced fibrosis (≥F3). MASLD patients had longer hospitalizations (median 8 vs 6 days, p=0.004), higher HF-related readmissions (20% vs 10%, p=0.02), and MASLD independently predicted 90-day HF readmission (aOR 2.1, 95% CI 1.1–4.2, p=0.021). Advanced fibrosis predicted readmission or death (aOR 2.9, 95% CI 1.4–6.0, p=0.004).

Conclusion: Nearly half of hospitalized HF patients have MASLD, and over one in ten show advanced fibrosis. Their presence signals higher risk for readmission and early mortality. Incorporating MASLD screening into HF workflows may offer a new axis for cardiometabolic risk stratification and intervention.

Keywords

Heart failure, MASLD, steatotic liver disease, liver fibrosis, FIB-4, readmission, transient elastography.

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D-HART Study - DPP-4 Inhibitor Use and Heart Failure Association in Retrospective Type 2 Diabetes Mellitus

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Abstract

Background: Dipeptidyl Peptidase-4 (DPP-4) inhibitors are widely used in India for managing type 2 diabetes mellitus due to their effective glycemic control and low hypoglycemia risk. However, recent data suggest a potential link to heart failure. The proposed mechanism involves inhibition of DPP-4-mediated degradation of substrates like stromal-derived factor-1α (SDF-1α) and brain natriuretic peptide (BNP), leading to fluid retention, sympathetic stimulation, and myocardial stress. As both diabetes and cardiovascular disease are highly prevalent in India, evaluating the cardiovascular safety of DPP-4 inhibitors is essential.

Objective: To evaluate the association between DPP-4 inhibitor use and risk of heart failure among patients with type 2 diabetes.

Methodology: A retrospective cohort study was conducted with 218 patients (≥30 years), evenly divided into DPP-4 users (n=109) and non-users (n=109). Data on demographics, BMI, blood pressure, and cardiovascular outcomes were analyzed using t-tests, chi-square, and nominal regression.

Results: The mean age was significantly higher in DPP-4 users (64.83 ± 11.25 vs. 59.14 ± 15.42 years; p = 0.002). Physiological risk factors were more prevalent in DPP-4 users: hypertension (71.6% vs. 48.6%), systolic blood pressure (129.10 ± 17.37 vs. 122.86 ± 17.88 mmHg; p = 0.010), and cardiomyopathy (17.0% vs. 4.6%). Nominal regression revealed significant associations between DPP-4 use and cardiomyopathy (OR = 4.880, p = 0.004), hypertension (OR = 2.744, p = 0.001), and overall heart failure risk (OR = 3.154, p = 0.015). Duration of use was not statistically significant.

Conclusion: This study indicates that DPP-4 inhibitor use is significantly associated with increased physiological risk factors and a higher overall incidence of heart failure among type 2 diabetic patients. Clinicians should exercise caution when prescribing

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DPP-4 inhibitors to patients with existing cardiovascular risk and consider closer cardiovascular monitoring or alternative glucose-lowering therapies in high-risk individuals. Prospective studies are recommended to confirm these associations and refine treatment guidelines.

Keywords

Type 2 Diabetes Mellitus, DPP4 Inhibitor, Heart Failure, Cardiomyopathy, Hypertension.

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Misdiagnosis or Missed Diagnosis? - A Case of Young Onset Hypertension

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Abstract

Introduction: Primary hyperaldosteronism (Conn's syndrome) is one of the most common causes of secondary hypertension and makes up about 20% of cases of resistant hypertension. Conn's syndrome usually manifests at a young age. Resolving the underlying cause of hypertension is critical as is seen in the following case report.

Case Report: 38 year old male, who was hypertensive for the past **7 years**, now presented with recurrent epistaxis and uncontrolled hypertension. On workup, 2D echo showed concentric LVH, fundoscopy revealed grade 1 hypertensive retinopathy.

He had **persistent hypokalemia**, which prompted evaluation for primary hyperaldosteronism. His plasma renin aldosterone ratio was found to be elevated (149.32 pmol/mU). A saline infusion test was done, and the results were confirmed. CT abdomen showed a well-defined lesion in the left adrenal gland, suggestive of adrenal myelolipoma/adenoma. The patient underwent laparoscopic left adrenalectomy. HPE confirmed the lesion to be an adrenal cortical adenoma with myelolipoma. The patient was discharged without antihypertensives post procedure. On follow up, his BP remained within normal limits.

Conclusion: Primary hyperaldosteronism is a treatable cause of hypertension with a potential cure. This case report highlights the need for high suspicion of secondary causes of hypertension, which, when picked up early, can prevent end organ damage like retinopathy, LVH and CKD.

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The Masquerader - Disseminated Staphylococcal Infection

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Abstract

Introduction: Chronic pulmonary cavitary lesions caused by Staphylococcus aureus are a relatively uncommon but clinically significant entity, often underdiagnosed due to their nonspecific presentation and resemblance to more prevalent pulmonary diseases. These cavities, defined by cavitary lung lesions persisting beyond three months with systemic symptoms such as fatigue and weight loss, are typically seen in immunocompromised individuals, including patients with diabetes mellitus, chronic lung disease, or malnutrition. In India, cavitary lesions—especially in the right upper lobe—are almost reflexively attributed to pulmonary tuberculosis (TB) due to its endemicity. However, this bias may lead to misdiagnosis and treatment delays in alternative causes like Staphylococcal pneumonia, chronic pulmonary aspergillosis, or malignancy.

Staphylococcus aureus classically causes pneumatoceles, particularly in post-viral bacterial pneumonia. However, when cavitation occurs with internal soft tissue density and a visible crescent sign, suspicion often leans toward fungal balls (aspergillomas), though this radiological sign is not pathognomonic and may occasionally appear in staphylococcal infections with necrotic debris or blood clots within cavities. This case emphasises the diagnostic complexity of cavitary lung lesions and the importance of thorough microbiological workup. Psoas abscess in a diabetic patient general presents as tuberculosis but in this case without any vertebral and disc involvement showed Staphylococcal growth.

Case Description: We present the case of a 42-year-old male with type 2 diabetes mellitus who presented with dry cough, significant weight loss over 2–3 years, generalised fatigue, and bilateral leg swelling. Physical examination revealed moderate pallor, bipedal pitting edema, and crepitations in the right upper lung fields. Vital signs showed relative hypotension and tachycardia, and capillary blood glucose was elevated (570 mg/dL). Laboratory investigations revealed anemia (Hb 7.6 g/dL) and leukocytosis (TLC 11,600/mm³).

High-resolution CT (HRCT) chest demonstrated a 4.2 × 3 cm cavity in the apical segment of the right upper lobe, containing soft tissue density with an internal crescent sign, initially suggestive of aspergilloma. While sputum CBNAAT and fungal KOH mounts were negative, serum Aspergillus IgM was positive. Surprisingly, sputum culture grew Staphylococcus aureus and Candida species, and the patient was started on IV linezolid and voriconazole. He was discharged on oral antifungals for 6 months.

Two weeks post-discharge, he presented with high-grade fever, diffuse abdominal pain, and diarrhea. BAL was done and sample analysis show no culture growth and CBNAAT was negative. CT abdomen revealed a right psoas abscess, confirmed on MRI as a well-defined T2/FLAIR hyperintense collection (29 × 23 × 76 mm) without vertebral involvement. Pus from the abscess grew Staphylococcus aureus once again, confirming hematogenous dissemination. The patient underwent incision and drainage, followed by a three-week course of IV meropenem and linezolid. He improved symptomatically and was discharged in stable condition.

Conclusion: This case highlights the multifaceted presentation of disseminated Staphylococcal abscesses, including atypical lung cavitation and psoas abscess without vertebral involvement, emphasising the need for a broad differential diagnosis in chronic pulmonary lesions. In endemic regions like India, reflex diagnosis of TB may overlook rare but treatable conditions like Staphylococcus

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aureus infection. This case advocates for microbiological confirmation, radiological correlation, and a multidisciplinary approach to ensure accurate diagnosis and optimal treatment outcomes.

Keywords

Chronic pulmonary cavity, Staphylococcus aureus, Cavitary lung lesion, Crescent sign, Aspergilloma, Psoas abscess, Hematogenous dissemination.

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Adoption of Guideline-Directed Medical Therapy (GDMT) and Four Pillar in the Management of Heart Failure

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Abstract

The annual incidence of heart failure (HF) in India is 0.4%-2.3% among coronary heart disease patients. Guideline-Directed Medical Therapy (GDMT) (beta-blockers, Angiotensin Receptor-Neprilysin Inhibitor, Mineralocorticoid Receptor Antagonists, and SGLT2 inhibitors) is crucial for HF management, yet utilization remains low. This survey explores HCPs' perspectives on prescribing patterns, usage, and compliance with GDMT in HF, categorized by location of practice. A paper- or web-based survey questionnaire was administered to HCPs. Results were stratified by location (Tier-1, Tier-2, Tier-3 cities, and rural areas). The survey included 695 HCPs of which 54.24% (377) were in Tier-1, 30.36% (211) in Tier-2, 10.50% (73) in Tier-3 cities, and 4.89% (34) in rural areas. Overall, 46.91% (326) responded, initiating all four therapies simultaneously [48.01%:Tier-1, 43.60%:Tier-2; 50.68%:Tier-3, 47.06%:rural], 22.59% favored starting with low doses and then up-titrating, 15.83% (110) preferred customizing to patient needs, and 14.68% preferred a sequential approach. Overall, 42.88% (298) HCPs estimated 10%–25% patients receiving all four drugs [40.32%:Tier-1, 45.97%:Tier-2, 46.58%:Tier-3, 44.12%:rural] as immediate post-diagnosis treatment, whereas, 30.94% (215) estimated 25%-50% patients [32.89%:Tier 1, 28.44%:Tier 2, 30.14%:Tier 3, 26.47%:rural] receiving all four drugs. Further, 49.06% (341) HCPs [50.66%:Tier-1, 46.45%:Tier-2, 57.53%:Tier-3, 29.41%-rural] agreed that all recommended medications are not prescribed, while 44.89% (312) strongly agreed and 36.55% (254) agreed that usage of GDMT reduced hospitalization and mortality in HF patients. Complexity of multiple drug regimens [23.31% (162)] and side effects [21.01% (146)], followed by need for individualization, and cost consideration were considered to be key issues by HCPs in optimizing multiple therapies. However, 51.08% (355) HCPs chose 'all of the above' [54.91%:Tier-1, 45.02%:Tier-2, 54.79%:Tier-3, 38.24%:rural] to be key challenges. This survey demonstrated that HCPs agreed that GDMT should be initiated for HF management. However, implementation is inconsistent across geography.

Keywords

GDMT, Heart Failure, Survey, HCPs.

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Selection of Therapies and Understanding Combination Treatment Approaches in Type 2 Diabetes: Findings from a Cross-Sectional Survey

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Abstract

Diabetes is a chronic metabolic disorder requiring long-term management. An Indian Council of Medical Research study showed that India had over 101 million type 2 diabetes mellitus (T2DM) patients by 2024. Effective management requires lifestyle modifications and early pharmacological interventions, with emerging therapies like SGLT2 and DPP-4 inhibitor combinations offering improved glycaemic and cardiovascular outcomes. This survey aimed at understanding the preferences of Indian HCPs for Oral Antidiabetic Drugs (OADs), either as single agents or fixed-dose combinations (FDCs), in patients who had controlled T2DM. A cross-sectional questionnaire-based survey was planned among approximately 2500 HCPs, to which 1919 HCPs responded. HCPs' preference for T2DM treatment showed that 46.6% recommended Metformin with Dapagliflozin as the optimal initial regimen, followed by Metformin with Sitagliptin (29.8%), Metformin with Glimepiride (14.5%), Metformin monotherapy (4.2%), and other regimens (4.8%). For intensifying therapy after Metformin monotherapy, 36.9% of physicians preferred Dapagliflozin with Sitagliptin, 33.2% Dapagliflozin alone, 22.2% Sitagliptin alone, 5.1% Glimepiride, 1.2% Gliclazide, 1.0% Pioglitazone, and 0.2% opted for other agents. Metformin with Dapagliflozin and Sitagliptin was considered as optimal triple drug therapy for comprehensive glycaemic and metabolic control by 63.5% HCPs. As a response to Dapagliflozin-Sitagliptin combination, HbA1c improved within 3-4 months according to 53.4% HCPs, within 1-2 months by 29.1%, within 5-6 months by 13.6%, and after more than 6 months by 3.8% HCPs. Treatment decisions were primarily guided by patient-specific characteristics and comorbidities (41.3%), followed by clinical guidelines (27.9%), patient preferences, adherence, and cost (21.6%), and therapeutic goals such as HbA1c and weight control (9.0%). This survey highlights a strong preference among physicians for combination therapies, especially Metformin with Dapagliflozin, Sitagliptin or both as initial and intensified treatments. Treatment decisions are largely individualized, influenced by patient-specific factors, clinical guidelines, and practical considerations such as cost and adherence.

Keywords

Oral antidiabetic drugs, T2DM, Survey, HCPs.

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There's More Than Meets the Eye: Unmasking Wolfram Syndrome in a Long - Misdiagnosed Adult

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Abstract

Wolfram syndrome (WS), also known as DIDMOAD (Diabetes Insipidus, Diabetes Mellitus, Optic Atrophy, and Deafness), is a rare autosomal recessive neurodegenerative disorder often misdiagnosed due to its overlapping features with common endocrinopathies. Early recognition is critical but frequently delayed, leading to progressive morbidity. We present a case of a 38-year-old woman with long-standing insulin-dependent diabetes mellitus, optic atrophy, bilateral hearing loss, secondary amenorrhea, and vitamin D deficiency. Initially managed as a standard case of type 1 diabetes with suspected drug-induced hyperprolactinemia, a broader syndromic possibility was considered due to the constellation of multisystem features. Genetic testing revealed a pathogenic homozygous variant in the WFS1 gene (exon 8, c.1530C>A), confirming a diagnosis of Wolfram Syndrome Type 1.

Management and Outcome: Following diagnosis, the patient was transitioned to tailored care including subcutaneous insulin and intranasal desmopressin for central diabetes insipidus. She remains under close endocrinological and neurological surveillance. Symptomatic improvement and stabilization of disease progression were noted with supportive care.

Conclusion: This case underscores the importance of revisiting atypical features in presumed type 1 diabetes patients. A high index of suspicion for WS in patients with juvenile diabetes and progressive neurologic deficits can enable early diagnosis. Genetic confirmation not only guides appropriate therapy but also offers prognostic and reproductive counseling. As seen in this case, there is truly more than meets the eye in diabetes care.

Keywords

Wolfram Syndrome, DIDMOAD, WFS1 gene, optic atrophy, diabetes insipidus, neurodegeneration, monogenic diabetes.

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Cardiac Sarcoidosis - A Rare Presentation of a Grossly Underdiagnosed Disease

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Abstract

Cardiac sarcoidosis is a rare manifestation of sarcoidosis that is widely misdiagnosed or undiagnosed as it requires a high level of clinical suspicion. About 25% of those with systemic sarcoidosis have cardiac involvement out of which only 5% are diagnosed. They usually present with AV blocks, ventricular arrythmias and heart failure.

Case Discussion: This is a 56 year old female, known diabetic and hypertensive with a history of recently diagnosed systemic sarcoidosis, came with complaints of retrosternal anginal type of chest pain.

Past History: Recent admission under ENT for a nasal polyp, biopsy of which showed multiple confluent granulomas. AFB and GeneXpert were negative.

Examination: B.P : 120/70mmhg, HR: 89/min, RR: 13/min, general and systemic examinations were normal.

Basic Investigations: Hb: 13.0, TC: 4660, plts 1.25. RFT was normal. LFT showed mild transaminitis with SGOT 83, SGPT 107. HbA1c: 10.3, TFT normal. ESR: 21, serum calcium 8.7, Serum ACE levels were elevated: 189. CT thorax was done and showed multiple tiny nodules in right middle and lower lobes with mediastinal and hilar lymphadenopathy.

Cardiac Workup: ECG was done which showed T wave inversions in V1, V2, V3 and a VR with q waves in lead 3. Cardiac biomarkers were done and found to be negative. HS Trop T: 4.3

2D ECHO: EF: 63%, no regional wall motion abnormality, normal chamber dimensions concentric LVH present.

Cardiac MRI: Patchy diffuse late gadolinium contrast enhancement along mid, inferior, basal and inferolateral segments, pattern suggestive of cardiac sarcoidosis.

Patient was managed symptomatically and continued on oral steroids. Patient was initiated on Inj. Cyclophosphamide for the same.

Conclusion: While endomyocardial biopsy provides a definitive diagnosis, the newer modalities of Cardiac MRI and PET imaging are widely used. Isolated cardiac sarcoidosis is rare and most cases require the presence of extracardiac disease to establish a diagnosis. The varied modes of presentations and atypical symptoms such as the chest pain in our patient make diagnosis a clinical challenge.

Keywords

Cardiac amyloidosis, Endomyocardial biopsy, Gadolinium enhancement, Chest pain.

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A Rhapsody in Red: Rare Case of Left Ventricular Non-Compaction Cardiomyopathy in a 19 Years Old Female

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Abstract

Background: Left ventricular noncompaction is a rare cause of congenital cardiomyopathy, characterized by trabeculations and intertrabecular recesses of the myocardial wall, communicating with the left ventricular cavity. Defective embryogenesis results in thickened myocardium with two layers consisting of non-compacted myocardium and a thin, compacted layer of myocardium. In the advanced stage of the disease, the classical triad of heart failure, ventricular arrhythmia, and systemic embolization is common. This disease can coexist with other congenital heart abnormalities.

Case Report: A 19 Years old female presented to OPD with history of progressive dyspnea and easy fatiguability on minimal exertion for the past two months. She also gave history of pedal edema and abdomen pain for past two weeks. Physical examination revealed pulmonary rales, third heart sound and hepatomegaly. Electrocardiography showed sinus rhythm with left ventricular hypertrophy and nonspecific ST changes. Chest X-ray showed an enlarged cardiac shadow (cardiomegaly). Echocardiography revealed left ventricular systolic dysfunction (LVEF: 25%), a noncompact layer, hyper trabeculation. The right ventricle had normal morphology and function. Patient was started on Guideline Directed Medical therapy and anti-coagulants. After discharge patient was referred to higher centre for cardioverter defibrillator implantation, to prevent sudden cardiac death.

Conclusion: Left ventricular noncompaction is rare congenital cardiomyopathy. It should always be considered as a possible diagnosis in a young patient hospitalized with heart failure.

Keywords

Left ventricular noncompaction cardiomyopathy, guideline-directed medical therapy, spongy myocardial tissue, trabeculations, echocardiogram, rare congenital heart disease.

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The DKD Shift-Function Over Filtration-Redefining Diabetic Kidney Disease

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Abstract

Introduction: Diabetic Kidney Disease (DKD), traditionally viewed as a progressive disorder that evolves from microalbuminuria to overt proteinuria, is undergoing significant redefinition. Recent evidence challenges the notion that proteinuria is an essential precursor to end-stage renal disease (ESRD) in patients with diabetes but Clinical observations have illuminated a non-proteinuric phenotype of DKD, potentially accounting for 40–50% of cases. The case series presented further substantiates this evolving understanding. These real-world cases provide compelling clinical validation of the non-proteinuric DKD phenotype, echoing global research trends and challenging traditional diagnostic frameworks.

Aim & Objectives: This case series aims to highlight and clinically validate the existence of non-proteinuric diabetic kidney disease. Our rigorously selected case series includes only patients with definitive diabetic kidney disease, excluding all with confounding renal, autoimmune, infectious, or malignant conditions. Despite no proteinuria, all demonstrated declining GFR and diabetic retinopathy—clinically validating the non-proteinuric DKD phenotype which challenges traditional albuminuria-based diagnostic criteria and advocates for a paradigm shift toward GFR-centric detection and earlier intervention in diabetic renal decline.

Objectives:

1. To Validate the Non-Proteinuric Phenotype of Diabetic Kidney Disease (DKD)
2. To Emphasise the Importance of GFR-Centric DKD Detection
3. To Highlight the Clinical Risk of Under diagnosed DKD
4. To Illustrate Diagnostic Rigour Through Careful Case Selection
5. To Advocate for a Paradigm Shift in DKD Screening Protocols

Cases

Case 1: A 52-year-old woman with 12 years of type 2 diabetes presented with headache and peripheral neuropathy. Despite preserved urine albumin and protein levels (protein: 6.8 mg/dL), she exhibited reduced GFR and bilateral retinopathy. Imaging revealed renal parenchymal disease with normal-sized kidneys, supporting non-proteinuric diabetic kidney disease.

Case 2: A 65-year-old man with 10 years of diabetes was admitted for progressive exertion dyspnea, bipedal edema. Urinalysis showed only trace albumin, yet renal function declined steadily (creatinine 1.84 mg/dL). Ophthalmologic evaluation confirmed bilateral diabetic retinopathy. Imaging indicated Grade 1 Renal Parenchymal Disease with mild ascites

Case 3: A 45-year-old man with a 5-year history of diabetes reported giddiness and constitutional symptoms. His serum creatinine was 3.74 mg/dL, yet urine analysis revealed no albuminuria. Fundus examination showed bilateral non-proliferative diabetic retinopathy. Renal ultrasound revealed bilateral parenchymal disease and multiple cysts, consistent with diabetic nephropathy without proteinuria.

Case 4: A 45-year-old woman with poorly controlled type 2 diabetes presented with exertional dyspnea. Her renal function was impaired (creatinine up to 2.74 mg/dL) with no detectable proteinuria. Despite this, ophthalmology revealed proliferative diabetic retinopathy with tractional retinal detachment. DKD was diagnosed in the absence of proteinuria.

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Case 5: A 54-year-old man with a 20-year history of diabetes was admitted for breathlessness, bilateral lower limb edema. Serum creatinine was 1.99 mg/dL, and urinalysis revealed nil protein. Fundoscopy was consistent with diabetic microangiopathy. Imaging showed increased cortical echogenicity, reinforcing the diagnosis of non-proteinuric diabetic kidney disease.

Results:

1. Persistent Renal Decline Without Proteinuria
2. Retinopathy as a Diagnostic Clue
3. Longstanding Diabetes with Variable Duration
4. Absence of Alternative Etiologies
5. Imaging Consistently Revealed Renal Parenchymal Disease
6. Clinical Silence Delays Diagnosis

Summary: This case series presents five rigorously selected patients with type 2 diabetes and progressive renal dysfunction in the absence of significant proteinuria, highlighting the non-proteinuric phenotype of diabetic kidney disease (DKD). Each patient demonstrated evidence of diabetic retinopathy and characteristic renal imaging findings, reinforcing a microvascular etiology. By excluding alternative renal pathologies and comorbid confounders, this series validates the existence of non-proteinuric DKD and challenges the traditional albuminuria-dependent diagnostic model. The findings advocate for GFR-based screening protocols and broaden the clinical perspective on DKD detection and management.

Conclusion: Non-proteinuric diabetic kidney disease is an under-recognised but clinically significant entity. Its silent progression, lack of albuminuria, and diagnostic overlap with other conditions necessitate a paradigm shift from proteinuria-centric models to GFR-first, multi-parameter approaches for early detection. This case series emphasises that absence of proteinuria does not imply absence of disease and reinforces the need for revised diagnostic criteria and greater clinical vigilance in diabetic renal care.

Keywords

Non-proteinuric diabetic kidney disease, DKD, eGFR decline, albuminuria-independent nephropathy, diabetic retinopathy, renal parenchymal disease, GFR-centric diagnosis, silent kidney injury, Type 2 diabetes mellitus, paradigm shift.

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Alteration in Thyroid Hormone Levels in Non-Thyroidal Illness and Its Correlation with Disease Severity in Critically Ill Patients

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Abstract

Introduction: Non-Thyroidal Illness Syndrome (NTIS), or euthyroid sick syndrome, refers to altered thyroid function test results in critically ill patients without intrinsic thyroid disease. A key pathophysiological feature is the impaired conversion of T4 to active T3 and increased production of reverse T3 (inactive metabolite), reflecting a systemic metabolic adaptation to illness.

Aim & Objectives: To evaluate changes in total T3, T4, and TSH levels in ICU patients with NTIS and correlate these with disease severity using APACHE II scores. Specific objectives included:

1. Assessment of TFTs on Day 1 and Day 3 of ICU stay
2. Correlation of hormone levels with APACHE II score
3. Association between TFT changes and ICU stay duration

Methods: A prospective observational study was conducted over 13 months in a tertiary care ICU. 120 adult patients without prior thyroid disorders were enrolled. TFTs and APACHE II scores were measured on Day 1 and Day 3. Data were analyzed using SPSS software.

Results: Most patients had reduced T3 levels on both days, with a significant decline by Day 3. Patients with ICU stays >5 days showed lower mean T3 (68 ng/dL) than those with <5 days (78 ng/dL), suggesting worsening NTIS with prolonged illness. A consistent inverse relationship was observed between T3 levels and APACHE II scores.

Conclusion: Progressive T3 decline correlates with increased severity and prolonged ICU stay. Serial T3 measurement may serve as a prognostic tool in critically ill patients.

Keywords

Non-Thyroidal Illness Syndrome, T3, APACHE II, ICU.

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A Case of Mixed Connective Tissue Disorder Presenting as Rapidly Progressive Myocarditis in a Young Female

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Abstract

Introduction: Mixed Connective Tissue Disease (MCTD) is a rare systemic autoimmune disorder characterized by overlapping features of SLE, scleroderma, and polymyositis. Cardiac manifestations, particularly autoimmune myocarditis, are uncommon but potentially fatal. This case illustrates an atypical presentation of MCTD with rapidly progressing cardiac involvement.

Aim & Objectives: To present a diagnostically complex case of MCTD manifesting as severe autoimmune myocarditis and highlight the critical importance of early recognition and intervention in multisystem autoimmune disease.

Methods: A 23-year-old woman presented with high-grade fever for 3 months, profound bilateral limb weakness, weight loss, and pressure sores. Clinical evaluation revealed malnutrition, autonomic dysfunction, and signs of multisystem involvement. Serology showed anti-dsDNA, anti-Sm, anti-U1 RNP, and SSA/Ro positivity. Echocardiography revealed dilated cardiomyopathy (EF 38%) and global hypokinesia. The clinical course rapidly progressed to refractory hypotension, sepsis, MODS, and eventual cardiac arrest.

Results: Despite aggressive supportive measures—including broad-spectrum antibiotics, inotropes, wound care, and steroids—the patient deteriorated and succumbed to cardiogenic shock secondary to autoimmune myocarditis.

Summary & Conclusion: This case underscores the diagnostic challenges of MCTD and its capacity for severe cardiac involvement. In young patients with unexplained heart failure, autoimmune myocarditis should be considered. Timely immunological workup and immunomodulation may improve outcomes. Resource-limited settings demand a careful balance between immunosuppression and infection control.

Keywords

MCTD, autoimmune myocarditis, cardiogenic shock, young female, overlap syndrome, multiorgan dysfunction.

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A Case of Systemic Lupus Erythematosus with Multisystem Involvement and Neuropsychiatric Manifesations

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Abstract

Introduction: Systemic Lupus Erythematosus (SLE) is a chronic autoimmune condition with variable presentations and systemic involvement, most common among women of reproductive age.

Aim & Objectives: To present a challenging case of SLE with rare central nervous system (CNS) involvement and hematologic complications, emphasizing the importance of early intervention.

Methods: A 41-year-old female presented with acute onset of vesicular skin lesions, joint pain, fever, and painful oral ulcers. Initial dermatology evaluation suggested cutaneous lupus, but systemic deterioration and laboratory abnormalities prompted a broader investigation.

Results: The patient developed pancytopenia, transaminitis, and altered mental status with psychosis and seizures. Autoimmune screening revealed positive ANA and specific autoantibodies consistent with mixed connective tissue disease, predominantly SLE. She was treated with IV pulse steroids (methylprednisolone), hydroxychloroquine, IV antibiotics, antifungals, and blood transfusions. Her condition stabilized under intensive care, and she was discharged on immunosuppressive therapy.

Summary & Conclusion: This case illustrates the diagnostic complexity and life-threatening potential of SLE with multisystem involvement, including CNS manifestations. Multidisciplinary care and timely immunosuppressive treatment were key to patient recovery.

Keywords

Systemic Lupus Erythematosus, CNS lupus, autoimmune disease, sepsis, psychosis, pulse steroid therapy.

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Exploring the Association Between Hypomagnesemia and Diabetic Nephropathy

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Abstract

Introduction & Objectives: Diabetes mellitus is characterized by insulin deficiency and insulin resistance, and it is a leading cause of chronic kidney disease worldwide. Magnesium plays a crucial role in insulin secretion and activity. Hypomagnesemia has been implicated in the development of diabetic complications. A case-control study was conducted to determine the prevalence and association of hypomagnesemia with diabetic nephropathy.

Materials & Methods: The study included 100 individuals with type 2 diabetes, divided into two groups: those with diabetic nephropathy (50 individuals) and those without (50 individuals). Various biochemical investigations were performed, including fasting and postprandial blood sugar levels, serum creatinine, serum magnesium, and urinary albumin-creatinine ratio. Descriptive statistics were used to analyze frequency and means. The association between categorical and continuous variables was assessed using χ2-Test and Student's t-tests, respectively. The correlation between nephropathy and hypomagnesemia was examined using Pearson's correlation.

Results & Discussion: Among the diabetic patients, 39% were found to have hypomagnesemia. There was a significantly higher prevalence of hypomagnesemia (66.6%) in patients with diabetic nephropathy (mean=1.69 ± 0.39 mg/dL) compared to those without nephropathy (33.3%) (mean=1.84 ± 0.31 mg/dL). Serum magnesium levels showed a significant inverse correlation with serum creatinine (r=−0.262, p value=0.027) and urinary albumin-creatinine ratio (r=−0.203, p=0.042).

Conclusion: There is a higher prevalence of hypomagnesemia among patients with diabetic nephropathy compared to diabetic patients without nephropathy.

Keywords

Diabetes mellitus, hypomagnesemia, diabetic nephropathy, chronic kidney disease, albumin creatinine ratio.

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Connecting the Dots: From Type 1 Diabetes to Autoimmune Hypothyroidism in Autoimmune Polyglandular Syndrome Type 3

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Abstract

Autoimmune Polyglandular Syndrome (APS) type 3 is a rare immune mediated disorder. It is associated with two or more autoimmune diseases by the presence of autoimmune thyroid disease with other Autoimmune conditions, excluding adrenal gland involvement.

We report a 15-year-old male, with a history of type 1 diabetes mellitus, diagnosed at the age of 4, now presenting with diabetic ketoacidosis. He was tested positive for anti-GAD65, anti-islet cell antibody, with low c-peptide levels at 4 years of age.

Thyroid antibodies were tested, revealing positive anti-thyroid peroxidase antibodies. The patient had elevated thyroid stimulating hormone with normal free FT3, FT4 levels. Cortisol levels were normal, ruling out adrenal involvement.

Patient had a delay in growth and secondary sexual characters, Low testosterone and luteinizing hormone levels. On comparing age with x-ray hand-wrist, in bone ossification there is a gross delay in bone age compared to chronological age. MRI Brain was normal.

This case demonstrates type 1 diabetic patient additionally diagnosed with autoimmune thyroiditis, excluding adrenal gland involvement, this constitutes diagnosis of APS type 3. Additionally patient had delay in growth and secondary sexual characters. Patient planned for

1. Insulin like growth factor –1 testing after achieving euthyroid state.
2. To achieve gain in height before epiphyseal closure.
3. To plan testosterone supplementation if serum testosterone remains low after correction of height.

Keywords

Autoimmune polyglandular syndrome, autoimmune thyroid disease, growth delay.

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Reversible Heartbreak: A Case of Postpartum Reverse Takotsubo Cardiomyopathy

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Abstract

The post-partum period is a time of extreme physical and emotional stress with catecholamine surges and hormonal fluctuations. These factors collectively increase the risk of acute cardiovascular complications, including Takotsubo cardiomyopathy (TTC)—a rare, stress-induced cardiomyopathy typically presenting with transient left ventricular dysfunction and apical ballooning. Atypical or reverse variants, involving basal hypokinesia and apical sparing, are more commonly observed in younger, peripartum women.

Here we report a 28-year-old postpartum mother one day after normal vaginal delivery who presented with dyspnea and sudden onset of chest pain, 30 minutes after tubal ligation surgery. Her sp02 was 80%, PR- 110/min, RR-34/min, and bilateral basal crepitations were auscultated. A Chest X-ray confirmed acute pulmonary edema. Immediate bedside echocardiography revealed Severe LV dysfunction with EF-35.4 % alongside apical ballooning and apical hypokinesia of the left ventricle, confirming a reverse Takotsubo. ECG showed no significant ST elevations or T wave inversions. There was no elevation of cardiac troponins. A Cardiac MRI taken 48 hours later showed improvement in heart function, with her ejection fraction rising to 48%, with no evidence of myocardial inflammation or infarction, ruling out the possibility of myocarditis and myocardial infarction, respectively. The rapidly improving cardiac function excluded our case's most challenging differential diagnosis of peripartum cardiomyopathy. While childbirth is a natural process, it is also a stressful physiological event. In her case, the combination of postpartum stress, hormonal shifts, surgery, and general anaesthesia likely overwhelmed the normal cardiac function, triggering a reversible, yet dramatic, episode of “broken heart syndrome” aka Reverse Takotsubo Cardiomyopathy.

Keywords

Takotsubo, Cardiomyopathy, Postpartum, Reverse, Stress-induced, Apical Ballooning, Broken Heart Syndrome.

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Study of Prevalence of QTC Interval Prolongation in ECG among Diabetic Population in DAE Hospital

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Abstract

Introduction: This is the study of prevalence of QTc interval prolongation in ECG among diabetic population who presented to our institution (DEPARTMENT OF ATOMIC ENERGY HOSPITAL). The **prevalence of this abnormality is about 44 percent among diabetic population with raised hba1c levels. QTc interval is normally less than 450 ms for men and less than 460 ms for women** Hence by measuring the QTc interval in ECG we can assess the cardiovascular risk and sudden death in diabetic patients at an earlier stage for intervention and management.

Study Methodology: This is a **retrospective study** done in our institution from **September2024-Feb 2025 of 100** patients after obtaining ethical clearance and informed consent from all patients with DM on medications

Results: In our study out of 100 patients **80 were females and 20 of them were males.** And about 55 out of 80 female patients were >60 years and 10 out of 20 male patients were >60 years. **QTc prolongation was found in 16 females and 6 males out of which h ba1c levels were >7 in 12 females and 4 males**. Those patients on both OHA and insulin. and duration of diabetes was >10 years. Other risk factors like hypertension, dyslipidemia, obesity were present in 35 females and 20 males. Hence **QTc prolongation was more in females and other factors like duration of diabetes, increased ba1c attributed to it.**

Conclusion: Both type 1 and type 2 DM are risk factors of sudden cardiac death but type 1 patients there is more of genetic factors involved. In type 2 DM patients QTc prolongation is a cause of death because of ion cannel defects and ventricular arrythmias. Hence **duration of diabetes hba1c levels and tight control of sugars with other risk factors contribute to increase of risk.** So, early detection with simple ECG record will help in early management.

Keywords

QTc interval in ECG, sudden cardiac death, diabetic population raised hba1c levels.

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From Vein to Brain: Unmasking a Hidden Shunt - Stroke Caused by Paradoxical Embolism Through ASD

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Abstract

Background: Paradoxical embolism is an underrecognized cause of ischemic stroke in young adults, often linked to the presence of a patent intracardiac shunt such as an atrial septal defect (ASD). The postpartum state is inherently hypercoagulable, increasing the risk of venous thromboembolism. In rare instances, this may result in embolic stroke via right-to-left shunting through a structural cardiac anomaly. This case highlights the clinical significance of early recognition and evaluation for paradoxical embolism in a young woman with acute ischemic stroke.

Case Summary: A 29-year-old female, 4 months postpartum, presented with acute onset right-sided weakness, facial asymmetry, and slurred speech. Neurological examination was consistent with a left hemispheric stroke (NIHSS score 8). Notably, she also reported left calf pain, and examination revealed swelling and tenderness. MRI brain confirmed an acute infarct in the left middle cerebral artery territory. Lower limb Doppler studies detected deep vein thrombosis (DVT) in the left popliteal and posterior tibial veins. Transthoracic echocardiography with contrast identified a secundum-type ASD with a right-to-left shunt, confirming the diagnosis of paradoxical embolism.

Discussion: This case exemplifies the pathophysiological triad of paradoxical embolism: a source of venous thrombus, an intracardiac shunt, and a resultant systemic embolic event. The postpartum period, with its hypercoagulable state, predisposed this patient to DVT. The ASD provided a conduit for embolic passage from the venous to arterial circulation, bypassing pulmonary filtration and resulting in cerebral infarction. Prompt recognition of this etiology is critical, especially in young stroke patients with no traditional risk factors. Echocardiographic screening, particularly with bubble contrast, is essential in such scenarios.

Conclusion: In young, otherwise healthy patients with cryptogenic stroke, especially during prothrombotic conditions like the postpartum period, paradoxical embolism through a structural cardiac defect should be a strong diagnostic consideration. Timely identification allows for effective management, including anticoagulation and potential closure of the ASD to prevent recurrence.

Keywords

Cryptogenic stroke, Atrial septal defect (ASD), Postpartum hypercoagulability Venous thromboembolism (VTE), Deep vein thrombosis (DVT) Right-To left shunt, Contrast echocardiography, Young stroke patient, Bubble study Secundum ASD Prothrombotic state, Embolic stroke, Intracardiac shunt.

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Prevalence and Cardiometabolic Risk Assessment in Young Adults with Metabolic Syndrome: A Cross-Sectional Study

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Abstract

Introduction: Metabolic syndrome (MetS) consists of interlinked metabolic disturbances—abdominal obesity, high blood pressure, dyslipidemia, and insulin resistance—that significantly elevate the risk for cardiovascular diseases (CVD) and type 2 diabetes. Identifying MetS in young adults at an early stage is vital for preventing long-term complications.

Aim & Objectives: This study aimed to estimate the prevalence of MetS and analyze associated cardiovascular risk in young adults attending a tertiary care hospital.

Objectives:

1. To assess the prevalence of MetS in individuals aged 18–35 years.
2. To evaluate the frequency of individual MetS components.
3. To determine cardiovascular risk using the Framingham Risk Score (FRS) and its association with MetS indicators.

Methods: A hospital-based cross-sectional study was conducted over six months in the Department of General Medicine. Two hundred adults aged 18–35 years visiting the outpatient clinic were enrolled. MetS was diagnosed using the modified NCEP ATP III criteria. Clinical parameters including waist circumference, blood pressure, fasting glucose, and lipid profile were recorded. The Framingham Risk Score was calculated for cardiovascular risk stratification.

Results: Out of 200 participants, 64 (32%) were diagnosed with MetS. Abdominal obesity (84%) and low HDL cholesterol (72%) were the most frequent findings. MetS was more common in males (58%) than females (42%) ($p < 0.05$). Individuals with MetS had higher FRS (mean 11.2) compared to those without (mean 6.4, $p < 0.01$). Waist circumference and triglyceride levels showed a strong positive correlation with cardiovascular risk.

Summary: The high prevalence of MetS in young adults, especially males, with a corresponding increase in cardiovascular risk, highlights a growing public health concern.

Conclusion: Proactive screening and lifestyle interventions are essential to curb future cardiovascular complications in this age group.

Keywords

Metabolic syndrome, young adults, Framingham risk score, obesity, dyslipidemia, cardiovascular risk.

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A Hospital-Based Cross-Sectional Study on Non-Invasive Predictors of Oesophageal Varices in Patients with Chronic Liver Disease

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Abstract

Chronic liver disease (CLD) globally affects millions of individuals; the oesophageal varices are a major complication of CLD due to portal hypertension. This study evaluates clinical, biochemical, and radiological parameters as non-invasive predictors of oesophageal varices in patients with CLD. A hospital-based cross-sectional study was conducted at SRM Medical College Hospital and Research Centre from October 2022 to March 2024, enrolled newly diagnosed CLD patients aged 18–80 years who had not undergone prior treatment for portal hypertension or varices. Thereafter, data on demographics, medical history, laboratory parameters, clinical and imaging findings were collected. The presence and severity of oesophageal varices were assessed using endoscopy and correlated with non-invasive predictors. Among 88 participants, 84.1% had oesophageal varices, predominantly Grade 1 (58.0%). Significant predictors of varices included low platelet count (<100,000/µL), increased spleen size (>12 cm), and platelet-to-spleen ratio (<909) showed correlation with variceal presence. Non-invasive markers, such as serum biomarkers, demonstrated high sensitivity and specificity playing a pivotal role in identifying the early detection of patients at risk of varices. This investigation aids to reduce the reliance on routine endoscopy, improving patient care and resource allocation.

Keywords

Chronic liver disease, esophageal varices, Portal hypertension.

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Association of Cardiometabolic Risk Factors with Insulin Resistance in Overweight and Obese Adults - An Observational Study

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Abstract

Introduction: Obesity, especially central obesity, is associated with a higher risk of developing insulin resistance, which is a precursor to several cardiovascular and metabolic disorders such as type 2 diabetes, hypertension, and dyslipidemia. Insulin resistance occurs when the body's cells become less responsive to the hormone insulin, leading to higher blood sugar levels and increased insulin production. Over time, this can contribute to the development of metabolic syndrome, a cluster of conditions that increases the risk of cardiovascular diseases.

Aim: To investigate the association of cardiometabolic risk factors with insulin resistance in overweight and obese adults in a tertiary care hospital.

Methods: This was a cross-sectional study conducted at a tertiary care hospital. The study included 200 overweight and obese adults aged 20-60 years. The participants were selected using a simple random technique. Participants with known endocrine disorders (e.g., hypothyroidism, Cushing's syndrome), Pregnant or lactating women, participants with acute infections or any other serious medical conditions were excluded. Anthropometric Measurements like Body weight, height, and waist circumference were measured to calculate the BMI (Body Mass Index) were measured. Insulin resistance was determined using the Homeostasis Model Assessment of Insulin Resistance (HOMA-IR).

Results: Among the 200 participants, 65% had insulin resistance (HOMA-IR > 2.5). The mean age of the participants was 40.5 years, with a higher prevalence of obesity in females (60%) compared to males (40%). A significant positive correlation was observed between waist circumference and HOMA-IR ($r = 0.45$, $p < 0.01$). Higher waist circumference was associated with higher insulin resistance.

Conclusion: These findings emphasize the importance of addressing obesity and associated metabolic risk factors to prevent the development of insulin resistance and subsequent cardiovascular and metabolic diseases. Further research and intervention strategies are needed to manage obesity and its related complications effectively.

Keywords

Cardiometabolic risk factors, Insulin resistance, Overweight, Obese adult.

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Crushing an Entrapped Stent in the RCA: Clinical Challenges and Interventional Strategies

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Abstract

This case presentation highlights a complex coronary intervention involving a 61-year-old male with a history of rheumatic heart disease and aortic valve replacement, who presented with chest discomfort and dyspnea on exertion. Diagnostic workup revealed double vessel disease affecting the right coronary artery (RCA) and left circumflex artery (LCX). During percutaneous coronary intervention (PCI) of the RCA, significant procedural complications were encountered due to vessel tortuosity and inadequate support. A sirolimus-eluting stent became entrapped in the proximal RCA after the balloon was stripped during delivery. Subsequent disengagement of the guide catheter and dissection of the RCA led to total flow compromise and ventricular tachycardia, which was reverted with defibrillation. The complication was managed by re-establishing vessel patency with sequential balloon dilatation and deploying overlapping stents to crush the entrapped stent. Final angiographic results showed TIMI III flow. This case emphasizes the challenges of stenting in tortuous vessels and underscores the importance of careful technique, proper equipment selection, and readiness to manage unforeseen complications such as stent entrapment.

Keywords

Complex PCI, Stent Entrapment, Coronary Artery Dissection, Tortuous RCA, Sirolimus-Eluting Stent, Guide Catheter Support, Balloon Stripping, VT during PCI, Stent Crushing Technique, TIMI III Flow, Cath Lab Complication, Interventional Cardiology, RCA Intervention, Aortic Valve Replacement, Rheumatic Heart Disease.

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From Murmur to Multisystem Mayhem: A Challenging Case of Lutembacher Syndrome

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Abstract

Introduction: Lutembacher syndrome, a rare combination of atrial septal defect (ASD) and mitral stenosis (MS), presents unique diagnostic and management challenges. Its hemodynamic burden often leads to progressive pulmonary artery hypertension (PAH), right heart failure, and systemic complications. Early identification and appropriate intervention are critical to prevent irreversible sequelae.

Case Report: We present the case of a 68-year-old female who presented with worsening dyspnea, pedal edema, and wet cough. Clinical examination and echocardiography revealed classical features of Lutembacher syndrome with severe pulmonary hypertension and severe tricuspid regurgitation. The patient also developed a pre-renal acute kidney injury (AKI) secondary to low cardiac output, compounded by a concurrent lower respiratory tract infection (LRTI). Multisystem involvement complicated clinical management.

Discussion: This case underscores the pathophysiological interplay between congenital and acquired cardiac lesions, and how they synergistically lead to pulmonary hypertension, right ventricular dysfunction, and systemic hypoperfusion. AKI in this context is a consequence of cardiorenal syndrome. LRTI further exacerbated the clinical condition. The case emphasizes the need for a multidisciplinary approach in managing such patients, including early cardiology, nephrology, and infectious disease input.

Conclusion: Lutembacher syndrome, though rare, can present with severe, life-threatening complications if not diagnosed and managed early. This case highlights the importance of recognizing its systemic impact and tailoring management to address both cardiac and extracardiac manifestations.

Keywords

Necrotising pneumonia, diabetes mellitus, invasive aspergillosis, sputum-negative tuberculosis, co-infection, cavitary lung lesion.

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A Diagnostic Labyrinth: Necrotising Pneumonia with Dual Infections of Aspergillosis and Pulmonary TB

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Abstract

Introduction: Necrotising pneumonia is a severe lung infection characterized by tissue necrosis and cavitation. In immunocompromised patients, including those with diabetes mellitus, the risk of co-infection with fungal pathogens and tuberculosis (TB) increases, complicating diagnosis and management—especially when TB tests are sputum-negative.

Case Report: We present a case of a 60 year old diabetic patient who developed left-sided necrotising pneumonia with high-grade fever, cough with purulent sputum, and breathlessness. Imaging revealed extensive cavitary lesions in the left lung. Bronchoalveolar lavage bacterial cultures isolated P*seudomonas* and K*lebsiella*. *Aspergillus fumigatus* was isolated on bronchoalveolar lavage fungal cultures and posiitve serum galactomannan test, confirming bacterial pneumonia with invasive pulmonary aspergillosis. Patients sputum AFB and CBAAT came positive, making the diagnosis of Tuberculosis. The patient was started on antifungal, antibacterial, and anti-TB therapy.

Conclusion: Diabetes mellitus predisposes patients to severe and atypical pulmonary infections. This case underscores the need for early bronchoscopy, broad-spectrum diagnostics, and high clinical suspicion for TB. Multimodal management is essential in such complex co-infections to reduce morbidity and improve outcomes.

Keywords

Necrotising pneumonia, diabetes mellitus, invasive aspergillosis, sputum-negative tuberculosis, co-infection, cavitary lung lesion.

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One Drug Dual Gain : A Meta - Analysis of Dapagliflozin in Heart Failure and Metabolic Health

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Abstract

Background: Heart failure (HF) remains a major public health concern with significant morbidity and mortality. Dapagliflozin (DAPA), a sodium-glucose cotransporter-2 (SGLT2) inhibitor initially approved for type 2 diabetes, has demonstrated promising cardiovascular benefits in patients with heart failure, independent of glycemic status. This study aimed to assess the clinical and metabolic effects of DAPA in heart failure patients treated at our institution.

Aim & Objective: To evaluate the impact of Dapagliflozin on cardiac function and metabolic parameters in heart failure patients over a three-month period.

Methods: We conducted a retrospective meta-analysis involving 100 heart failure patients (both HFrEF and HFpEF) who received DAPA therapy between 2024 and 2025 at our hospital. Clinical data were collected from electronic medical records and included echocardiographic parameters, New York Heart Association (NYHA) classification, weight, blood pressure, and lipid profile. Patients included were between 30–75 years of age, with at least three months of follow-up and available baseline and post-treatment data. Patients with acute decompensated HF, severe renal dysfunction (eGFR <30), or non-compliance were excluded.

Results: Following DAPA therapy, patients showed a statistically significant improvement in left ventricular ejection fraction (from 35% to 42%, $p<0.001$) and NYHA functional class, with 60% of patients improving by at least one class. Metabolic parameters also improved: average body weight reduced by 2.8 kg, systolic blood pressure decreased by 7-10 mmHg, and lipid profile changes included a reduction in LDL cholesterol by 12 mg/dL, an increase in HDL by 4 mg/dL, and a decrease in triglycerides by 15 mg/dL.

Conclusion: Dapagliflozin therapy was associated with both improved cardiac function and favorable metabolic outcomes in heart failure patients. The observed benefits reinforce its role as a cornerstone in heart failure management, extending beyond glycemic control. Our findings support the broader adoption of DAPA in clinical practice, especially in integrated cardiovascular-metabolic care.

Keywords

SGLT2 inhibitor, Heart failure (HFrEF, HFpEF), Glycemic-independent effects, NYHA functional class, Lipid profile, Left ventricular ejection, HDL, LDL, Triglycerides, Weight reduction, Blood pressure reduction, Retrospective meta-analysis.

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A Pale Teenager with a Paradox: When Iron is High but Hemoglobin is Low

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Abstract

Background: Dimorphic anemia is characterized by the presence of two distinct populations of red blood cells, commonly caused by combined nutritional deficiencies. Vitamin B12 deficiency is uncommon in adolescents and often overlooked. This case highlights a rare presentation of severe B12 deficiency anemia in a 17-year-old male, with functional iron overload and ineffective erythropoiesis.

Case Presentation: A 17-year-old male presented with complaints of generalized tiredness and palpitations. On examination, he was pale and tachycardic (pulse 126/min). Investigations revealed severe anemia with Hb 5.7 g/dL, PCV 16.8%, and a markedly elevated LDH of 4905 IU/L. Peripheral smear showed a dimorphic picture. Serum vitamin B12 was 130 pg/mL (low), while iron studies revealed iron 224 µg/dL, TIBC 249 µg/dL, transferrin saturation 90%, and ferritin 595 ng/mL, suggestive of iron overload. Direct Coombs test was negative. HPLC was normal, ruling out hemoglobinopathies. Chest X-ray and abdominal ultrasound were unremarkable.

Management and Outcome: The patient was diagnosed with dimorphic anemia due to vitamin B12 deficiency with secondary functional iron overload and ineffective erythropoiesis. He was started on intramuscular vitamin B12 injections (1000 mcg daily for 1 week, then weekly). Oral iron was withheld. Clinical improvement was noted within 2 weeks, with rising hemoglobin and resolution of symptoms.

Conclusion: Vitamin B12 deficiency should be considered even in adolescents presenting with anemia, especially when peripheral smear shows a dimorphic picture. Early recognition and treatment can reverse hematologic abnormalities and prevent complications. Iron studies may appear paradoxically elevated due to ineffective erythropoiesis and should not delay B12 replacement.

Keywords

Dimorphic anemia, Vitamin B12 deficiency, adolescent anemia, functional iron overload, ineffective erythropoiesis, LDH elevation, peripheral smear, transferrin saturation, ferritin, hemoglobinopathies, HPLC, intramuscular B12, nutritional deficiency anemia, Coombs test.

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A Rare Case of Double Outlet Right Ventricle (DORV) with Large Subpulmonic VSD in a 40-Year-Old Male

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Abstract

Background: Double outlet right ventricle (DORV) is a rare congenital cardiac anomaly in which both the aorta and pulmonary artery arise predominantly from the right ventricle, typically associated with a ventricular septal defect (VSD). When the VSD is subpulmonic, the physiology resembles Taussig-Bing anomaly, allowing oxygenated blood to preferentially enter the pulmonary artery.

Case Report: We present a 40-year-old male, Mr. Chakrabani, with lifelong exertional dyspnea, recently progressed to NYHA Class III. He had resting oxygen saturation of 85–93%, mild cyanosis, grade 3 clubbing, and a history of forehead sweating in infancy. Clinical examination revealed murmurs with a palpable thrill; chest X-ray showed mild cardiomegaly and ECG was unremarkable. Echocardiograph demonstrated DORV with a large subpulmonic VSD, preserved left ventricular function (EF 62%), and severe pulmonary stenosis. Recent angiographic evaluation suggested progression to pulmonary atresia, likely accounting for his worsening cyanosis and functional limitation. However, final reports of the angio study are awaited to confirm diagnosis and delineate pulmonary circulation. In view of the complex anatomy and suspected pulmonary outflow tract discontinuity, the patient was advised cardiopulmonary transplantation as the definitive treatment. He declined surgical intervention at this stage.

Conclusion: This case highlights how patients with subpulmonic-type DORV may remain compensated into adulthood, but progressive outflow obstruction can eventually lead to critical circulatory imbalance. Early diagnosis, regular follow-up, and timely referral are essential, as late presentations may narrow treatment options to transplantation alone.

Keywords

Double outlet right ventricle, subpulmonic VSD, Taussig-Bing anomaly, pulmonary stenosis, adult congenital heart disease.

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SLE-Sjögren's Overlap Syndrome presenting with Class V Lupus Nephritis and Acquired Gitelman Tubulopathy - A Case Report

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Abstract

Systemic lupus erythematosus (SLE) is a chronic autoimmune disorder involving multiple organs. Lupus nephritis is a common manifestation in SLE; however, the coexistence of secondary Sjögren's syndrome with acquired Gitelman tubulopathy in an SLE patient is exceedingly uncommon and poses diagnostic challenges.

We present a 32-year-old woman with frothy urine and muscle cramps in her extremities. Examination revealed pallor, periorbital edema and positive Trousseau sign. Vitals were normal Lab investigations revealed nephrotic-range proteinuria, hypokalaemia, hypomagnesaemia, hypocalcaemia, metabolic alkalosis and anaemia. Endocrine work-up showed subclinical hypothyroidism, low vitamin D and secondary hyperparathyroidism. The proteinuria likely caused Vitamin D and thyroxine-binding globulins loss, contributing to hypocalcaemia and hypothyroidism respectively. Urinary indices confirmed renal potassium wasting and hypocalciuria. Autoimmune markers were positive for ANA (4+, coarse speckled), anti-dsDNA, anti-Sm, anti-Ro/SSA, anti-La/SSB, and anti-nucleosome antibodies. Renal biopsy showed ISN/RPS Class V lupus nephritis. A positive Schirmer's test with SSA/SSB antibodies positivity confirmed secondary Sjögren's syndrome. Given the findings of normotension, metabolic alkalosis, hypokalaemia, hypomagnesaemia, hypocalciuria and renal potassium loss - Gitelman tubulopathy was diagnosed. Genetic testing for SLC12A3 mutations were negative and diagnosis of acquired Gitelman syndrome, secondary to autoimmune disease was made

She was managed with electrolytes replacement, corticosteroids, mycophenolate mofetil, ACE inhibitors, vitamin D, iron, and levothyroxine. Over 10 months, electrolyte abnormalities improved; tacrolimus was added for persistent proteinuria.

This case highlights the importance of recognizing acquired renal tubular defects like Gitelman tubulopathy in SLE-Sjögren's overlap, especially in patients with unexplained electrolyte disturbances.

Keywords

Overlap syndrome, Lupus nephritis, Gitelman syndrome.

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Rare Presentations of Secondary Hypertension: A Case Series Involving Pheochromocytoma, Takayasu Arteritis and Dengue-Associated PRES

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Abstract

Background: Secondary hypertension, though less prevalent than essential hypertension, often results from identifiable and treatable conditions. Rare etiologies can present atypically and pose diagnostic challenges, making early recognition crucial for targeted therapy and improved outcomes.

Case Details: We report three cases of secondary hypertension with distinct rare causes:

- **Case 1:** A 30-year-old male presented with paroxysmal hypertension, palpitations, and diaphoresis. Elevated plasma metanephrines and imaging with bilateral adrenal hyperplasia confirmed pheochromocytoma. Bilateral adrenalectomy done.
- **Case 2:** A 21-year-old female with headache and unequal limb blood pressures and constitutional symptoms was diagnosed with Takayasu arteritis via CT angiography. Started on steroids and improved.
- **Case 3:** A 14-year-old male with recent dengue fever developed seizures and altered mental status.The patient had Papilledema and MRI revealed posterior reversible encephalopathy syndrome (PRES), with hypertension as a contributing factor. Anti hypertensives and anti edema measures given.

Discussion: All patients were managed with condition-specific treatments, resulting in improved blood pressure control and symptom resolution. These cases illustrate the broad spectrum of secondary hypertension and highlight the importance of clinical examination in identifying rare etiologies, particularly in young patients or those with atypical features.

Conclusion: Rare causes of secondary hypertension, though infrequent, require high clinical suspicion. A systematic approach to diagnosis can facilitate early intervention and significantly improve patient outcomes.

Keywords

Young hypertension, Dengue, Renovascular hypertension, MEN.

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Hemorrhagic Pleural Effusion: An Atypical Gateway to Diagnosing Stage IVB Lung Adenocarcinoma

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Abstract

Background: Adenocarcinoma commonly presents with respiratory symptoms, but initial presentation with hemorrhagic pleural effusion and distant metastasis is less common. This case highlights a patient diagnosed at Stage IVB with both liver and brain metastases, detected after evaluation for breathlessness and pleural effusion.

Case Presentation: A 43-year-old female presented with one month history of progressive breathlessness. Clinical examination revealed right-sided stony dullness with decreased breath sounds. Chest X-ray showed a right-sided pleural effusion. Thoracentesis revealed hemorrhagic fluid; cytology showed malignant cells. CECT thorax showed a right upper lobe mass (T4) with mediastinal lymphadenopathy (N2). Ultrasound abdomen revealed multiple liver metastases. MRI brain showed a hypodense lesion in the frontal lobe.

Management and Outcome: The patient was staged as T4N2M1c – Stage IVB NSCLC. Molecular studies were not available; hence, empirical treatment was initiated with Pemetrexed + Carboplatin chemotherapy. Whole brain radiotherapy was planned for the frontal lobe metastasis. Pleural effusion was managed with thoracentesis and pleurodesis. Supportive care including corticosteroids and nutritional support was given. The patient tolerated chemotherapy and is under regular follow-up with response assessment planned after 3 cycles.

Conclusion: Hemorrhagic pleural effusion can be the initial manifestation of advanced Adenocarcinoma. A systematic diagnostic approach and timely initiation of systemic therapy are essential. Empirical chemotherapy remains the mainstay of treatment in resource-limited settings when mutation testing is unavailable.

Keywords

Adenocarcinoma, hemorrhagic pleural effusion, non-small cell lung carcinoma, Stage IVB, T4N2M1c, liver metastasis, brain metastasis, thoracentesis, pleurodesis, chemotherapy, Pemetrexed, Carboplatin, whole brain radiotherapy, systemic therapy.

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Bee Sting Induced Acute Cornary Syndrome - A Rare Case of Kounis Syndrome

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Abstract

Aims: To report an unusual case of STEMI triggered by honey bee sting (Kounis syndrome) in an elderly patient.

Presentation of Case: An 82 year old South Asian woman with hypertension and diabetes developed chest pain and dyspnea after multiple bee stings. ECG revealed ST elevation in leads I, aVL, V_1–V_6. Troponin T was 6258 ng/mL. Echocardiogram showed LV EF of 25%. Serum tryptase was elevated (12 µg/L). Coronary angiography demonstrated no significant lesions, confirming Kounis syndrome. She received aspirin, clopidogrel, IV corticosteroids, antihistamines, frusemide, amiodarone, and supportive care.

Discussion: This case highlights the pathophysiology of allergic-induced vasospasm or plaque destabilization in pre existing CAD. Elderly patients may not manifest classical anaphylaxis yet develop severe cardiovascular reactions. Integrated management of allergy and ACS was pivotal.

Conclusion: Clinicians should suspect Kounis syndrome in ACS following allergen exposure; dual-pathway treatment is essential.

Keywords

Kounis Syndrome, Bee Sting, Myocardial Infarction, ST Elevation, Type I Kounis, Elderly Female.

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Open Rings of Demyelination - A Rare Case of Tumefactive Multiple Sclerosis

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Abstract

Introduction: Tumefactive multiple sclerosis (MS), a rare and atypical subtype of MS, presents with large demyelinating lesions that can mimic acute stroke, leading to diagnostic uncertainty. Stroke-like symptoms in such cases require a thorough neuroimaging.

Aims and Objectives: We describe the case of a 35-year-old woman who presented with acute onset of right-sided hemiparesis and hemisensory loss, along with facial weakness of the left upper motor neuron facial weakness and focal seizures. Initially suspected to be a cerebrovascular event, the condition was later diagnosed as tumefactive multiple sclerosis.

Methods: A comprehensive neurological assessment with neuroimaging and magnetic resonance spectroscopy (MRS) revealed multiple open ring-enhancing lesions in the left pons, middle cerebellar peduncle, and bilateral cerebral hemispheres, raising suspicion for a demyelinating process. A differential diagnosis, including neoplastic, infectious, and inflammatory conditions was carefully evaluated before confirming tumefactive MS.

Results: The patient's stroke-like deficits improved significantly with high-dose intravenous methylprednisolone therapy. Follow-up imaging demonstrated the resolution of the enhancing lesions, strengthening the diagnosis. The dramatic response to steroids and the absence of progressive deterioration helped differentiate tumefactive MS from gliomas or infectious abscesses.

Conclusion: This case highlights the importance of considering tumefactive MS in acute neurological deficits with ring-enhancing lesions. Advanced imaging techniques are crucial for accurate differentiation that allows for timely and appropriate treatment.

Keywords

Demyelination, Neuroimaging, Open Ring-Enhancing Lesion, Stroke Mimic, Tumefactive MS.

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A Rare Case of Multicentric Castleman's Disease Presenting with Generalized Lymphadenopathy and Constitutional Symptoms

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Abstract

Introduction: Castleman's disease is a rare, non-clonal lymphoproliferative disorder that often mimics lymphoma both clinically and histologically. It can be classified as unicentric or multicentric, with the latter often associated with systemic inflammatory symptoms and multigroup lymphadenopathy.

Aim & Objectives: To present a rare case of multicentric Castleman's disease (plasma cell variant) in a patient with previous cardiac surgery and longstanding constitutional symptoms, and to highlight the diagnostic challenges and therapeutic options.

Methods: A 58-year-old female, with a history of ASD patch closure (2016), presented with right-sided abdominal pain, burning micturition, weight loss (5–6 kg over 6 months), night sweats, and chronic painless cervical lymphadenopathy. Clinical examination revealed pallor and right cervical and axillary lymphadenopathy. Labs showed anemia, elevated ESR (100 mm/hr), mild renal dysfunction, and polyclonal hypergammaglobulinemia. Cervical lymph node biopsy done in 2019 and reviewed at two tertiary centers confirmed plasma cell variant of Castleman's disease.

Results: The patient underwent 4 cycles of ABVD chemotherapy followed by 15 sessions of radiotherapy. She achieved complete remission by November 2016.

Conclusion: Multicentric Castleman's disease is a rare yet significant differential in patients with generalized lymphadenopathy and systemic symptoms. Early biopsy and histopathological confirmation are critical for targeted therapy. Plasma cell variants often require immunochemotherapy, and remission is achievable with early intervention.

Keywords

Castleman's disease, Multicentric lymphadenopathy, Plasma cell variant, ABVD chemotherapy, Non-clonal lymphoproliferative disorder.

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Rusting Heartbeats: Ventricular Tachycardia in Iron-Burdened Thalassemia

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Abstract

Introduction: Cardiomyopathy due to iron overload is a serious and often under-recognized complication in patients with transfusion-dependent beta thalassemia major. Excessive iron deposition in the myocardium can lead to arrhythmias, heart failure, and sudden cardiac death. Early detection and aggressive management are vital to prevent poor outcomes.

Materials and Methods: A 16-year-old male with known beta thalassemia major, on regular blood transfusions and HCV-positive on antiviral therapy, presented with giddiness and syncope for 3 days. ECG revealed monomorphic ventricular tachycardia, requiring amiodarone initiation and synchronized cardioversion.

Cardiac evaluation showed:

- 2D Echo: Moderate left ventricular systolic dysfunction with global hypokinesia
- Cardiac MRI: Severe myocardial iron overload with moderate hepatic siderosis
- Serum Ferritin: 5959 ng/mL

Additional Findings: HbA1c: 7.8%, indicating impaired glucose toleranceLiver Enzymes: Elevated transaminases, hepatomegaly, and cholelithiasis on USG. He was managed with antiarrhythmic therapy and was evaluated for intensified iron chelation therapy.

Conclusion: Ventricular tachycardia due to iron overload cardiomyopathy is a rare but serious manifestation in thalassemia major. Timely cardiac imaging, arrhythmia control, and optimization of chelation therapy are critical to improving survival. This case exemplifies the broader cardiometabolic challenges in chronically transfused patients and the need for vigilant screening and preventive care.

Keywords

Beta thalassemia major, secondary hemochromatosis, ventricular tachycardia, cardiac MRI.

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Dilated Cardiomyopathy in Youth: Unraveling the Clinical Complexity

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Abstract

Introduction: Dilated cardiomyopathy (DCM) is a myocardial condition marked by enlargement of the ventricular chambers and systolic dysfunction, occurring without abnormal loading conditions or coronary artery disease to explain the myocardial impairment. Though traditionally considered a condition of older adults, DCM is increasingly diagnosed in children and young adults. If not promptly identified and treated, it can lead to severe complications.

Aim & Objectives: To assess the etiological factors, clinical manifestations, diagnostic challenges, and treatment strategies for managing DCM in younger populations.

Methods: A cross-sectional observational study and literature review were conducted. Patients aged 40 years or younger diagnosed with DCM were included. Clinical data, diagnostic investigations, echocardiography, genetic findings, treatment plans, and outcomes were analyzed.

Results: Most young DCM patients presented with symptoms of heart failure, such as dyspnea, fatigue, and palpitations. A significant number had a positive family history, suggesting a genetic basis. The major causes identified included idiopathic (40%), genetic (30%), viral myocarditis (15%), and toxin-induced (10%). Imaging techniques like cardiac MRI and echocardiography were crucial for diagnosis. About 25% required implantable cardioverter-defibrillators (ICDs). Standard heart failure treatment improved left ventricular function in 60% of cases.

Summary: DCM in young individuals shows diverse presentations. Recognizing both familial and non-familial forms early enables targeted management and reduces complications.

Conclusion: Management of DCM in young patients requires a multidisciplinary strategy involving advanced imaging, genetic evaluation, and individualized treatment. Early detection significantly improves outcomes and quality of life.

Keywords

Dilated cardiomyopathy, young adults, Genetic cardiomyopathy, Heart failure, Myocarditis.

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Acute Coronary Syndrome in Diabetes: A Cross - Sectional Study on Clinical Profile and in-Hospital Outcomes

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Abstract

Diabetes mellitus significantly increases the risk and complexity of acute coronary syndrome, often leading to delayed diagnosis and poorer clinical outcomes. Individuals with diabetes frequently experience atypical or silent symptoms, which can result in misdiagnosis or late presentation. This study evaluated the differences in clinical presentation, diagnostic timelines, and in-hospital outcomes between diabetic and non-diabetic patients admitted with ACS. A cross-sectional observational study was conducted at Mahatma Gandhi Hospital and Sri Ram Cancer & Super Speciality Centre, Jaipur, over a period of 6 months. The study included 200 patients diagnosed with ACS, comprising 100 patients with type 2 diabetes mellitus and 100 non-diabetic controls matched for age and gender. Detailed data were collected, including symptom onset-to-door time, presenting symptoms, ECG findings, laboratory markers, angiographic profiles, and clinical outcomes such as heart failure, arrhythmias, reinfarction, and mortality. Statistical analysis was performed using SPSS software, with a p-value of <0.05 considered significant. The study found that diabetic patients had a higher prevalence of atypical symptoms, longer delays in seeking treatment, and a greater incidence of complications during hospitalization. These findings support the need for early detection strategies and improved risk management in diabetic populations presenting with ACS.

Keywords

Acute Coronary Syndrome, Diabetes Mellitus, Cross-Sectional Study, Cardiovascular Risk, Atypical Symptoms, In-Hospital Outcomes.

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To Study Il-10 Gene Polymorphism in Patients of Diabetic Nephropathy

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Abstract

- Type 2 diabetes mellitus (T2DM) is a major health problem and its complications have become a major cause of morbidity, mortality, and disability in the World.
- Diabetic nephropathy (DN) is the leading cause of chronic kidney disease world wide and affects about 40% of diabetic patients.
- Approximately 30–40% of DM patients in the world progress to end stage renal disease (ESRD), which emphasizes the effect of genetic factors on DN.
- Therefore, a large number of genetic studies have been carried out to identify susceptibility genes in different diabetic cohorts.
- Some diabetics develops diabetic nephropathy early and some develop it late emphasizing a probable role of genetic factors. This study is being carried out to find the role of genetic factors in DN.
- Several candidate genes are implicated in the pathogenesis of Diabetic nephropathy in T2DM, one of which is interleukin (IL-10).
- IL-10, an 18-kDa glycoprotein plays a key role in homeostatic control of inflammatory and immune responses. It is produced by T-helper 2 (Th2) cells and a wide variety of cell types including B cells, monocytes, macrophages, keratinocytes, and many tumor cells.
- Its gene is defined to be located on chromosome 1 and to have many polymorphic sites in the promoter region.
- IL-10 polymorphic variants are linked with cytokine production and are involved in many chronic inflammatory diseases, including T2DM.

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Salmonella Induced Acute Pulmonary Thromboembolism – A Rare Complication

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Abstract

Enteric fever includes typhoid and paratyphoid fever, which are multisystemic febrile illnesses caused by Salmonella enterica serotypes (S. typhi and S. paratyphi A, B, and C). It causes serious complications, including death, which typically occurs 2 to 3 weeks after the onset of illness. Commonly observed complications include ileal perforation, hepatitis, sepsis, shock, neuropsychiatric manifestations, anemia, relapse, and carrier state. There are very few reported cases of patients developing venous thrombosis (splenic vein thrombosis, mesenteric vein thrombosis, deep vein thrombosis), or pulmonary thromboembolism. The risk in non-typhoid salmonellosis has been highest between 3 to 12 months post-illness.

Objective: To describe the recognition and management of pulmonary thromboembolism in a hospitalized patient with diagnosed S. paratyphi infection undergoing treatment.

Methods: A 33-year-old gentleman presented with a history of fever and loose stools. He was diagnosed with Salmonella paratyphi A infection via blood culture and was treated with appropriate antibiotics. The patient showed improvement in symptoms by the 16th day of illness and 9th day of antibiotic treatment, but subsequently developed pulmonary thromboembolism.

Results: The patient underwent CT pulmonary angiography (CTPA) due to arterial blood gas (ABG) and electrocardiogram (ECG) findings combined with worsening respiratory distress. Since the imaging revealed pulmonary thrombosis, he was treated with thrombolysis and subsequently improved.

Conclusion: This case emphasizes the importance of clinical judgment and the need to suspect unexpected complications of common illnesses, which must be promptly identified and managed urgently to prevent mortality.

Keywords

Enteric fever, Pulmonary thromboembolism, Complications.

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Hemodynamic Stress Induced by High-Volume Aerobic Exercise in Heart Failure with Reduced Ejection Fraction (HFrEF): A Case Study of an Elite Athlete's Complex Clinical Course

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Abstract

Introduction: Heart Failure with Reduced Ejection Fraction (HFrEF) typically benefits from moderate exercise as part of standard care; however, the effects of high-volume endurance training in this population remain inadequately understood.

This case study investigates the physiological and clinical impacts of an intensive aerobic program in a highly motivated patient beyond conventional rehabilitation recommendations.

Aim & Objectives: To assess the long-term safety and efficacy of a sustained high-volume aerobic training regimen on hemodynamic and cardiopulmonary function in a patient with ischemic HFrEF.

Methods: A 61-year-old male with ischemic HFrEF (baseline Left Ventricular Ejection Fraction [LVEF] 32%) participated in a supervised 15-month hybrid training program averaging over 300 minutes weekly, culminating in a half-marathon finish.

Serial assessments included echocardiographic measurements (LVEF, stroke volume [SV], cardiac output [CO]) and cardiopulmonary exercise testing (peak VO2), supplemented with continuous wearable fitness tracking.

Results: The high-volume intervention elicited significant physiological improvements without adverse cardiac events:

- LVEF improved by 10 percentage points (32% to 42%; +31%)
- Stroke volume increased from 48 mL to 60 mL (+25%)
- Cardiac output rose from 3.8 L/min to 5.1 L/min (+34%)
- Peak VO2 increased by 35% (14.2 to 19.1 mL/kg/min)

These changes reflect pronounced enhancement in systolic function, central hemodynamic, and aerobic capacity.

Summary: A carefully monitored, long-term high-volume training regimen in this HFrEF patient resulted in marked reverse ventricular remodeling and improved functional capacity well beyond standard rehabilitation outcomes, achieved safely in a high-risk population.

Conclusion: This case demonstrates that for select, motivated patients with HFrEF, a meticulously supervised, high-volume endurance exercise program can safely drive meaningful reverse remodeling and substantial functional gains.

These observations indicate potential for expanding traditional exercise guidelines in this population with appropriate clinical oversight.

Keywords

HFrEF, High-Volume Aerobic Exercise, Hemodynamic Adaptation, Echocardiography, VO2max.

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Tracing the Genetic Footprints of a Hidden Renal Disorder

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Abstract

Introduction: Alport Syndrome is an uncommon hereditary disorder affecting the glomerular basement membrane, most often associated with mutations in the COL4A5 gene. It manifests with a triad of progressive renal dysfunction, sensorineural hearing loss, and ocular abnormalities. Due to its variable presentation, diagnosis is frequently delayed until advanced kidney damage occurs, limiting opportunities for early intervention.

Case Summary: We report a 20-year-old male who presented with progressive fatigue, visual blurring, and hearing impairment over several months. Clinical examination was unremarkable except for pallor. Laboratory workup revealed severe anemia (Hb 6.3 g%), metabolic acidosis, electrolyte imbalances, and nephrotic-range proteinuria. Ultrasound of the abdomen demonstrated bilaterally small kidneys with cortical thinning and cyst formation. Audiological assessment confirmed bilateral sensorineural hearing loss, while ophthalmological evaluation revealed anterior lenticonus and early cataract formation—findings highly suggestive of Alport Syndrome.

Genetic analysis via whole-exome sequencing identified a hemizygous nonsense mutation in COL4A5 (c.1684G>T; p.Glu562Ter), classified as "likely pathogenic" according to ACMG criteria. This mutation introduces a premature termination codon, leading to truncated α5 chains of type IV collagen, impairing basement membrane integrity. No pathogenic copy number variations were detected, confirming an X-linked dominant mode of inheritance.

The patient was initiated on maintenance hemodialysis and provided supportive care, including correction of anemia and acidosis. He received counseling regarding renal transplantation as the definitive therapy and was advised for cascade genetic screening of family members to enable early detection and surveillance of at-risk individuals.

Conclusion: This case emphasizes the diagnostic value of correlating clinical features with molecular findings in young patients with end-stage renal disease. Early genetic confirmation not only facilitates timely transplant planning but also enables preventive family screening, thereby improving clinical outcomes and quality of life in hereditary nephropathies such as Alport Syndrome.

Keywords

Alport, Collagenopathy, Nephropathy, Hearingloss, Lenticonus, Genetics.

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Infection-Associated Proximal Tubulopathy: *Klebsiella pneumoniae* as a Rare Cause of Fanconi-like Syndrome

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Abstract

Background: Fanconi syndrome is characterized by proximal tubule dysfunction leading to inappropriate urinary loss of solutes. While most acquired causes are drug/ toxin related, infections are rare but being increasingly recognised.

Case: A 68-year old man known case of Systemic Hypertension and Hypertrophic Cardiomyopathy presented with complaints of giddiness and vomiting. On examination he was drowsy, afebrile with a BP of 110/70 mmHg, HR of 92/min, RR of 20/min. Initial electrolyte panel revealed hypokalemia (2.7 mmol/L), hyponatremia (101 mmol/L), hypocalcemia (7.6 mg/dL), hypomagnesemia (1.2 mg/dL), hypophosphatemia (1.3 mg/dL) with glucosuria and metabolic acidosis. CT Chest showed patchy centri-lobular ground glass opacities. Sputum culture yielded Klebsiella pneumonia. CT KUB revealed bilateral perinephric fat stranding suggestive of pyelonephritis. With the specific targeted antibiotic therapy, electrolyte panel improved and patient became symptomatically better.

Conclusion: Infectious causes of Fanconi syndrome are rare but include Leptospira, Legionella, and Streptococcus pneumoniae. This case adds to emerging evidence that gram-negative organisms like Klebsiella may cause transient proximal tubulopathy, particularly during systemic infections and hence infections should be considered as a cause when patients present with poly-electrolyte disturbance.

Keywords

Fanconi syndrome, Klebsiella pneumoniae, proximal tubulopathy, electrolyte imbalance, infection-induced renal dysfunction.

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Utility of Heart Rate Variability, Postural Hypotension and QTc Interval in Identifying Cardiac Autonomic Neuropathy in Diabetes Mellitus and Estimating its Association with Peripheral Neuropathy

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Abstract

Introduction: Diabetes mellitus (DM) is a major global health challenge, currently affecting 463 million individuals, projected to reach 700 million by 2045. Cardiac autonomic neuropathy (CAN) is a serious cardiovascular complication of DM, contributing to morbidity, mortality, and reduced quality of life in diabetics. Conventional diagnostic methods like Ewing's tests are time-consuming, whereas QTc interval has emerged as a simple and effective predictor of CAN and sudden cardiac death in diabetics.

Aim & Objectives: To evaluate QTc interval, postural hypotension (PH), and heart rate variability (HRV) as non-invasive predictors of CAN and their association with clinically detected peripheral neuropathy in diabetics.

Methodology: This cross-sectional study included adult diabetic patients admitted to a general medicine ward with QTc > 440 ms on ECG. Data on age, gender, DM duration, and HbA1c were recorded. QTc was calculated using Bazett's formula. Peripheral neuropathy was assessed clinically. PH was identified by measuring BP in supine position followed by standing for 2 minutes. HRV with inspiration and expiration was measured using ECG.

Results: 75 diabetics (mean age 55.87 ± 10.95 years; 58.7% were women) were studied. Age showed significant negative correlation with HRV ($r = -0.55$; $p<0.05$). QTc and HRV did not show any statistically significant difference with respect to gender. HRV correlated negatively with DM duration ($r = -0.40$; $p<0.05$). Mean HbA1c was 9.23 ± 2.41, with no statistically significant correlation to QTc ($r = 0.16$; $p = 0.15$) or HRV ($r = -0.135$; $p = 0.24$). QTc and HRV showed significant inverse correlation ($r = -0.49$; $p<0.05$). Mean QTc was 460.45 ± 21.62 ms. QTc did not show statistically significant correlation with age ($r = 0.18$; $p = 0.12$). PH was present in 29.3%, with 81.9% exhibiting moderate-to-severe HRV reduction. Among 42 patients with peripheral neuropathy, 31 patients (73.8%) had moderate-to-severe HRV reduction.

Conclusion: CAN prevalence increases with age and DM duration but is unaffected by gender or glycemic control. Postural hypotension and peripheral neuropathy are associated with moderate to severe CAN. QTc prolongation proved to be an effective indicator to predict CAN. QTc prolongation (>440 ms), reduced HRV, and PH are effective, cost-efficient, non-invasive tools for CAN detection particularly in primary Health care care settings. Peripheral neuropathy in diabetics should prompt CAN screening.

Keywords

Diabetes mellitus, Cardiac autonomic neuropathy (CAN), QTc interval, Heart rate variability (HRV), Postural hypotension (PH), Peripheral neuropathy.

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Strain Over Strength: Detecting Subclinical Myocardial Dysfunction in Chronic Stable Angina

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Abstract

Background: Chronic stable angina (CSA) is a common manifestation of coronary artery disease, often associated with preserved left ventricular ejection fraction (LVEF). Conventional parameters may underestimate subclinical myocardial dysfunction. Global Longitudinal Strain (GLS) by two-dimensional speckle-tracking echocardiography is more sensitive in detecting early myocardial impairment.

Aim: To evaluate changes in GLS in patients with CSA and normal LVEF before and after percutaneous coronary intervention (PCI).

Methods: In this prospective observational study, 30 patients with CSA and preserved LVEF undergoing PCI were enrolled. Standard echocardiographic assessment including LVEF and GLS was performed at baseline and repeated post-PCI. GLS values were compared to determine the impact of revascularization on subclinical myocardial function.

Results: Despite normal baseline LVEF, patients demonstrated significantly impaired GLS values prior to PCI, suggesting the presence of subclinical myocardial dysfunction. Following successful PCI, GLS showed a significant improvement, while LVEF remained unchanged. This indicates that GLS is more sensitive than LVEF in detecting functional recovery after revascularization.

Conclusion: GLS is a reliable marker for assessing subtle myocardial dysfunction in CSA patients with preserved LVEF. PCI leads to significant improvement in GLS, underscoring its role in detecting early myocardial recovery not captured by conventional LVEF. Routine use of GLS in CSA patients may enhance clinical decision-making and provide better assessment of therapeutic efficacy.

Keywords

Global Longitudinal Strain, Chronic Stable Angina, Left Ventricular Function, Percutaneous Coronary Intervention, Echocardiography.

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Acute Kidney Injury in Acute Gastroenteritis: A Hospital-Based Analysis

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Abstract

Background: Acute diarrheal diseases are a significant and preventable cause of acute kidney injury (AKI) in India. Failure to promptly and adequately replace fluid losses can lead to a high incidence of AKI. This condition is marked by a sudden decline in kidney function, typically indicated by a rise in serum creatinine levels, with or without a decrease in urine output. The severity of AKI can vary widely, ranging from mild impairment to severe forms that necessitate hemodialysis.

Objective: To evaluate the incidence, clinical characteristics, severity, and outcomes of acute kidney injury (AKI) in patients presenting with acute gastroenteritis in a hospital setting.

Methods: By using simple random method, 30 cases of acute kidney injury in acute gastroenteritis admitted in meenakshi medical college hospital and research institute.

Results: Out of 30 patients studied, 90% of patients had AKI at the time of arrival to the hospital. 23 patients ended up requiring hemodialysis based on their laboratory parameters and their clinical status. 8 patients required hospital stay for more than 10 days. 9 patients had hypertension, type2DM, IHD as comorbidities. 2 patients expired due to severe septic shock. 7 patients advised for continuation of hemodialysis thrice weekly. Remaining 21 patients were clinically stable at the time of discharge with no need of further renal replacement therapy.

Summary:

AKI being the most common entity in a developing country like India, awareness of such potential renal complications and their prevention and early hospitalization, being the single most cost-effective life saving measure should be emphasized among people.

According to KDIGO review, delayed hemodialysis was associated with increased mortality, longer duration of hospital stays and dependency on RRT.

Mortality has been dramatically brought down due to hemodialysis therapy and appropriate medical management.

Keywords

ADD, AKI, RRT, Hemodialysis, serum creatinine, diarrheal disease.

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Hidden Infection, Striking Kidneys: An Unfolding Clinical Puzzle

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Abstract

Introduction: Infection-related glomerulonephritis (IRGN) is a classical cause of acute nephritic syndrome in children, yet its rising incidence among adults with subtle or occult infections poses a diagnostic challenge. Early biopsy confirmation is essential to guide treatment and prognosis.

Case Description: A 54-year-old man presented with a two-week history of productive cough, followed by cola-colored urine and oliguria. Examination revealed hypertension (170/90 mmHg) and pedal edema. Laboratory evaluation showed microscopic hematuria, subnephrotic proteinuria (2.8 g/24h), and acute kidney injury. Serum complement (C3) was low. Renal biopsy demonstrated endocapillary proliferative GN with dominant C3 deposits and subepithelial humps on EM, consistent with IRGN. He received targeted antibiotics and optimized antihypertensive therapy, resulting in complete resolution of renal dysfunction and normalization of complement levels at follow-up.

Discussion: This case illustrates the shifting epidemiology of IRGN and underscores the diagnostic importance of kidney biopsy in adults presenting with nephritic syndrome and atypical infection history. Prompt infection control and supportive therapy led to favorable recovery.

Conclusion: IRGN in adults may present with subtle infectious clues and mimic other glomerulopathies. Vigilant evaluation, early biopsy, and targeted therapy are vital to prevent progression to chronic kidney disease.

Keywords

Infection-related glomerulonephritis, Renal biopsy, Acute nephritic syndrome, Chronic kidney disease, End-stage renal disease, Proteinuria.

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Clot as a Cryptic Clue: Malignancy-Associated Nephrotic Syndrome Unveiled

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Abstract

Introduction: Deep vein thrombosis (DVT) is a well-recognized vascular emergency, but it may occasionally represent the earliest clue to occult systemic disease.

Minimal Change Disease (MCD) accounts for <15% of nephrotic syndrome in adults and is rarely reported as a paraneoplastic manifestation of Hodgkin's lymphoma.

This case highlights a diagnostic pathway where a thrombotic event revealed an underlying hematologic malignancy and secondary podocytopathy.

Case Presentation: A 65-year-old female presented with:

Sudden-onset unilateral left leg swelling and systemic edema

No conventional thrombosis risk factors (immobility, surgery, family history)

Investigations showed

Serum albumin: 1.7 g/dL

24-hour urine protein: 4.8 g/day (nephrotic range)

Hypercholesterolemia

Doppler ultrasound: Extensive left lower-limb DVT

A renal biopsy confirmed Minimal Change Disease, showing diffuse podocyte foot process effacement without immune complex deposition.

Clinical examination revealed painless cervical lymphadenopathy. Although she had no B symptoms (fever, night sweats, weight loss), an excisional biopsy of the lymph node confirmed Classical Hodgkin's Lymphoma, Nodular Sclerosis Subtype.

The patient was started on ABVD chemotherapy and corticosteroids. She subsequently achieved complete remission of both the nephrotic syndrome and the lymphoma.

Discussion: Secondary MCD is a rare but important renal manifestation of Hodgkin's lymphoma, often driven by cytokine dysregulation (notably IL-13).

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This case emphasizes:

1. Thrombosis as a sentinel sign of multi-system disease
2. The role of renal biopsy and oncologic work-up in atypical nephrotic syndrome
3. Disease remission is typically malignancy-driven in paraneoplastic glomerulopathies

The absence of B symptoms made early suspicion of Hodgkin's lymphoma difficult, underscoring the need for vigilance in atypical presentations.

Conclusion: An unprovoked DVT in an elderly patients should prompt a thorough evaluation for hidden systemic disease. Early identification and treatment of underlying malignancy can reverse renal injury and prevent recurrence of thrombotic complications.

Keywords

Secondary Minimal Change Disease, Podocytopathy, Hodgkin's Lymphoma, Paraneoplastic Syndrome, Venous Thromboembolism, Nephrotic Syndrome.

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Takayasu Arteritis Presenting with Severe Hypertension, Subclavian Thrombosis, and Carotid Occlusion - Case Report

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Abstract

Background: Takayasu arteritis (TA) is a rare, chronic granulomatous vasculitis involving large vessels, predominantly the aorta and its primary branches. It mainly affects women under 40 years and has a global incidence of 1–2 cases per million annually. The disease often follows an insidious course, initially presenting with nonspecific symptoms before progressing to vascular stenosis, occlusion, or aneurysm formation, from limb claudication and diminished pulses to severe cerebrovascular complications. The diagnosis of TA relies on a combination of clinical evaluation and imaging studies. The 2022 ACR/EULAR criteria have improved diagnostic accuracy, emphasizing imaging evidence of arterial involvement. Timely initiation of immunosuppressive therapy remains the cornerstone of management to prevent disease progression and vascular complications.

Case Presentation: A 39-year-old female with a history of persistent pain and functional limitation of the left upper limb for six months. Examination revealed absent radial, Brachial pulses and unrecordable blood pressure in the left upper limb, while the right arm BP was 200/120 mmHg. There was no distal acute ischemic changes. There was a bruit in the left carotid artery. Fundus examination did not show any evidence of vasculitis. Cerebrovascular Doppler demonstrated absent flow in the left subclavian artery. CT aortography revealed soft tissue thickening in bilateral common carotid arteries, near-complete non-opacification of the left subclavian artery from its origin suggestive of thrombosis, and bilateral carotid artery involvement. MR angiography confirmed bilateral internal carotid artery occlusion with collateral circulation. ANA was negative. Tests for Tuberculosis was negative. Based on the 2022 ACR/EULAR criteria, the patient scored 9 points, confirming TA.

Management and Outcome: The patient was started on high-dose corticosteroids, anti-hypertensive drug, and anticoagulants. She is on follow-up with tapering steroids, showing no evidence of new vessel involvement, bleeding, or secondary infections.

Conclusion: This case underscores the importance of considering Takayasu arteritis in young females presenting with asymmetric blood pressures and cerebrovascular symptoms. Hypertension is a common but often overlooked manifestation, resulting from vascular stenosis or occlusion. Early recognition and immunosuppressive therapy are crucial to prevent irreversible vascular damage and complications.

Keywords

Takayasu arteritis, subclavian artery thrombosis, carotid occlusion, large-vessel vasculitis, upper limb ischemia.

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A Case Report of Pulmonary Thrombo-Embolism in Young Male Secondary to Hyperhomocysteinemia

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Abstract

Introduction: Hyperhomocysteinemia is a prothrombotic condition that increases the risk of venous thromboembolism (VTE) by inducing endothelial dysfunction, platelet activation, and impaired fibrinolysis. Though rare, it can present as unprovoked pulmonary embolism (PE) with right heart failure, particularly in young adults.

Aim and Objectives: To emphasize diagnostic and therapeutic approach in a case of hyperhomocysteinemia-associated pulmonary thromboembolism with right heart failure and deep vein thrombosis (DVT) in a young male.

Methods: A 31-year-old male, chronic alcoholic and smoker, presented with palpitations, progressive dyspnea (NYHA III), cough with expectoration since 15 days and a single syncope episode 15 days back. Examination showed tachycardia, tachypnea, elevated JVP, and gynecomastia. ECG revealed sinus tachycardia, S1Q3T3 with T-wave inversions in precordial leads; echocardiography showed dilated RA/RV, severe pulmonary hypertension, McConnell sign, and D-shaped LV. CT pulmonary angiography confirmed bilateral acute Pulmonary thrombosis; venous Doppler revealed left popliteal DVT.

Results: Lab findings included elevated INR, NT-proBNP (2217 pg/mL), and significantly raised homocysteine (>65 µmol/L) with borderline low B12. Other thrombophilia markers were normal. Treatment included IV heparin, transition to warfarin, aspirin, diuretics, vitamin B12 and folate supplementation, and counseling for substance abuse. The patient showed clinical improvement. At discharge, he was prescribed rivaroxaban, folate-B12, aspirin, atorvastatin, beta-blocker, furosemide, thiamine, and compression therapy.

Conclusion: Hyperhomocysteinemia is an underrecognized but significant cause of unprovoked PE in young adults. Early thrombophilia screening especially in young who are smokers and who has sedentary lifestyle is essential and anticoagulation, and vitamin correction are vital for recurrence prevention and better outcomes. This patient needs further genetic evaluation to rule out the cause for hyperhomocysteneimia.

Keywords

Hyperhomocysteinemia, Pulmonary embolism, Right heart failure, Thrombophilia, Deep vein thrombosis.

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A Complex Case of Extrapulmonary Tuberculosis and Extrahepatic Portal Vein Obstruction Secondary to Non Cirrhotic Portal Vein Fibrosis

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Abstract

A 33-year-old male presented with a 7 day history of fever, cough, and breathlessness, accompanied by weight loss and decreased appetite. He reported close contact with a tuberculosis patient and denied any high-risk sexual behavior. On examination, patient thin built, with signs of poor nourishment. Clinical findings included pallor, splenomegaly, an ejection systolic murmur at the aortic area, and reduced air entry across the left lung field. Investigations revealed Hb-5.2,TLC-2000,PLT-1.05L,ESR-25,CRP-reactive(65),Albumin-2.6,T.bilirubin-1.23,

Directbilirubin-0.45,AST-38,ALT-49,ALP-265,GGT-116. The patient tested positive for Hepatitis B, with a weakly positive ANA by IFA and positive GAD antibodies, APLA profile showed positive for lupus anti-coagulant- while the ANA extended profile was negative.

A chest X-ray revealed a massive left-sided pleural effusion with tracheal deviation to the right. CT abdomen showed gross splenomegaly, mild to moderate ascites, cholelithiasis with cystic duct calculus, and multiple collaterals in the left retroperitoneal and supradiaphragmatic regions. CT angiography indicated total occlusion of the main portal vein, suggestive of non-cirrhotic portal vein fibrosis. Ascitic fluid analysis showed transudative effusion, while pleural fluid analysis revealed exudative effusion; both fluid cell blocks were negative for malignancy. Thoracoscopy with pleural biopsy identified granulomas, and serum ACE levels were within normal limits.

ICD was inserted and intrapleural fibrinolysis was done with streptokinase. The patient was initiated on an anti-tuberculosis (ATT) trial. Upper GI endoscopy revealed large esophageal varices (GOV-1), mild portal hypertensive gastropathy, duodenal varices (IGV2), and portal hypertensive duodenopathy. He was started on antibiotics, diuretics, and propranolol, and was referred for splenectomy with splenorenal shunting.

Keywords

EHPVO, extra pulmonary TB.

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When the Angiogram Surprises: A Cardiac Mystery

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Abstract

A 49-year-old female presented with chest discomfort, elevated cardiac biomarkers (Troponin I 44.6 ng/mL), and ECG changes showing T wave inversion in leads V1–V5. Initial evaluation suggested non–ST elevation myocardial infarction (NSTEMI). She was managed with standard acute coronary syndrome protocol, including dual antiplatelet therapy, statin, heparin, diuretics, and supportive measures. Echocardiography and routine laboratory work-up revealed hypothyroidism (TSH 40.18 µIU/mL) and mild renal dysfunction; urine protein- creatinine ratio was 2.8. Coronary angiography demonstrated normal epicardial coronary arteries. Based on the universal definition of myocardial infarction, she was diagnosed with myocardial infarction with non-obstructive coronary arteries (MINOCA). Potential etiologies include coronary microvascular dysfunction, vasospasm, myocarditis, Takotsubo cardiomyopathy, and thyroid-related cardiac effects. The patient's condition improved with medical management, and she was discharged at request. This case highlights the importance of considering MINOCA in patients presenting with myocardial injury and unobstructed coronaries, and the need for further diagnostic evaluation to identify the underlying mechanism and guide targeted therapy.

Keywords

MINOCA.

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Common Predictive, Diagnosis and Prognostic Biomarkers Across Cardio Metabolic Disorders, Renal Disease and Microbial Infection

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Abstract

Background: Cardio-metabolic, renal, and infectious diseases share mechanisms such as inflammation, immune dysregulation, and oxidative stress. Traditional biomarkers often miss the mark for early diagnosis and prognosis.

Aim: To find shared biomarkers across these diseases to improve diagnosis, prognosis, and precision medicine.

Hypothesis: Molecular biomarkers, both protein-coding and non-coding, are common to several disorders. Integrative bioinformatics may be able to identify them and offer a unified framework for diagnosis and therapy.

Methodology: Integrative bioinformatics was used with NCBI, DisGeNET, and GeneCards. Data were processed in Python, reduced using PCA, and overlapping biomarkers were identified. Visualization was performed with Matplotlib, Seaborn, and matplotlib-venn.

Results: A total of 185 common biomarkers were found. Important ones included TNF, PAX6, CERNA3, and TRA-TGC7-1. TNF and IL6 showed strong potential for diagnostics and therapy, while CERNA3 appeared as a new non-coding RNA marker.

Discussion: Common biomarkers connect infectious, renal, and cardiometabolic diseases. Unified panels might improve diagnosis and allow for cost-effective screening. CERNA3 expands precision medicine beyond proteins. Limitations include the use of secondary data and no validation; future work needs multi-omics and clinical trials.

Conclusion: This study demonstrates that common biomarkers span multiple disease categories and can serve as a foundation for personalized healthcare strategies and multi-disease diagnostic panels.

Keywords

Common biomarkers, cardio metabolic disorders, renal disease, microbial infection, precision medicine, inflammation.

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Artificial Intelligence (AI) Based Clinical Decision Support System (CDSS) for Acute Emergency Care (AEC) of STEMI Patients Based on Standardized Management Protocol

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Abstract

Background: ST-segment elevation myocardial infarction (STEMI) remains a leading cause of cardiac mortality. This study introduces an Artificial Intelligence (AI)-powered Clinical Decision Support System (CDSS) tailored to accelerate and improve decision-making for STEMI patients based on standardized emergency protocols.

Hypothesis: Implementation of an Artificial Intelligence-based Clinical Decision Support System (AI-CDSS) can significantly enhance diagnostic accuracy, reduce treatment delays, and standardize emergency cardiac care protocols for STEMI patients compared to conventional diagnostic approaches.

Aim: To develop and an AI-driven CDSS that enhances acute STEMI management through data-driven prediction, triage, and protocol-aligned recommendations.

Methods: Conducted at Parul Sevashram Hospital, this study involved data extraction from electronic health records, including demographics, ECG, cardiac enzymes, and symptoms. A Random Forest classifier was trained on 20+ clinical features. Dashboard integration enabled real-time predictions. Accuracy, sensitivity, specificity, and AUC were evaluated.

Results: Among STEMI cases evaluated, the Random Forest model achieved 92% accuracy. Feature importance revealed age, troponin levels, ECG patterns, and smoking as top predictors. Dashboards provided patient-specific risk stratification for clinicians. Pre-hospital, ED, treatment, and post-reperfusion phases were algorithmically enhanced.

Conclusion: AI-CDSS significantly optimizes STEMI care through timely prediction and standard-compliant decision support. Results suggest a scalable impact across LMIC hospitals.

Keywords

STEMI, AI, Clinical Decision Support System, Cardiology, Emergency Care, Machine Learning, artificial intelligence; emergency cardiac care; Random Forest; myocardial infarction; diagnostic accuracy.

Results:

Accuracy: 92%

Sensitivity: 90%

Specificity: 88%

AUC-ROC: 0.94

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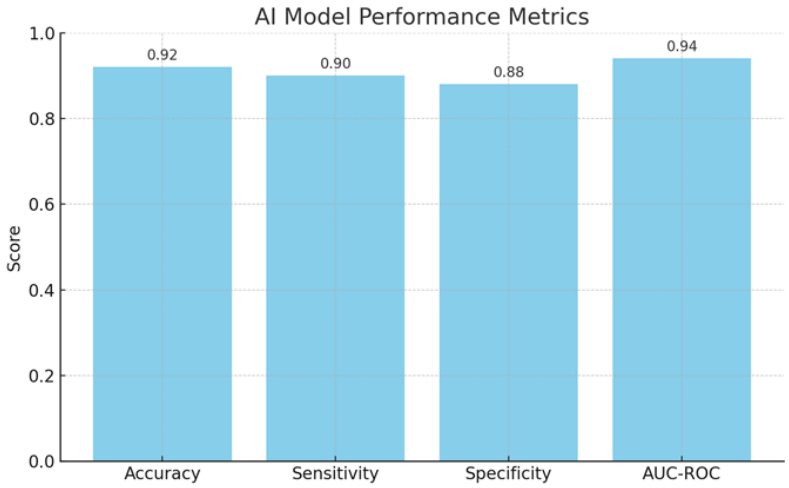

Figure 1: AI model performance metrics

Dashboard Visualization

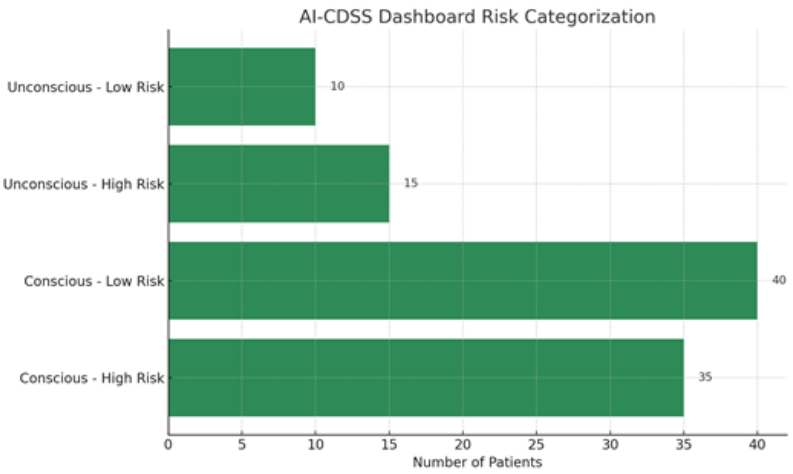

Figure 2: Dashboard categorizing STEMI patients by risk and consciousness

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Fever Unveils the Hidden Danger: A Case Report of Brugada Pattern Unmasked by Pyrexia

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Abstract

Brugada syndrome is rare and potentially lethal arrhythmogenic disorder characterized by specific electrocardiographic abnormalities, which are often seen as the Brugada pattern. In the case report presented, a patient who had no history of syncope or documented arrhythmias, experienced a febrile episode that precipitated the sudden appearance of Brugada-like ECG changes. This occurrence underscores the need for clinicians to remain vigilant for Brugada syndrome in febrile patients, even in the absence of prior cardiac findings. The typical ECG features of Brugada syndrome are more prominent during febrile illnesses, likely due to the inflammatory response and electrolyte disturbances associated with fever, which can trigger or reveal Brugada syndrome ECG patterns in individuals at risk. Detecting an increased risk of dysrhythmia in these patients is crucial, as it appears to be linked to a higher likelihood of in-hospital mortality.

Keywords

Brugada pattern, Fever, Electrocardiogram, pyrexia, arrhythmia.

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The Correlation Between Proportional Pulse Pressure and Ejection Fraction in Heart Failure Patients

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Abstract

Background: Heart failure (HF) remains a major cause of morbidity and mortality worldwide, despite advances in therapy. Proportional pulse pressure (PPP), calculated as the ratio of pulse pressure to systolic blood pressure, is a simple, non-invasive clinical parameter that may correlate with left ventricular ejection fraction (EF) and help in prognostication, particularly in resource-limited settings.

Aim: To investigate the relationship between PPP and EF in patients with HF and assess its prognostic significance.

Methods: This prospective observational study was conducted over 10 months in the Department of General Medicine, Shri sathya sai medical college and research institute, chengalapattu. A total of 150 patients aged 18–75 years with clinical features of HF and reduced EF were included. Patients with valvular, pericardial, or pulmonary disease–related HF were excluded. Clinical evaluation, blood pressure measurement, and echocardiography were performed. PPP (%) was calculated as:

PPP = (Pulse Pressure / Systolic BP) × 100

Patients were grouped into EF ≤30% (Group 1) and EF 31–40% (Group 2).

Results: The mean age was 59.2 ± 9.5 years, with 62% males. Low systolic BP and low pulse pressure were significantly more common in Group 1 ($p=0.001$ and $p<0.0001$, respectively). PPP ≤25% was seen in 86.9% of Group 1 but only 13.04% of Group 2. There was a highly significant correlation between PPP and EF ($\chi^2=40.96$, $p<0.0001$).

Conclusion: PPP correlates significantly with EF in HF patients and serves as a low-cost, non-invasive predictor of disease severity and prognosis, making it valuable in primary healthcare and resource-limited settings.

Keywords

Heart failure, Proportional pulse pressure, Ejection fraction, Prognostic marker, Resource-limited settings.

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A Study of Echocardiographic Abnormalities in Metabolic Syndrome: A Prospective Study

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Abstract

Background: Metabolic syndrome (MS) is a growing global health concern, strongly associated with increased cardiovascular morbidity and mortality. It predisposes to structural and functional cardiac changes even in the absence of overt coronary artery disease. Echocardiography, including advanced strain imaging, provides sensitive markers for detecting these subclinical abnormalities.

Aim: To study echocardiographic abnormalities in patients with metabolic syndrome and to evaluate left ventricular structural remodeling and systolic/diastolic dysfunction.

Methods: This cross-sectional study was conducted in the Department of General Medicine, MMCHRI, Kanchipuram. A total of 60 patients fulfilling the International Diabetes Federation (IDF) criteria for metabolic syndrome were enrolled. All subjects underwent clinical evaluation, biochemical testing, and comprehensive echocardiography including 2D, M-mode, Doppler. Left ventricular mass, ejection fraction (Simpson's method), relative wall thickness, and strain parameters were assessed. Patients with established coronary artery disease or abnormal treadmill test were excluded.

Results: The majority of patients (64%) were between 40–60 years of age; females (61%) outnumbered males (39%). Concentric remodeling was the most common structural abnormality (54%), followed by eccentric hypertrophy (30%) and concentric hypertrophy (16%). Diastolic dysfunction was observed in 51% (Grade I: 37%, Grade II: 12%). Higher grades of diastolic dysfunction correlated significantly with elevated myocardial performance index. Patients with metabolic syndrome demonstrated reduced longitudinal and early diastolic strain rates, and increased late diastolic strain rates, with overall diminished systolic longitudinal strain. Significant associations were found between blood pressure, waist circumference, fasting glucose, and echocardiographic abnormalities.

Conclusion: Metabolic syndrome is associated with a high prevalence of left ventricular remodeling and subclinical diastolic dysfunction. Advanced strain imaging highlights early myocardial impairment despite preserved ejection fraction. These findings underscore the importance of early cardiovascular risk stratification and targeted management strategies in patients with metabolic syndrome to prevent progression to overt heart failure.

Keywords

Metabolic syndrome, Echocardiography, Cardiac remodeling, Diastolic dysfunction, Strain imaging.

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Unexplained Hypoxia and Methemoglobinemia: A Case Series

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Abstract

Introduction: Methemoglobinemia is an uncommon but potentially life-threatening hemoglobinopathy in which hemoglobin iron is oxidized from ferrous (Fe^{2+}) to ferric (Fe^{3+}) state, impairing oxygen transport. It can be acquired through drug exposure or congenital due to enzyme/hemoglobin defects. Recognition is difficult as hypoxia is often refractory to oxygen therapy despite normal cardiopulmonary evaluation.

Aim & Objectives: To report and analyse two contrasting cases of methemoglobinemia, highlighting differences in acquired and recurrent/congenital variants.

Methods: Two patients presenting with unexplained hypoxemia underwent detailed evaluation including laboratory tests, imaging, and hematology review. Data were retrospectively analysed for clinical features, diagnostic challenges, and therapeutic interventions.

Results:

- **Case 1:** A 39-year-old male presented with unexplained hypoxia (SpO_2 88–90%) despite stable vitals and normal cardiopulmonary studies. Methaemoglobin was 13.3%. He was treated with oral Vitamin C and B2, with levels reducing to 8.6% at follow-up.
- **Case 2:** A 22-year-old male with idiopathic recurrent panniculitis presented with cyanosis and methHb 30.2%. He required intravenous methylene blue and red cell exchange. Recurrent episodes every 2–3 weeks (methHb 17–24%) persisted. HPLC was normal, raising suspicion of congenital methemoglobinemia, likely cytochrome b5 reductase deficiency.

Summary: These cases illustrate the clinical spectrum of methemoglobinemia, ranging from mild acquired forms to recurrent, probable congenital variants.

Conclusion: Methemoglobinemia should be considered in unexplained or refractory hypoxemia. Differentiating acquired from congenital forms is essential for appropriate treatment and prevention of recurrence.

Keywords

Methemoglobinemia, unexplained hypoxia, acquired hemoglobinopathy, congenital variant.

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Correlation of Neck Circumference with Waist Circumference and Body-Mass-Index in Ischemic Heart Disease: A Prospective Study

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Abstract

Objectives: This study was conducted to evaluate correlation of neck circumference with waist circumference and body mass index in patients with IHD undergoing coronary angiogram (CAG), in a referral institute.

Material and Methods: Consecutive patients of IHD, undergoing CAG in our institute were included prospectively in the study. This included a total of 41 patients- males 28, females 14, and mean age 55 (range 33-85) years. Apart from standard contra-indications for invasive CAG study, those patients having established thyroid disease or enlargement, neck abnormalities, pregnant women and critically ill subjects were excluded. Their demographic profile and anthropometric measurements were documented. Neck circumference was measured with the superior border of the tape placed below the laryngeal prominence, midway between base of the neck and the upper part of the sternum to within 1mm. Waist circumference was measured at midpoint between the lower margin of the last palpable rib and top of iliac crest, in standing position after normal expiration. Body mass index (BMI) was calculated as weight in kilograms divided by the square of standing height in meters.

Results: Pearson's correlation coefficients indicated a statistically significant correlation between changes in NC and changes in waist circumference and body mass index.

Conclusion: Neck circumference, a novel anthropometric index is an excellent method for assessment of upper body obesity in ischemic heart disease patients. It is a simple, reliable, socially acceptable, time saving and less cumbersome measure of obesity.

Keywords

Neck circumference, waist circumference, body mass index, ischemic heart disease.

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Assessment of ASCVD Risk Score in Patients with Type 2 Diabetes Mellitus: A Rural Tertiary Care Experience

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Abstract

Background: Type 2 Diabetes Mellitus (T2DM) is a major risk factor for atherosclerotic cardiovascular disease (ASCVD). Early risk prediction in diabetics is crucial to implement preventive strategies and reduce cardiovascular morbidity and mortality. The ASCVD risk score is a validated tool that estimates the 10-year risk of major cardiovascular events.

Aim: To calculate the ASCVD risk score in patients with Type 2 Diabetes Mellitus.

Methods: This descriptive analytical study was conducted over 3 months at a tertiary care rural centre. A total of 106 patients with T2DM aged >40 years were included using non-probability convenience sampling. Patients with proven cardiovascular disease and those aged <40 or >80 years were excluded. Demographic data, duration of diabetes, HbA1c, comorbidities, and lifestyle factors were recorded. The ASCVD risk score was calculated for all participants.

Results: Among 106 patients, 66 (62%) were male and 40 (38%) female. Duration of diabetes was <5 years in 40%, 5–10 years in 38%, and >10 years in 28%. HbA1c was <6.5% in 12%, 6.5–8% in 52%, and >8% in 36%. Comorbidities included hypertension (34%), cerebrovascular accident (12%), and thyroid disorder (6%). Smoking was reported in 26% and alcohol use in 12%. The ASCVD risk score distribution was: **Low risk in 20%, Borderline in 28%, Intermediate in 30%, and High in 22% of patients.**

Conclusion: A significant proportion of diabetic patients in this rural cohort had intermediate to high ASCVD risk, underscoring the need for routine cardiovascular risk assessment in T2DM. Incorporating the ASCVD score into clinical practice can help identify high-risk individuals early and initiate timely preventive interventions.

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Hypothyroidism as a Reversible Cause of Heart Failure with Reduced Ejection Fraction – A Case Report

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Abstract

Background: Heart failure with reduced ejection fraction (HFrEF) is most commonly attributed to ischemic or dilated cardiomyopathy. Endocrine disorders such as hypothyroidism are rare but important **reversible causes**. Timely recognition and treatment can lead to significant improvement in cardiac function and patient outcomes.

Case Presentation: We report a 55-year-old female who presented with giddiness, exertional breathlessness, and lower limb numbness. On evaluation, thyroid function tests revealed severe hypothyroidism (T3: 1.71 ng/ml, T4: <0.07 ng/dl, TSH >150 µIU/ml). Echocardiography demonstrated severe global hypokinesia, left ventricular systolic dysfunction with EF 30%, grade II diastolic dysfunction, mild MR, trivial AR, and minimal pericardial effusion. supporting a diagnosis of heart failure. The patient was initiated on thyroxine replacement along with guideline-directed heart failure therapy.

Follow-up: After 3 months, the patient was clinically improved. Repeat echocardiography showed EF improvement to 48% with only mild LV systolic dysfunction and grade I diastolic dysfunction.

Discussion: Hypothyroidism contributes to cardiomyopathy through impaired myocardial contractility, reduced heart rate, increased systemic vascular resistance, and pericardial effusion. Correction with levothyroxine improves metabolic efficiency, contractility, and overall LV function. This case emphasizes the importance of screening thyroid function in all patients with unexplained cardiomyopathy.

Conclusion: Hypothyroidism should be considered a **treatable and reversible cause of HFrEF**. Early diagnosis and thyroxine replacement can result in dramatic improvement in ejection fraction and symptoms, as demonstrated in our patient.

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Clinico-Radiological Manifestations of Interstitial Lung Diseases: A Cross-Sectional Study from a Tertiary Care Centre

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Abstract

Background: Interstitial Lung Diseases (ILDs) are a group of diffuse parenchymal lung disorders marked by varying degrees of inflammation and fibrosis, leading to restrictive pathology with characteristic clincal, radiological, physiological and pathological manifestations. Differentiating ILDs from other alveolar filling disorders can be clinically challenging, often delaying diagnosis. A multidisciplinary approach is essential for accurate evaluation.

Objective: To study the clinical presentations and radiological manifestations of ILDs among patients in a tertiary care hospital.

Methods: A cross-sectional study was conducted on 100 patients (≥18 years) diagnosed with ILD at the Department of General Medicine, Meenakshi medical college hospital and research institute. Clinical history, physical examination, and investigations including chest radiography, high-resolution CT (HRCT), spirometry, bronchoscopy, and connective tissue profile were performed.

Results: Among 100 patients, 55% were males and 45% females, with a mean age of 55 years. The peak incidence was between 50–69 years. Breathlessness (100%) and cough (85%) were the most common presenting symptoms, while clubbing was noted in 50%. Common comorbidities included obstructive airway disease (63%), diabetes, and hypertension (36% each). HRCT was the most valuable diagnostic tool, showing reticular patterns as the most frequent finding, followed by cystic lesions and ground-glass opacities. Idiopathic Pulmonary Fibrosis (46%) was the leading etiology, followed by Nonspecific Interstitial Pneumonia (20%) and CTD-associated ILD (11%).

Summary: Breathlessness and cough are hallmark symptoms of ILDs. HRCT plays a key role in diagnosis, supported by spirometry and bronchoscopy. A multidisciplinary approach is critical for early diagnosis and management.

Keywords

Interstitial Lung Disease, HRCT, Spirometry, Bronchoscopy, Idiopathic Pulmonary Fibrosis, Clinical-Radiological Profile.

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Case Study: Unmasking the Silent Thief: A Case of Bartter Syndrome

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Abstract

Introduction: Bartter syndrome is a rare autosomal recessive disorder characterized by hypokalemia, hypomagnesemia, hypercalciuria and metabolic alkalosis due to impairment of sodium and chloride reabsorption in the thick ascending loop of henle. This case study discusses the diagnosis and management of a 48-year-old male presenting with symptoms that led to the identification of Bartter Syndrome.

Case Presentation: A 48-year-old male presented to the emergency department with complaints of abdominal pain, muscle cramps, excessive thirst, polyuria. The patient had no significant past medical history and was not on any regular medications. Initial physical examination was unremarkable except for mild dehydration.

Diagnostic Workup: Routine preoperative blood tests revealed a serum potassium level of 2 .0mmol/L significantly lower than the normal range (3.5-5.0 mmol/L). Serum calcium level 8.0 mmol/L (normal Range 8.5 to 10.5 mmol/L.). Electrocardiography (ECG) performed due to the hypokalemia showed T wave inversion and the presence of U waves, suggestive of significant potassium depletion. Fasting Blood Sugar and Postprandial Blood Sugar respectively 86 MG / DL, 120 MG/DL, Hba1c – 5.5. Serum ADH level within normal range and MRI BRAIN impression Was no significant abnormality detected.

Given the critical hypokalemia, three cycles of potassium chloride (KCl) correction were administered. Despite these interventions, the patient's serum potassium level remained persistently low at 2.3 mmol/L. Concurrently, urine potassium levels were elevated at 18 mmol/L, indicating ongoing renal potassium wasting.

Further investigations were undertaken, including measurements of serum magnesium, and urine electrolytes. The urine calcium/creatinine ratio was found to be 0.25, consistent with a diagnosis of Bartter Syndrome.

Management: The patient was started on oral aldactone (spironolactone) and potassium chloride syrup to manage his electrolyte imbalance. Aldactone, a potassium-sparing diuretic, helps to reduce renal potassium excretion, while the potassium chloride supplementation directly addresses the hypokalemia.

Follow-Up: On regular follow-up visits, the patient's serum potassium levels were monitored and maintained above 3.5 mmol/L with the continued use of aldactone and potassium chloride supplementation. The patient also received dietary advice to increase intake of potassium-rich foods and was educated about the importance of adherence to his medication regimen.

Discussion: This case highlights the diagnostic challenge and management of severe hypokalemia in a patient with Bartter Syndrome. The persistence of hypokalemia despite aggressive potassium supplementation prompted further investigation, leading to the diagnosis. Bartter ' s syndrome should be considered in the differential diagnosis of unexplained hypokalemia, especially when associated with renal potassium wasting and a high urine calcium/creatinine ratio.

Conclusion: Bartter' s syndrome is a rare but important cause of hypokalemia that requires careful management to prevent complications. This case underscores the importance of recognizing the clinical and biochemical features of Bartter 's syndrome and highlights effective strategies for managing this condition to ensure optimal patient outcomes.

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A Study of Prevalence of Autonomic Dysfunction in Type 2 Diabetes Mellitus

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Abstract

Background: Autonomic neuropathy is the most neglected aspect of diabetes due to difficulties in diagnosis, which requires invasive investigations in earlier days, and lack of specific treatment. Most earlier studies have been done on autonomic dysfunction in Type I Diabetes mellitus and there are only a few studies on Type II Diabetes mellitus patients. With this in mind, this study has been conducted on the prevalence of autonomic dysfunction in Type II Diabetes mellitus patients and the association of various factors with this disease in the diabetic population in and around Kanchipuram.

Aim: To study the prevalance of autonomic neuropathy in previously diagnosed and newly detected patients with Type 2 diabetes mellitus in kanchipuram.

Materials and Methods: 40 type 2 Diabetes mellitus patients and 10 control subjects who were admitted in Meenakshi medical college were enrolled in the study. Those who complied with the inclusion and exclusion criteria were subjected to detailed history taking and clinical examination and necessary investigations was done and analysis was performed with appropriate statistical methods.

Results: 90% of patients studied had prevalence of diabetic autonomic neuropathy. A battery of tests is more accurate in assessing the degree of involvement of the autonomic system rather than a single test. Among the tests performed, the heart rate response to deep breathing and to postural change from lying to standing were found to be the most sensitive in detecting prevalence of autonomic neuropathy.

Conclusion: This study revealed a high prevalence of autonomic neuropathy in Type2 Diabetes mellitus patients. This was also evident even in asymptomatic patients. The squatting test can be used as an early marker of dysautonomia. The degree of metabolic control was the factor which had the strongest association with severity of autonomic impairment. Thus, this study underscores the value of tight metabolic control in the management of Type2 Diabetes mellitus.

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Non Thyroid Illness as a Prognostic Marker in Sepsis

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Abstract

Introduction: Sepsis is the major problem in Intensive Care Units (ICUs), with death rate of 50% for severe sepsis in developed countries. In India, death rate in severe sepsis is much higher (65.2%). Many prognostic factors associated with outcome in sepsis such as age, sex, severity of illness, and biomarkers of sepsis have been available. But, still shortage exist in predicting outcome. So, it is important to formulate more aggressive approach in sepsis management.

Critical illness is associated with changes in the thyroid metabolism and hypothalamic–pituitary–thyroid axis collectively known as the nonthyroidal illness syndrome (NTIS). Results in low levels of total triiodothyronine (T3) and free triiodothyronine (fT3), low thyroxine (T4) and normal or mild decrease in TSH.

The prognostic significance of NTIS in illness is known however, its importance in sepsis is still questionable.

Objective:

I) . To study T3, T4 and TSH parameters in sepsis patients.

II). To study whether low levels of T3, T4 and TSH has any value in early prediction of mortality in sepsis.

III). Whether early interventions can reduce the mortality rate

Methods:

Study Setting: ICU patients from Meenakshi Medical College, Kanchipuram and consent was taken from the patients

Study Design: Prospective Observational Study

Sample Size: 20

Study Period: Feb 2025 - July 2025

All sepsis patients above 18yrs, were classified with SIRS and

APACHE II score calculated and patients are graded into sepsis, severe sepsis and septic shock. Patients were maintained and managed according to the international guidelines for the management of severe sepsis and septic shock.

Statistical analysis was done using SPSS.

Results:

1. With normal values of T3(84.63-201.08 ng/dl) the mortality rate is less compared to survival rate, but with moderate values of T3(25-84.62 ng/dl) the survival rate is low (44.1%) compared to the death (55.9%). But in very low values of T3 (<24.99) the mortality is very high compared to the survival rate.
2. The values of T4 also decreases in sepsis but to the lesser extent. Even with mild T4 decreases along with low T3 values the mortality is high. when compared to decreased values of T3 and T4 alone.

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3. We also noticed APACHE II score increasing theT3values decreases which indicates the patient has the increase in severity of sepsis, and there is increase in mortality.

Conclusion: NTIS is a condition characterized by abnormal thyroid function tests encountered in patients with acute or chronic systemic illnesses. In the acute phase of critical illness, the alterations in thyroid hormones present as decreased T3 and increased T4 and rT3, as well as normal TSH. In the chronic phase of critical illness, central hypothyroidism develops, and NTIS presents as decreased T3, decreased T4 and decreased TSH. In the present study, a marked correlation in the thyroid hormone levels and the APACHE II score was observed in the survivors and the non-survivors.

Critically ill sepsis patients admitted to the intensive care unit (ICU) exhibit thyroid dysfunction the magnitude of the thyroid dysfunction depends on the duration and severity of the disease.

In our study, non-survivors had significantly lower T3 and T4 levels in comparison to survivors, signifying important role of NTIS in sepsis.

There is a strong correlation of NTIS with sepsis. NTIS affects 60%–70% of critically ill patients. In our study, NTIS was found in 65% of sepsis patients.

Keywords

NTIS, APACHE Score, Prognosis, Sepsis, Mortality.

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Study on Liver Size to Albumin Ratio in CLD Patients Compared with Endoscopy with or Without Esophageal Varices

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Abstract

Background: Esophageal varices are a major complication of chronic liver disease (CLD) and a leading cause of morbidity and mortality. Endoscopy remains the gold standard for detection, but it is invasive, costly, and not always feasible. Hence, there is a need for reliable, non-invasive predictors.

Objective:

1. To evaluate the usefulness of biochemical and ultrasonographic parameters in predicting the presence and severity of esophageal varices.
2. To assess the liver size to serum albumin ratio as a potential screening tool for esophageal varices in patients with cirrhosis.

Methods: A prospective observational study was conducted at Meenakshi medical college hospital and research centre, kanchipuram. A total of 70 cirrhotic patients aged >18 years were included. Patients with hepatocellular carcinoma, bleeding disorders, or prior endoscopic/surgical interventions for portal hypertension were excluded. Serum albumin levels and ultrasonographic liver diameter were measured, and endoscopic findings were compared. Statistical analysis was performed using the Chi-square test.

Results: Among 70 patients, 55% had serum albumin levels between 2–3g/dl. Esophageal varices were present in 77% of patients: 12.9% grade I, 17.1% grade II, 27.1% grade III, and 20% grade IV.A higher liver diameter to albumin ratio was significantly associated with higher grades of varices.

Summary: The liver size to albumin ratio shows a strong correlation with the presence and severity of esophageal varices. It may serve as a simple, non-invasive, and cost-effective screening tool to identify high-risk patients, thereby guiding the need for endoscopy.

Keywords

Chronic liver disease, Esophageal varices, Liver size to albumin ratio, Non-invasive screening, Cirrhosis.

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A Complex Case of Constrictive Pericarditis with Multisystem Comorbidities: Navigating Diagnostic and Therapeutic Challenges

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Abstract

Background: Constrictive pericarditis is an uncommon but important cause of right heart failure, often associated with pericardial effusion. Coexistent chronic illnesses such as diabetes mellitus, chronic kidney disease (CKD), and systemic hypertension complicate management and outcomes.

Case Presentation: We report the case of a 60-year-old male with a history of alcohol consumption and multiple comorbidities including type 2 diabetes mellitus with retinopathy (HbA1c 9.9%), systemic hypertension, and CKD. He presented with bilateral lower limb swelling and cough of one-week duration. Examination revealed bilateral pitting pedal edema and basal crepitations on auscultation.

Investigations: Laboratory evaluation showed anemia, deranged renal parameters, and positive HBsAg status. Imaging and echocardiography confirmed chronic constrictive pericarditis with moderate pericardial effusion. CT thorax revealed pericardial effusion with pericardial calcifications. Auto –immune and connective tissue workup was negative. Ultrasound abdomen revealed mild to moderate ascites and chronic kidney changes.

Management: Patient was initiated on empirical anti-tubercular therapy (ATT) with steroids, managed for CKD with dialysis (two cycles of SLED), and treated with diuretics (Lasix, Metolazone, Spironolactone) along with antihypertensives, antidiabetic agents (OHA, insulin), and supportive care. The patient underwent pericardiectomy, which resulted in significant clinical improvement. The patient was discharged on tapering steroids and continuation of ATT with advice for strict follow-up.

Conclusion: This case highlights the complex interplay of chronic constrictive pericarditis with comorbid CKD, diabetes, hypertension, and HBsAg positivity. A multidisciplinary approach involving cardiology, nephrology, and internal medicine is crucial in optimizing outcomes in such high-risk patients.

Keywords

Constrictive pericarditis, pericardial effusion, chronic kidney disease, diabetes mellitus, HBsAg positive, internal medicine.

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A Study of Electrocardiography and 2D Echocardiography in Patients with Left Ventricular Hypertrophy

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Abstract

Background: Left ventricular hypertrophy is a common condition that commonly affects morbidity and mortality from cardiovascular diseases, including congestive heart failure, myocardial infarction, and stroke. The ECG in the assessment of cardiac dimensions has lost its prominence in favor of imaging techniques that provide a multidimensional display of the heart, but secondary ST-T changes due to LVH, which are uniquely determined from the ECG, are known to increase the risk of cardiovascular morbidity and mortality. Two-dimensional echocardiogram still demands considerably more time, cost, the technical skill of the operator than routine 12 lead ECG. Considering the magnitude of LVH, the study is designed to correlate between three different ECG criteria of left ventricular hypertrophy using echocardiography as a diagnostic standard.

Objective: To identify the left ventricular hypertrophy and to compare relative sensitivity, specificity, accuracy, positive predictive value, the negative predictive value of echocardiography, and 12 lead ECG for detecting left ventricular hypertrophy.

Methods: The study was conducted on 100 patients at Meenakshi Medical College and Hospital, Kanchipuram from March 2025 to July 2025. Patients were divided into two groups the study group and the control group. Patients in the study group had echo evidence of LVH, whereas the patients in the control group had no echo evidence of LVH. After taking a full detailed history, all the patients were subjected to physical examination, ECG, and echo.

Results: The sensitivity and specificity for S – L Index were 37% and 77%, For the R.E. system, it was 49 and 77%, and for total QRS voltage criteria, it was 58% and 89%. The kappa measure of agreement was 0.12, 0.23, and 0.41 for the three criteria, respectively. It means ECG has a weak correlation with echocardiography.

Summary: This study shows that all the ECG criteria have low sensitivity but high specificity, so we cannot use ECG to rule out LVH, but ECG can be recommended as a routine investigation because of high specificity and secondary ST-T changes which are associated with elevated cardiac morbidity and mortality.

Keywords

Left Ventricular Hypertrophy, Electrocardiography, Echocardiogram.

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Epidemiologic and Clinical Characteristics of Infective Endocarditis: A Retrospective Study at Tertiary Care Centre

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Abstract

Aim: Infective endocarditis is one of the most misdiagnosed diseases in India because of variable treatment regimen. This study aims to assess the quality of management of infective endocarditis in a tertiary care teaching hospital.

Methods: A single centre retrospective cohort study was conducted based on medical records extracted from Sri Manakula Vinayagar Medical record department, of all patients diagnosed who presented with infective endocarditis as final diagnosis from 2016-2025.

Results: Out of a total of 34 patients diagnosed with Infective endocarditis, 100% of our patients had blood cultures done before initiating empirical antibiotic therapy. Positive blood cultures were reported in 33% of patients, rest 77% were culture negative. Coagulase negative staphylococcus was the most common organism identified in 11.4% of patients, followed by staphylococcus Aureus in 5.7% patients. On echocardiography, 100% of patients had vegetation that was present in a single valve. Single valve: 91.2%, multiple valve: 8.8%. The mitral valve had the highest incidence of vegetation in 75% patients followed by aortic valve in 15% patients. Valve repair was done in 23.8% of patients. Out of 34 patients, 8 patients required ICU admission. The most common complication post-surgery was Acitrom induced coagulopathy followed by stuck valve thrombus.

Keywords

Infective endocarditis, Stuck Valve thrombus, Staphylococcus aureus, Acitrom induced coagulopathy.

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Phenytoin Induced Paradoxical Seizure - A Case Report

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Abstract

Introduction: Phenytoin is a commonly used antiseizure drug for managing generalized tonic-clonic and focal seizures. Although effective, its narrow therapeutic index predisposes patients to toxicity when serum levels rise above the recommended range. Paradoxically, phenytoin toxicity itself can precipitate seizures—a rare but clinically significant phenomenon. Early identification and management are essential to prevent morbidity.

Case Presentation: We report a case of a 23-year-old male with a 4-year history of epilepsy who presented with a generalized tonic-clonic seizure at his workplace. He had been seizure-free for over a year but had recently self-escalated his phenytoin dose to 600 mg/day. On examination, he was drowsy and exhibited gaze-evoked horizontal nystagmus, ataxia, slurred speech, and gingival hypertrophy. His serum phenytoin level was >40 µg/mL. Neuroimaging and laboratory tests were unremarkable. Electroencephalogram showed mild diffuse slowing without epileptiform activity. A diagnosis of phenytoin-induced paradoxical seizure due to toxicity was made. Phenytoin was discontinued, and the patient was started on levetiracetam, with resolution of symptoms within 48 hours.

Clinical Discussion: Phenytoin follows zero-order kinetics at higher concentrations, leading to rapid toxicity even with minor dose increases. Common neurological signs of toxicity include nystagmus, ataxia, and altered mentation. In rare cases, paradoxical seizures may occur due to cortical excitability from toxic accumulation. This case emphasizes the need for therapeutic drug monitoring and highlights how cerebellar signs and extra-neurological features, such as gingival hypertrophy, can aid in diagnosis.

Conclusion: Phenytoin toxicity should be suspected in patients with cerebellar signs or new-onset seizures while on chronic phenytoin therapy. Clinician awareness, therapeutic drug monitoring, and patient education are key to preventing such adverse outcomes.

Keywords

Phenytoin toxicity, paradoxical seizure, antiepileptic drug overdose, cerebellar signs, levetiracetam, therapeutic drug monitoring.

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Hypercalcemia Unveils Peripheral T-Cell Lymphoma, not Otherwise Specified (PTCL-NOS): A Case Report

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Abstract

Peripheral T-cell lymphoma, not otherwise specified (PTCL-NOS), is an uncommon and aggressive subtype of mature T-cell lymphomas, representing a heterogeneous group of malignancies without specific defining immunophenotypic or genetic features. It often presents with systemic "B" symptoms, generalized lymphadenopathy and extranodal involvement. Diagnosis requires the exclusion of other well-defined T-cell lymphoma subtypes through detailed histopathological and immunohistochemical evaluation. Hypercalcemia is a recognized paraneoplastic manifestation in various cancers, particularly in solid tumors and some hematological malignancies; however, it is rarely the initial presentation of PTCL-NOS. We report the case of a 53-year-old female who presented with persistent fatigue and vague abdominal discomfort. Laboratory investigations revealed severe hypercalcemia with normal renal function and intact parathyroid hormone levels. Imaging demonstrated diffuse bone marrow infiltration without radiological evidence of lytic bone lesions. Bone marrow biopsy showed diffuse infiltration by atypical lymphoid cells and immunohistochemistry confirmed the diagnosis of PTCL-NOS. Hypercalcemia was attributed to a paraneoplastic mechanism associated with the lymphoma. Following initiation of combination chemotherapy, her calcium levels normalized, and systemic symptoms improved.

This case highlights an unusual presentation of PTCL-NOS, where severe hypercalcemia preceded other overt clinical signs. The absence of lytic lesions and the rapid correction of calcium levels with lymphoma-directed therapy further support a humoral paraneoplastic process rather than direct bone destruction. It also underscores the need for a thorough and systematic diagnostic workup in patients presenting with unexplained hypercalcemia, particularly when conventional etiologies have been excluded. It also highlights the importance of considering PTCL-NOS as part of the differential diagnosis in such atypical clinical scenarios, enabling timely diagnosis and appropriate management.

Keywords

Hypercalcemia, Immunohistochemistry, Paraneoplasm, PTCL-NOS.

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Case Series of Dengue Encephalitis – A Rare Manifestation of Dengue Fever

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Abstract

Introduction: The clinical spectrum of Dengue Fever ranges from symptomatic infection to dengue shock syndrome. Dengue is classically considered a non - neurotropic virus. Neurological complications are not commonly seen in dengue. The neurological manifestations seen in dengue are encephalitis, meningitis, encephalopathy, stroke and GBS. Dengue encephalitis is a rare disease.

Objective: The main objective is to look for neurological manifestations in dengue patients and to study the prognosis of the disease.

Methods: 4 dengue patients with neurological symptoms were studied. CSF analysis was done to rule out other viral aetiology of encephalitis. Confirmation was done through dengue serology and MRI brain. Patients were treated accordingly.

Results: We describe 4 interesting cases of Dengue encephalitis from Southern India who presented to us during a dengue epidemic. All 4 patients had history of fever, generalized body pain and joint pain associated with altered sensorium and few episodes of seizure activity after the fever developed. CSF samples of all 4 patients were inconclusive and hence were started on antibiotics and antivirals in view of a meningoencephalitis. Routine investigations for all patients revealed thrombocytopenia and Dengue Serology was positive and hence the antivirals and antibiotics were stopped and treated symptomatically with which they improved. MRI revealed nonspecific imaging features suggestive of encephalitis. CSF for HSV PCR and other viral aetiology were negative.

Conclusion: Mostly dengue causes encephalopathy rather than encephalitis. So unlike other encephalitis, the demonstration of dengue IgM antibody in CSF may not be demonstrable. Dengue encephalopathy is a complication of a disease rather than direct neuroinvasion. So detection of IgM antibody or NS1 antigen in serum coupled with CNS manifestations are enough to diagnose dengue encephalopathy. Dengue encephalitis should be considered in the differential diagnosis of fever with altered sensorium especially in countries like India where dengue is rampant.

Keywords

Dengue, CNS manifestations, encephalitis, encephalopathy.

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Case Series of Rheumatoid Arthritis with Secondary Sjogren Syndrome

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Abstract

Introduction: Rheumatoid arthritis is a autoimmune condition affecting joints. But 15% of rheumatoid arthritis develop a complication that affects the tears and salivary glands causing dry mouth, dry eyes, dry skin and additional symptoms that aggravate their arthritis called sjogren syndrome.

Objective: The main objective is to look for sjogren syndrome in rheumatoid arthritis in female patients and to study characteristic in overlap syndrome

Methods: Among 50 patients of Rheumatoid arthritis, 4 overlap cases of Rheumatoid arthritis with sjogren syndrome. Confirmation was done through clinical, and biochemical tests, like ASO titre, RA factor, Anti -CCP, ESR, CRP, Anti -Ro and Anti -La antibodies to support the diagnosis. Patients with proven Rheumatoid arthritis and Sjogren syndrome in the study.

Results: The patients of rheumatoid arthritis with sjogren syndrome showed hip pain, knee pain and swelling, Dryness of mouth and dryness of skin, dryness of eye and severe arthritis and low incidence of fever. Anti CCP, RA factor, CRP and ESR and anti Ro and anti La antibodies were found to be elevated in almost all patients and investigations were correlated along with clinical symptoms which showed the existence of Rheumatoid arthritis with secondary sjogren syndrome.

Conclusion: Patients with Rheumatoid Arthritis with the above complaints should be ruled out of sjogren syndrome. The diagnosis of overlap of Rheumatoid Arthritis with sjogren syndrome is essential to prevent complications and to promote quality of life for prompt diagnosis and treatment.

Keywords

Rheumatoid Arthritis, Anti CCP, RA factor, CRP, ESR, anti Ro and anti La antibodies, Sjogren syndrome.

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Prognostic Significance of Troponin T in Unstable Angina

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Abstract

Background: Cardiac troponin T is a regulatory contractile protein not normally found in blood. Elevation of TnT in patients with unstable angina has been associated with an increased risk of subsequent death or acute myocardial infarction (AMI).

Objectives: To study the prognostic significance of troponin T in the serum of patients with unstable angina.

Method: Single centre, prospective study of in hospital events. We screened all the patients with unstable angina for serum creatine kinase activity, creatine kinase myocardial band (isoenzyme M) activity, and troponin T. at the time admission to the hospital. The outcomes of interest during the hospitalization were death and myocardial infarction.

Results: Troponin T was detected in the serum of 50 of the 180 patients who presented with symptoms consistent unstable angina. None of these patients had elevated creatine kinase-MB activity. Of the 50 patients who were positive for troponin T. 11 had myocardial infarction, and 6 of these died during hospitalization.

Conclusions: There was a male preponderance in this study. Cardiac troponin T in serum appears to be a more sensitive and specific indicator of myocardial-cell injury than serum creatine kinase MB activity, and its detection in the circulation may be a useful prognostic indicator in patients with unstable angina. Presence of other cardiac risk factors such as DM, HTN, and dyslipidemia contributed significantly to in hospital morbidity and mortality. Higher values of troponin T correlated with complex coronary angiographic results.

Keywords

Unstable angina, cardiac troponin T, creatine kinase MB.

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A Study of Comparison of Micro Albuminuria Between Pre Hypertensive and Normotensive Individuals in a Tertiary Care Hospital in a Sub Urban Population

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Abstract

Introduction: Prehypertension is a blood pressure reading where the patient's BP is more than normal but not up to the level which is considered as hypertension. Prehypertension is a warning sign that the patient may develop hypertension in his near future. The aim of the study is to look for the presence of microalbuminuria in two groups namely a pre hypertensive group (BP 120- 139/80-89mmHg) and a normotensive group (BP <120/80 mmHg) and to find out is there a significant difference in presence of microalbuminuria in both groups. This study shows the importance of screening and identification of pre hypertensive individuals

Aim: A study of comparison of micro albuminuria between pre hypertensive and normotensive individuals in a tertiary care hospital in a sub urban population

Material and Methods: The study participants were selected from ward patient's attenders (100 sample) who were divided into two groups based on their blood pressure measurement. A brief history was recorded. Urine albumin creatinine ratio for microalbuminuria, and echocardiogram to detect diastolic dysfunction were done in all participants. Other relevant investigations were done, SPSS was used for statistical analysis of results.

Results: The distribution of microalbuminuria in two groups are 2% and 28% in normotensive and prehypertensive group respectively ('p' values <0.001) which is statistically significant

1. The distribution of diastolic dysfunction is 32% in prehypertensive group while none had diastolic dysfunction in normotensive group ('p' value is 0.004) which is statistically significant. 60% of those participants with microalbuminuria had associated diastolic dysfunction also.

Conclusion: The study highlights the importance of End organ damage which starts to occur even at a prehypertension stage of blood pressure. So, screening for high BP should start early and if detected to be prehypertensive, life style modification should be strongly recommended.

Keywords

Micro Albuminuria, Pre Hypertensive, Normotensive.

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Landouzy Septicemia in an Immunocompetent Adult: A Case Report of Fulminant Disseminated Tuberculosis

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Abstract

Background: Tuberculosis continues to be a leading cause of infectious disease–related mortality worldwide. While pulmonary TB is the most common form, extrapulmonary and disseminated TB are diagnostically challenging. Landouzy septicemia represents a rare and fulminant manifestation of disseminated TB. This case emphasizes the importance of considering TB in atypical sepsis presentations, even in immunocompetent individuals.

Case Presentation: A 62-year-old immunocompetent male presented with fever, fatigue, and bilateral leg swelling. On admission, he was febrile, tachycardic, and hypotensive with clinical features of sepsis. Laboratory investigations revealed anemia, elevated ESR, and deranged liver function. Chest imaging showed diffuse bilateral infiltrates. GeneXpert MTB assay and blood culture confirmed Mycobacterium tuberculosis. Despite aggressive supportive management and initiation of anti-tubercular therapy, the patient developed multi-organ failure and succumbed rapidly, consistent with fulminant Landouzy septicemia.

Discussion: Landouzy septicemia is an uncommon but fulminant presentation of disseminated tuberculosis. It is usually associated with immunocompromised states, but rare cases have been reported in immunocompetent individuals. The nonspecific clinical features often mimic bacterial sepsis, leading to diagnostic delay. Early microbiological confirmation using GeneXpert or blood cultures is crucial, but outcomes remain poor despite rapid initiation of therapy. This highlights the aggressive nature of the disease and the difficulty in management.

Conclusion: Landouzy septicemia should be considered in cases of severe sepsis with atypical features, even in immunocompetent patients. Prompt recognition and timely initiation of anti-tubercular therapy may improve outcomes, though prognosis remains guarded.

Keywords

Landouzy septicemia, Disseminated tuberculosis, Fulminant TB, Immunocompetent adult.

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Paget's Disease of Bone and Rheumatoid Arthritis: A Rare Case of Co-Occurrence

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Abstract

Background: Paget's disease of bone (PDB) is a chronic skeletal disorder marked by abnormal bone remodeling. Rheumatoid arthritis (RA) is an autoimmune condition causing joint inflammation and bone erosion. Their coexistence is extremely rare, with limited cases reported worldwide. The contrasting bone effects of RA and PDB complicate diagnosis and management. Recognizing such overlap is vital for early intervention and tailored therapy.

Case Presentation: A 44-year-old female with seropositive rheumatoid arthritis presented with upper jaw swelling and facial discomfort. Laboratory tests showed elevated alkaline phosphatase, indicating increased bone turnover. Imaging revealed mixed lytic–sclerotic lesions with cortical thickening in the maxilla. Dental evaluation ruled out odontogenic pathology as a cause of the swelling. Histopathological examination confirmed the diagnosis of Paget's disease of bone. She was treated with intravenous zoledronic acid along with DMARDs, showing good clinical and biochemical response.

Discussion: Co-occurrence of RA and PDB is rare and diagnostically challenging due to overlapping skeletal features. While RA causes bone erosion, PDB leads to excessive and disorganized bone formation. Multidisciplinary evaluation and histopathology are essential for accurate diagnosis and targeted management.

Conclusion: This case underscores the importance of considering PDB in RA patients with atypical bone symptoms. Early recognition and individualized therapy can optimize outcomes and prevent complications.

Keywords

Rheumatoid arthritis, Paget's disease of bone, Alkaline phosphatase, Jaw swelling.

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Rare Presentation of Acute Pulmonary Embolism as Pleural Effusion

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Abstract

Introduction: Pleural effusion - the pathological aggregation of fluid in the pleural space is a very common presentation to many different underlying diseases. Rarely pulmonary embolism can also present with pleural effusion and pleuritic chest pain.

Objective: To consider pulmonary embolism as an important possibility while investigating a case of not diagnosed exudative pleural effusion presenting with a chest pain.

Case Discussion: A 65-year-old male sales man from rural Kanchipuram a known case of T2DM and SHTN presented with chest pain and difficulty in breathing. Oxygen saturation was 97%. All vital signs were normal. Patient had no history of fever, radiating chest pain, vomiting, sweating, cough, giddiness. ECG done showed normal sinus rhythm. Trop T done was within normal limits. echo done revealed normal study. Radiographe of chest done revieled right sided pleural effusion. Diagnostic pleural tapping showed it to be a exudate. Patient was started on antibiotics. The Gram stain and cultures were sterile. Cytology was with no malignant cells. Patient had persistent chest pain in spite of treatment. D-dimer done and was elevated. CT PA done was suggestive of pulmonaryembolism. He was started on anticoagulants. Patient became symptomatically better.

Methods: Confirmation was done through history taking, physical examination, ECG, 2 D echo, routine blood investigations, chest Xray, thoracocentesis, d-dimer, CT- pulmonary angiography.

Results: d-dimer- elevated, CT PA done was suggestive of pulmonary embolism.

Conclusion: Pulmonary embolism should be considered important possibility of unilateral pleural effusion with persistent chest pain.

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A Rare Triad: Coexistence of Primary Hyperaldosteronism, Acquired Nephrogenic Diabetes Insipidus, and Thyrotoxicosis

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Abstract

Background: The coexistence of primary hyperaldosteronism, nephrogenic diabetes insipidus, and thyrotoxicosis is extremely rare. Each condition independently contributes to electrolyte disturbances, metabolic derangements, and multisystem involvement, making simultaneous presentation a diagnostic challenge.

Case Presentation: A 55-year-old patient presented with proximal muscle weakness, abdominal cramps, vomiting, diarrhea, and difficulty standing. Initial investigations revealed severe hypokalemia (1.86 mmol/L), hyperglycemia, and suppressed thyroid-stimulating hormone with elevated free thyroxine and anti-TSH receptor antibodies, suggestive of thyrotoxicosis. Despite aggressive potassium supplementation, hypokalemia persisted, accompanied by polyuria (6–9 L/day), consistent with nephrogenic diabetes insipidus.

Investigations: Arterial blood gas analysis showed persistent metabolic alkalosis. Urinary electrolyte studies confirmed renal potassium wasting. Plasma renin activity was suppressed with elevated plasma aldosterone concentration, establishing the diagnosis of primary hyperaldosteronism. CT angiography revealed a 5 cm unilateral adrenal cortical adenoma. Additional testing demonstrated elevated 24-hour urinary cortisol, although dexamethasone suppression testing was advised for further evaluation.

Management: The patient was stabilized with potassium replacement, beta-blockers, and antithyroid therapy. Given the large adrenal mass, surgical adrenalectomy was recommended to exclude malignancy and achieve definitive management.

Conclusion: This case illustrates a rare coexistence of endocrine disorders leading to refractory hypokalemia, polyuria, and thyrotoxicosis. Recognition of such overlap is crucial, as timely diagnosis and targeted management can prevent life-threatening complications.

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Interorgan Crosstalk in Metabolic Disease: Liver–Heart and Adipose–Renal Axes

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Abstract

Introduction: Metabolic diseases such as obesity, type 2 diabetes, and metabolic syndrome are now understood as systemic disorders rather than isolated organ conditions. A key reason is **interorgan crosstalk** – the dynamic communication between organs through hormones, inflammatory cytokines, neural signals, and other mediators. This crosstalk has profound implications for disease pathophysiology: dysfunction in one organ can propagate maladaptive signals that impair distant organs, creating a vicious cycle of multisystem disease. **Chronic low-grade inflammation** and **oxidative stress** serve as common denominators in this process, linking metabolic abnormalities to tissue damage across the body. Likewise, **neurohormonal signaling** (e.g. activation of the sympathetic nervous system and the renin–angiotensin–aldosterone system) helps orchestrate these inter-organ effects, further perpetuating metabolic and cardiovascular derangements. Recognizing the significance of interorgan communication has thus become essential for understanding why metabolic diseases often present as complex, multi-organ syndromes rather than singular ailments.

Within this broad context, two axes of organ interaction stand out as paradigmatic examples of crosstalk in metabolic disease: the **liver–heart axis** and the **adipose–renal axis**. The liver–heart axis highlights how metabolic liver diseases (such as non-alcoholic or metabolic-associated fatty liver disease) not only drive systemic inflammation and dyslipidemia, but also elevate the risk of cardiac remodeling, heart failure, and atherosclerosis. In turn, cardiac dysfunction (e.g. chronic heart failure or ischemic heart disease) can impair hepatic perfusion and promote liver injury, creating a bidirectional feedback loop. Similarly, the adipose–renal axis illustrates the interplay between **adipose tissue** and the kidneys: in obesity, expanded adipose depots release a myriad of adipokines and pro-inflammatory cytokines that induce insulin resistance, hypertension, and direct kidney damage. Concurrently, chronic kidney disease (CKD) leads to metabolic and endocrine changes (such as altered adipokine levels and uremic toxin accumulation) that further exacerbate adipose tissue dysfunction. These two axes are not isolated; they exemplify a broader principle that metabolic derangements and inflammatory signals in one organ system can significantly influence the health of another. By examining the liver–heart and adipose–renal relationships, we gain insight into the **bidirectional** nature of organ injury in metabolic disorders and the molecular messengers involved—ranging from **hepatokines and cardiokines** in the liver–heart dialogue to **adipokines** and renal hormones in the adipose–renal connection.

This document provides a comprehensive exploration of interorgan crosstalk in metabolic disease with an emphasis on the liver–heart and adipose–renal axes. We first detail the mechanistic underpinnings of these axes, focusing on how chronic inflammation, oxidative stress, and neurohormonal dysregulation act as interconnecting threads that drive pathology across organ systems. We then highlight key clinical and translational advances that have arisen from this integrated perspective. Notably, new therapeutic strategies originally targeting a single organ or pathway have demonstrated multi-organ benefits: for example, **SGLT2 inhibitors** and **GLP-1 receptor agonists** (novel anti-diabetic agents) have been shown to improve not only glycemic control but also cardiovascular and renal outcomes, underscoring the interconnected nature of metabolic organ health. We also discuss emerging interventions aimed at breaking pathological organ cross-talk loops, including **anti-inflammatory therapies** (targeting cytokines and immune pathways) and **epigenetic therapies** designed to reprogram maladaptive gene expression linked to metabolic and inflammatory memory. Finally, the review considers the broader implications of these insights for **personalized medicine** and **public health** –

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advocating for risk stratification and treatment approaches that account for an individual's multi-organ disease profile, and for preventive strategies that address root causes (like obesity and sedentary lifestyle) to curb the cascading interorgan impacts of metabolic disease.

Liver–Heart Axis: Bidirectional Disease Propagation: The liver–heart axis exemplifies bidirectional crosstalk in cardiometabolic disease . Metabolic dysfunction-associated steatotic liver disease (MASLD, formerly NAFLD) affects over 30% of adults and increases cardiovascular event risk by 2–3 fold . Hepatic fat accumulation and fibrosis release pro-atherogenic factors and inflammatory mediators that promote atherosclerosis, arrhythmias, and heart failure with preserved ejection fraction (HFpEF) . For example, MASLD accelerates HFpEF via myocardial fibrosis and diastolic dysfunction . Concurrently, advanced liver diseases (e.g. NASH cirrhosis) can lead to cirrhotic cardiomyopathy, characterized by blunted contractility and rhythm disturbances. The traffic is two-way: chronic heart failure (particularly HFrEF) induces hepatic congestion and ischemia, contributing to hepatocyte injury and fibrosis. Thus, dysfunction in one organ propagates pathology in the other through shared mechanisms like insulin resistance, systemic inflammation, and hemodynamic stress. Oxidative stress and endothelial dysfunction provoked by liver diseases (e.g. alcohol-associated liver disease) further exacerbate cardiac injury. This liver–heart interplay makes cardiovascular disease the leading cause of death in MASLD patients. Recognition of the cardio-hepatic axis has prompted closer monitoring of cardiac function in patients with fatty liver and vice versa, as well as investigations into hepatokine-modulating therapies to break this pathologic cross-talk.

Adipose–Renal Axis: Obesity and Kidney Dysfunction: Parallel to the liver–heart connection, an adipose–renal axis links obesity with chronic kidney disease (CKD). Obesity is an independent risk factor for ~20–25% of CKD cases worldwide, beyond its effects on diabetes and hypertension. Expanding adipose tissue acts as an endocrine organ: hypertrophic adipocytes secrete a myriad of adipokines and pro-inflammatory cytokines that drive insulin resistance and renal injury. This chronic inflammatory milieu damages the glomeruli and vasculature, evidenced by elevated TNF-α and IL-6 levels correlating with CKD severity even in nondiabetic patients. Excess adiposity also causes lipotoxicity – impaired adipose storage capacity leads to ectopic fat deposition in the kidneys, promoting glomerular hypertrophy and fibrosis. Moreover, adipose-derived angiotensin II and RAAS overactivity in obesity contribute to intraglomerular hypertension and proteinuria. Notably, this crosstalk is bidirectional: kidney disease feeds back by exacerbating adipose tissue dysfunction and dysmetabolism. Real-world evidence underscores these connections – weight loss through lifestyle change, GLP-1 agonists or bariatric surgery reduces systemic inflammation, normalizes cytokine levels, and relieves renal hyperfiltration. In one series, bariatric surgery in severe obesity reduced proteinuria and glomerular hyperfiltration, translating to a 79% lower 5-year mortality in CKD patients. These findings highlight the adipose–renal axis as a major therapeutic target amid the dual epidemics of obesity and CKD.

Clinical Evidence and Therapeutic Advances: Growing clinical evidence shows that targeting metabolic pathways can yield cardiac and renal benefits, affirming the importance of interorgan crosstalk. Notably, SGLT2 inhibitor trials (originally for glycemic control in type 2 diabetes) demonstrated marked cardio-renal protection. In pooled CKD patient analyses, SGLT2 inhibitors reduced combined cardiovascular death or heart failure hospitalization by ~28%, cut heart failure events by ~35%, and lowered all-cause mortality ~14%. These benefits manifest even in nondiabetic heart failure or CKD, suggesting pleiotropic effects (improved myocardial energetics, enhanced diuresis, reduced glomerular hyperfiltration, and anti-inflammatory actions). Likewise, GLP-1 receptor agonists have shown multi-organ efficacy. Large-scale trials (e.g. LEADER, SUSTAIN) and meta-analyses report GLP-1 RAs significantly reduce major adverse cardiovascular events (~14% relative risk reduction) and overall mortality. They also confer renal benefits, slowing decline in eGFR and progression to end-stage kidney disease. For instance, patients on GLP-1 RAs experienced fewer new macroalbuminuria and improved renal outcomes alongside cardiovascular risk reduction. Beyond glucose control, these agents modulate weight, blood pressure, and inflammation – addressing root causes across organ systems. Such trials underscore a paradigm shift: cardiometabolic therapies (SGLT2 inhibitors, GLP-1 RAs) are now employed not only to lower blood sugar, but to simultaneously protect the heart, kidneys, and liver. Anti-inflammatory therapies are also being explored; for example, IL-1β antagonism (canakinumab) reduced recurrent myocardial infarction in the CANTOS trial, highlighting inflammation as a treatable driver of cardiometabolic complications. These advances illustrate how elucidating interorgan mechanisms can translate into multisystem therapeutic strategies that improve patient outcomes.

Translational Targets and Future Directions: Deepening our understanding of organ crosstalk opens new avenues for targeted interventions. Modulating adipokines and hepatokines is one promising strategy: enhancing protective signals (e.g. adiponectin or fibroblast growth factors) or inhibiting deleterious ones (e.g. leptin, resistin, or serum amyloid A) could ameliorate systemic insulin resistance and inflammation. For instance, therapies aimed at raising adiponectin or blocking IL-6 signaling are under investigation to mitigate obesity-related cardio-renal damage. Bile acid signaling has emerged as another therapeutic target at the intersection of metabolism and inflammation. Bile acids function as endocrine messengers via the FXR and TGR5 receptors, influencing glucose,

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lipid, and energy homeostasis as well as immune tone. FXR agonists (such as obeticholic acid) showed promise in improving NASH (a liver disease) and might confer cardiovascular benefits by reducing hepatic fat and inflammatory cytokines – although the first NASH trial of obeticholic acid faced safety setbacks. Future drugs refining this bile acid–FGF19 axis or safely engaging TGR5 could yield metabolic and cardiac improvements. Meanwhile, epigenetic regulation is recognized as a key link between environmental factors and cardiometabolic disease risk. Nutrient excess and inflammation can induce epigenetic changes (DNA methylation, histone modifications) in liver, adipose, and immune cells, persistently altering gene expression. Identifying these epigenomic signatures of metabolic stress raises the prospect of novel biomarkers and "epi-drugs" to reprogram maladaptive gene expression. Early research suggests epigenetic therapies (e.g. HDAC or BET protein inhibitors) might attenuate pathological cardiac remodeling and insulin resistance. Moving forward, integrative multi-omics and systems biology approaches will be pivotal to map these complex inter-tissue networks and to discover druggable nodes. By targeting upstream mediators of multi-organ dysfunction – whether an inflammatory cascade, a hormone receptor, or an epigenetic enzyme – we can develop disease-modifying therapies that concurrently benefit the liver, heart, adipose, and kidneys.

Implications for Personalized Medicine and Public Health: Elucidating interorgan crosstalk has practical implications for risk stratification and personalized care in cardiometabolic disease. Patients with combined organ involvement (e.g. NAFLD with myocardial hypertrophy, or obesity with albuminuria) may represent high-risk endotypes who warrant aggressive intervention. For example, a simple fibrosis index for NAFLD was shown to stratify cardiovascular risk – patients with high NAFLD Fibrosis Score had a 3.46-fold higher incidence of cardiac events. Such biomarkers enable clinicians to identify which patients with fatty liver are most prone to heart failure or which obese individuals are progressing toward CKD, allowing tailored therapy (for instance, prioritizing GLP-1 RA for a patient with prevalent liver steatosis, versus an SGLT2 inhibitor for one with diabetic CKD). This knowledge also refines clinical trial design by helping enroll patients who most stand to benefit from organ-targeted interventions. On a broader scale, interorgan axes highlight that prevention strategies must be holistic. Lifestyle interventions – nutritious diet, physical activity, weight management – have multiplicative benefits across organs by reducing the inflammatory and metabolic load. Indeed, weight loss has been shown to improve liver enzymes, left ventricular diastolic function, and renal filtration simultaneously. The rising global burden of cardiometabolic disease (over 500 million adults with diabetes and 25% of the population with fatty liver) poses a huge challenge, straining healthcare systems with costs in the trillions. By leveraging insights into organ crosstalk, public health initiatives can better target upstream risk factors (like obesity) and implement integrated care models – for example, combined cardio-hepato-metabolic clinics – to prevent progression to multi-organ failure. Finally, recognizing socioeconomic determinants (such as diet quality, access to care, and stress) is crucial, as these factors influence the metabolic-inflammatory milieu that drives organ damage. In summary, unraveling liver–heart and adipose–renal axes is not only advancing our scientific understanding, but also paving the way for precision medicine, wherein therapy is customized to an individual's metabolic profile and crosstalk pathways, and for population-level approaches that address the roots of the intertwined cardiometabolic epidemic.

Conclusion: In conclusion, our examination of the liver–heart and adipose–renal axes confirms that metabolic diseases are fundamentally **multi-organ** in nature. The key findings underscore that pathologies in the liver, heart, adipose tissue, and kidney are tightly interwoven through complex crosstalk mechanisms. **Chronic inflammation** emerges as a unifying culprit: pro-inflammatory mediators originating from one organ (for instance, an inflamed fatty liver or hypertrophied visceral fat depot) can travel through the circulation to inflict damage on distant tissues, thereby compounding metabolic disease progression. Similarly, **oxidative stress** and associated metabolic byproducts act systemically, creating an environment in which insulin resistance, endothelial dysfunction, and tissue injury occur in parallel across organs. We also highlighted the role of **neurohormonal signaling** – for example, overactivation of sympathetic nerves and the renin–angiotensin system – in reinforcing the connection between organs (such as by elevating blood pressure and inducing hypertrophic responses that affect both heart and kidneys). Importantly, the relationships in these axes are **bidirectional**. Just as adipose-derived factors can worsen renal function, declining kidney function feeds back to worsen adipose tissue metabolism; and just as liver disease elevates cardiovascular risk, cardiac dysfunction can exacerbate liver injury. This bidirectionality creates self-perpetuating cycles of organ impairment, explaining why patients with metabolic syndrome often develop co-existing conditions like fatty liver, heart failure, nephropathy, and beyond.

Reiterating the clinical and translational relevance, appreciating interorgan crosstalk in metabolic disease opens the door to more effective **integrated therapies.** One clear example is the success of metabolic medications that confer multi-system benefits: **SGLT2 inhibitors** (Sodium–Glucose Cotransporter-2 inhibitors) and **GLP-1 receptor agonists** were initially developed for glycemic control in diabetes, yet they have delivered significant cardiovascular and renal protection in clinical trialssciencedirect.comsciencedirect.com. These agents reduce heart failure hospitalizations and slow CKD progression, reflecting how targeting a single metabolic pathway can favorably impact multiple organs. Likewise, interventions aimed at dampening chronic inflammation have shown promise in breaking

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the cycle of organ damage – for instance, trials of anti-cytokine therapies (e.g. IL-1β or IL-6 inhibitors) have demonstrated reductions in cardiovascular event rates in high-risk metabolic patients by addressing the inflammatory driver of atherosclerosis. Emerging **epigenetic therapies** also represent a forward-looking strategy: by modifying DNA methylation or histone acetylation patterns, it may be possible to **reprogram dysregulated gene expression** in metabolic disease, mitigating the "memory" of past metabolic stress and inflammation that continues to fuel organ dysfunction. The convergence of these therapeutic advances underscores a crucial point: treating metabolic disease effectively requires moving beyond an organ-siloed approach. Instead, **multifaceted treatment** regimens that simultaneously target metabolic, inflammatory, and neurohormonal pathways can synergistically restore balance across organ systems, offering better outcomes than addressing each condition in isolation.

Finally, our discussion points toward important future directions and opportunities for both research and patient care. From a research standpoint, further elucidating the molecular messengers of interorgan crosstalk – whether they be novel hepatokines, adipokines, myokines, gut-derived metabolites, or neural circuits – will be essential. Advanced tools like multi-omics analyses, systems biology modeling, and **organ-on-chip** platforms can help map these inter-organ networks with greater precision, potentially revealing new therapeutic targets and biomarkers for risk stratification. In clinical practice, embracing a **personalized medicine** approach that accounts for interorgan crosstalk will be key. This means developing predictive models and biomarkers that identify which patients are on a trajectory toward multi-organ involvement (for example, detecting early signals of liver–heart or adipose–renal axis dysfunction), and tailoring interventions accordingly – such as prioritizing weight loss, anti-inflammatory therapy, or specific drug classes based on an individual's profile. On a broader scale, the recognition of interorgan crosstalk amplifies the urgency of public health measures against the root causes of metabolic disease. Combating obesity, physical inactivity, and poor diet is not only about preventing diabetes or heart disease in isolation; it is about preventing the downstream domino effect of **cardiometabolic–renal** complications that collectively drive morbidity and mortality. By intervening early and holistically, we may reduce the incidence of scenarios where, for example, a young adult with obesity progresses to develop diabetes, then fatty liver, heart failure, and kidney disease in succession. In summary, **integrating the interorgan perspective** into both research and healthcare will pave the way for more effective prevention strategies and therapeutic regimens. It holds the promise of transforming our approach to metabolic diseases – from reactive and organ-specific management to proactive, network-level intervention – ultimately improving patient outcomes and quality of life in the face of these complex disorders.

Keywords

Interorgan crosstalk, metabolic disease, liver–heart axis, adipose–renal axis, chronic inflammation, oxidative stress, neurohormonal signaling, SGLT2 inhibitors, GLP-1 receptor agonists, personalized medicine.

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Unmasking Diabetic Cardiomyopathy: A Hidden Threat in Diabetes Mellitus

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Abstract

Diabetic cardiomyopathy (DCM) is defined as the presence of myocardial dysfunction in patients with diabetes mellitus, independent of hypertension, atherosclerosis, or valvular disease. The studies have highlighted the strong association between elevated glycated hemoglobin (hba1c) levels and the development of heart failure, underlining the significant cardiovascular risk posed by poorly controlled diabetes. With the incidence of heart failure in diabetic populations expected to rise, timely diagnosis and effective management of DCM are critical. Current therapeutic strategies emphasize **optimal glycemic control, lipid-lowering therapy, and standard heart failure pharmacotherapy**, all of which can reduce the risk of cardiometabolic disease and improve long-term outcomes. In addition, **lifestyle modifications** such as adherence to a low-carbohydrate diet, regular physical activity, and weight management play a central role in prevention and treatment. Looking ahead, **emerging therapies** including stem **cell–based interventions** and **microRNA-targeted approaches** hold promise, though further research is needed to establish their safety and efficacy.

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QTc Prolongation in Diabetic Patients and its Correlation with HbA1c

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Abstract

Background: Diabetes mellitus is a chronic metabolic disorder that significantly increases the risk of cardiovascular complications. Prolongation of the corrected QT interval (QTc) on electrocardiography is an early marker of subclinical cardiovascular dysfunction. Poor glycemic control, reflected by higher HbA1c levels, may be associated with QTc prolongation and predispose patients to arrhythmias and sudden cardiac death.

Objectives: To evaluate the relationship between glycemic control, as measured by HbA1c, and QTc prolongation in patients with type 2 diabetes mellitus.

Methods: A cross-sectional observational study was conducted among adult patients with type 2 diabetes mellitus attending [Hospital/Institution Name]. Clinical history and demographic details were collected. HbA1c was measured to assess glycemic control, and a standard 12-lead ECG was recorded for QTc interval analysis using Bazett's formula. Patients were categorized into good and poor glycemic control groups (HbA1c ≤7% vs >7%). Statistical analysis was performed to assess correlation between HbA1c levels and QTc prolongation.

Results: A total of 150 patients were included. The mean QTc interval was significantly higher in patients with poor glycemic control compared to those with good control ($p < 0.05$). A positive correlation was observed between HbA1c levels and QTc duration, indicating that higher HbA1c is associated with greater QTc prolongation.

Conclusion: QTc prolongation is more prevalent in diabetic patients with poor glycemic control. HbA1c shows a positive correlation with QTc interval, suggesting that strict glycemic control may help reduce the risk of cardiac arrhythmias and sudden death in diabetic patients. Early ECG monitoring can serve as a simple, non-invasive tool to identify high-risk individuals.

Keywords

Diabetes Mellitus, HbA1c, QTc Prolongation, Cardiovascular Risk, ECG.

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The Silent Saboteur: Insulin Resistance in Cardiovascular Disease

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Abstract

Background: Insulin resistance (IR) is a fundamental metabolic disturbance that precedes type 2 diabetes and plays a central role in the pathogenesis of cardiovascular disease (CVD). Despite being clinically silent for years, IR drives endothelial dysfunction, atherogenesis, and pro-inflammatory states, thereby accelerating cardiovascular morbidity and mortality.

Aim: To explore the mechanistic links between insulin resistance and cardiovascular disease, highlight its clinical implications, and discuss emerging therapeutic strategies targeting IR for cardiometabolic protection.

Methods: A narrative review of contemporary evidence was conducted using PubMed, Scopus, and major cardiology and endocrinology journals. Literature focusing on insulin resistance, endothelial dysfunction, atherosclerosis, and cardiometabolic outcomes was analyzed.

Results: Insulin resistance impairs endothelial nitric oxide signaling, promotes vascular stiffness, and augments pro-thrombotic and pro-inflammatory cascades. These effects synergize with dyslipidemia, hypertension, and hyperglycemia to accelerate atherosclerotic cardiovascular disease. Novel findings suggest that IR not only predicts incident CVD but also worsens prognosis after acute coronary syndromes. Interventions such as weight reduction, exercise, metformin, SGLT2 inhibitors, GLP-1 receptor agonists, and thiazolidinediones demonstrate variable efficacy in improving insulin sensitivity and reducing cardiovascular risk.

Conclusion: Insulin resistance is a “silent saboteur” that underlies cardiovascular pathology well before overt diabetes develops. Early identification and targeted intervention against IR may represent a crucial strategy in reversing the tide of the cardiometabolic epidemic. Future research should focus on precision-based therapies integrating metabolic and cardiovascular care.

Keywords

Insulin resistance, Cardiovascular disease, Endothelial dysfunction, Atherosclerosis, Metabolic syndrome, Cardiometabolic risk.

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Twin Epidemics: Obesity and Cardiovascular Disease in Focus

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Abstract

Background: Obesity has emerged as a global health crisis, paralleling the rising burden of cardiovascular disease (CVD). These "twin epidemics" are intricately linked through shared mechanisms including insulin resistance, dyslipidemia, systemic inflammation, and endothelial dysfunction. Together, they amplify cardiometabolic risk, reduce quality of life, and increase premature mortality.

Aim: To evaluate the interrelationship between obesity and cardiovascular disease, explore the pathophysiological mechanisms that unite them, and highlight current and emerging strategies to mitigate their combined impact.

Methods: A comprehensive review of recent literature was undertaken from PubMed, Scopus, and leading cardiovascular and metabolic journals. Evidence focusing on obesity-induced cardiovascular risk, preventive strategies, and therapeutic interventions was synthesized.

Results: Obesity contributes to hypertension, atherogenic dyslipidemia, insulin resistance, and pro-inflammatory states that collectively accelerate CVD development. Central obesity is particularly associated with coronary artery disease, heart failure with preserved ejection fraction, and atrial fibrillation. Clinical trials demonstrate that lifestyle interventions, bariatric surgery, and pharmacotherapies (GLP-1 receptor agonists, SGLT2 inhibitors, dual agonists) not only promote weight reduction but also significantly reduce cardiovascular events. Integrated management targeting both obesity and cardiovascular disease shows promising outcomes in reducing morbidity and mortality.

Conclusion: Obesity and cardiovascular disease form a dangerous syndemic, fueling each other in a vicious cycle. Addressing these twin epidemics requires a comprehensive, multidisciplinary approach encompassing lifestyle modification, pharmacotherapy, surgical interventions, and public health policies. Precision medicine and early preventive strategies may hold the key to breaking this cardiometabolic chain.

Keywords

Obesity, Cardiovascular disease, Cardiometabolic syndrome, Insulin resistance, Atherosclerosis, Metabolic health.

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Liddle Syndrome Presenting as Early-Onset Resistant Hypertension: A Case Report

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Abstract

Background: Liddle syndrome is a rare autosomal dominant form of monogenic hypertension characterized by early-onset, severe hypertension with hypokalemia, metabolic alkalosis, and low renin and aldosterone levels. It results from mutations in the epithelial sodium channel (ENaC), leading to increased sodium reabsorption.

Aim/Objectives: To present a case of Liddle syndrome in a young adult with resistant hypertension and highlight the importance of early recognition and targeted therapy.

Materials & Methods: A 19-year-old male presented with persistent headaches and two episodes of transient visual blurring. BP at admission was 178/112 mmHg. He had been on three antihypertensive agents for 6 months without adequate control. Laboratory evaluation revealed hypokalemia (K^+ 2.9 mEq/L), metabolic alkalosis (HCO_3^- 30 mEq/L), suppressed plasma renin activity, and low serum aldosterone levels. Secondary hypertension workup ruled out pheochromocytoma and renal artery stenosis. A genetic panel confirmed a pathogenic mutation in the SCNN1B gene, consistent with Liddle syndrome.

Results: The patient was started on amiloride 5 mg daily, resulting in rapid BP normalization and correction of potassium levels. Other antihypertensives were tapered off. At 3-month follow-up, the patient remained normotensive on amiloride monotherapy, with normal serum electrolytes.

Conclusion: Liddle syndrome should be considered in young patients with resistant hypertension, hypokalemia, and suppressed renin-aldosterone levels. Early diagnosis is crucial, as conventional antihypertensive therapy is often ineffective. Potassium-sparing ENaC blockers such as amiloride offer dramatic therapeutic benefit and prevent long-term cardiovascular and renal complications.

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A Case of Elderly Female with Wellens Syndrome: An ECG Sign of Impending Infarction

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Abstract

Wellens syndrome is a critical electrocardiographic pattern indicative of significant proximal left anterior descending (LAD) artery stenosis, representing a pre-infarction state.

Case Scenario: 76-year-old female known Hypertensive, presented with complaints of left-sided retrosternal chest pain. The pain began the previous night, was intermittent and non-radiating, and aggravated on exertion for the past two months. On examination, the patient was conscious, oriented, although pallor was present. Her vitals were: BP-140/79 mmHg; PR- 73 bpm. Systemic examination revealed no significant findings.

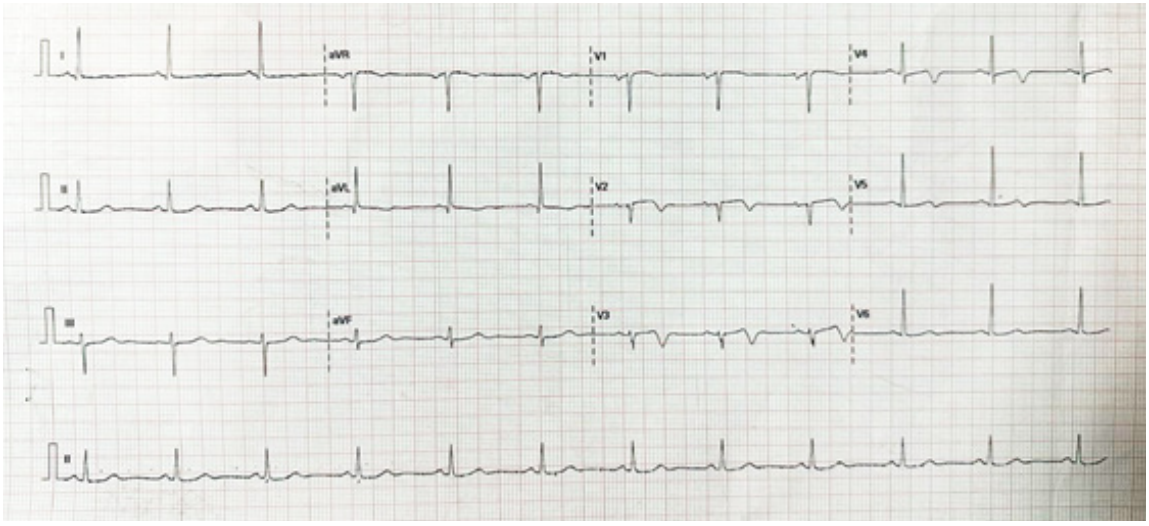

Figure 1: ECG findings

Troponin I levels were elevated, prompting immediate medical management with loading dose. 2D ECHO revealed apical hypokinesia with a left ventricular ejection fraction of 51%. Cardiology consultation was obtained, and CAG was performed. Reports revealed 95% stenosis in the LAD, with mild disease noted in the left circumflex (LCX) and right coronary arteries (RCA). PCI was done to LAD

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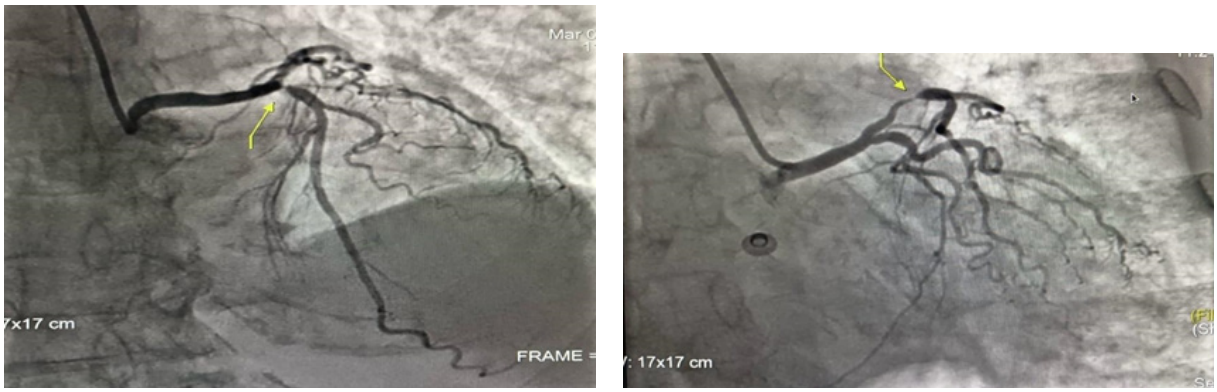

Figure 2: Post-PTCA findings

Our patient had elevated troponin I levels and 95% stenosis of the LAD artery, confirmed by coronary angiography. The Wellens ECG pattern is strongly associated with critical LAD. Coronary angiography is the definitive diagnostic tool for identifying Wellens syndrome.

In this case immediate step for PTCA was taken as soon as the patient received her angiogram reports in our case and was stabilised with medications.

Conclusion: Wellens syndrome is a vital ECG marker of significant proximal LAD stenosis and a predictor of anterior myocardial infarction. Recognition of its characteristic T-wave abnormalities during asymptomatic intervals is crucial. Coronary angiography is essential for confirmation, and prompt PCI significantly improves clinical outcomes.

Keywords

Wellens syndrome left anterior descending artery syndrome, electrocardiogram findings, myocardial infarction.

A Rare Case of Von Hippel Lindau Syndrome Presenting as Hypertensive Urgency

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Abstract

Von Hippel-Lindau (VHL) syndrome is a rare, autosomal dominant hereditary disorder characterized by the development of multiple benign and malignant tumours across various organ systems, including the central nervous system, retina, adrenal glands, kidneys, and pancreas. Early diagnosis is often challenging due to its variable presentation and age-dependent penetrance. We present a case of a 21-year-old male who presented with hypertensive urgency, along with a history of childhood retinal surgery and a positive family history suggestive of a hereditary syndrome. Laboratory investigations revealed elevated plasma and urinary metanephrines, and subsequent imaging using contrast-enhanced CT and DOTANOC PET-CT scans identified somatostatin receptor-expressing lesions in the right adrenal gland, pancreatic head, and prevertebral region. The patient underwent successful right adrenalectomy following preoperative alpha-blockade, with significant clinical improvement. Based on the clinical, biochemical, radiological findings, and family history, a diagnosis of VHL syndrome was established. This case highlights the importance of considering VHL syndrome in young patients presenting with secondary hypertension and syndromic features. Timely recognition, genetic evaluation, and surveillance are crucial in reducing morbidity associated with this multisystem disorder.

Keywords

Von Hippel-Lindau syndrome, Pheochromocytoma, Secondary hypertension, Pancreatic neuroendocrine tumour, DOTANOC PET-CT, Adrenalectomy, Hereditary cancer syndrome.

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Premature Multivessel Coronary Artery Disease in South Asians: From Polygenic Risk to Metabolic Syndrome

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Abstract

Background: Triple-vessel coronary artery disease (TVD) at age ≤45 years represents an aggressive atherosclerotic phenotype characterised by diffuse plaque burden and prolonged lifetime risk exposure. South Asian populations exhibit earlier onset and a distinct cardiometabolic risk architecture, necessitating tailored prevention and management paradigms.

Objective: To synthesize contemporary evidence on determinants of early-onset TVD—genetic, metabolic, and behavioural—with emphasis on South Asia, and to translate these data into pragmatic screening and treatment recommendations.

Methods: Narrative review of observational cohorts, angiographic registries, and guideline statements addressing premature coronary artery disease (CAD) and multivessel involvement. Domains appraised included heritable dyslipidaemias (familial hypercholesterolaemia [FH], lipoprotein(a) [Lp(a)]), atherogenic lipoprotein profiles (ApoB particle burden, triglyceride-rich lipoproteins), insulin resistance/metabolic syndrome, tobacco exposure, diet/physical activity, and plaque morphology in the young.

Results: Early-onset TVD clusters around three mechanistic pillars. (1) Inherited susceptibility: FH (pathogenic variants in LDLR, APOB, PCSK9) and elevated Lp(a) (small-isoform, high-concentration apolipoprotein(a) with pro-atherothrombotic properties) accelerate pan-coronary plaque accumulation independent of LDL-C. Conventional scores underrecognize this risk; once-in-lifetime Lp(a) testing and FH cascade screening are high-yield. (2) Atherometabolic milieu: High ApoB (atherogenic particle number), hypertriglyceridaemia with low HDL-C, and visceral adiposity/insulin resistance—features prevalent in South Asians—even at lower BMI, promote diffuse, inflamed plaque biology. Diabetes and metabolic syndrome are strong correlates of multivessel (vs single-vessel) disease in the young. (3) Behavioural drivers: Tobacco exposure remains a potent trigger; in South Asia, refined-carbohydrate dietary patterns, central obesity, sedentariness, and psychosocial stress frequently rival smoking in attributable risk. Intravascular and autopsy studies in young patients demonstrate lipid-rich, thin-cap fibroatheromas with high rupture propensity. Although short-term mortality is lower than in older adults, multivessel disease confers substantial lifetime recurrence risk, particularly with persistent smoking, elevated ApoB, or uncontrolled glycaemia.

Conclusions: Early-onset TVD is largely predictable and modifiable. Priority actions include early identification of inherited risk (FH, Lp(a)), routine assessment of ApoB-centric dyslipidaemia and insulin resistance, selective coronary calcium scoring when risk is underestimated, and early, intensive therapy: high-intensity statins with timely non-statin add-ons (ezetimibe/PCSK9), rigorous tobacco cessation, dietary quality improvement, weight reduction, structured physical activity, and cardiac rehabilitation. Region-specific implementation—especially in South Asia—should pair clinical pathways with community and mHealth strategies to compress lifelong risk.

Keywords

Triple-vessel coronary artery disease, Premature coronary artery disease, Young adult, South Asia, Familial hypercholesterolemia, Lipoprotein(a), Apolipoprotein B, Metabolic syndrome.

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Rheumatologic Complications of Diabetes Mellitus: Prevalence, Comorbidities, and Inflammatory Profile

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Abstract

Introduction/Background: Diabetes mellitus (DM) is a chronic metabolic disorder characterized by persistent hyperglycemia due to impaired insulin secretion or action. While cardiovascular, renal, and neurological complications are well recognized, musculoskeletal manifestations remain under-reported despite their significant contribution to morbidity and reduced quality of life. Chronic hyperglycemia, advanced glycation end-products, and systemic inflammation lead to connective tissue and joint abnormalities. Coexisting conditions such as hypertension, dyslipidemia, and peripheral neuropathy further worsen outcomes.

Objectives: To evaluate the spectrum of musculoskeletal manifestations in diabetic patients, compare them with non-diabetic individuals, and assess associations with comorbidities, glycemic control, and inflammatory markers.

Methods: A cross-sectional study was conducted at a tertiary care hospital on 50 patients presenting with musculoskeletal symptoms. Demographic data, duration of diabetes, HbA1c, type of musculoskeletal involvement, and comorbidities were recorded. Laboratory parameters included fasting blood sugar (FBS), postprandial blood sugar (PPBS), lipid profile, erythrocyte sedimentation rate (ESR), and C-reactive protein (CRP). Statistical analysis was performed using SPSS v25, with $p < 0.05$ considered significant.

Results: The study included 60% males and 40% females, with 50% aged 40–60 years. Large joint involvement was most common (40%), followed by osteoarthritis (30%) and polyarthralgia (20%). Hypertension (40%) and peripheral neuropathy (35%) were the leading comorbidities. Poor glycemic control (mean HbA1c 8.4%) was significantly associated with musculoskeletal involvement ($p < 0.01$). Severe symptoms correlated with elevated inflammatory markers (ESR 40 mm/hr, CRP 16 mg/L, $p < 0.05$). Peripheral neuropathy strongly associated with joint deformities ($p < 0.001$).

Conclusion: Musculoskeletal manifestations are common in DM and strongly linked to poor glycemic control, comorbidities, and inflammation. Early detection and integrated care are vital to improving outcomes.

Keywords

Diabetes mellitus, musculoskeletal conditions, comorbidities, neuropathy, inflammation.

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The Therapeutic Rhythm: Exploring Carnatic Music in Modulation of Cardiac Autonomic Imbalance and Arrhythmia Risk

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Abstract

Introduction: Cardiac autonomic imbalance, characterized by sympathetic overactivity and reduced parasympathetic tone, is a risk factor for arrhythmias. Non-pharmacological interventions targeting autonomic modulation are increasingly explored in preventive cardiology. Carnatic music, has demonstrated potential in enhancing parasympathetic activity and reducing sympathetic dominance.

Aim & Objectives: To evaluate the role of Carnatic music in modulating cardiac autonomic function and its potential to reduce arrhythmia risk in high-risk populations.

Methods: A narrative review of literature from standard cardiology sources was conducted, focusing on the effects of music therapy on heart rate variability, autonomic nervous system activity, and arrhythmogenesis. Mechanisms by which Carnatic music ragas (e.g., Kalyani, Hamsadhwani) and rhythmic cycles influence vagal tone were analyzed.

Results: Evidence indicates that Carnatic music enhances HRV, lowers heart rate, and reduces stress-mediated sympathetic surges. These effects suggest improved parasympathetic dominance, which correlates with lower arrhythmia risk, supporting its preventive role in cardiovascular health.

Summary: Carnatic music offers a culturally relevant, non-invasive, and low-cost adjunct in restoring autonomic balance and mitigating arrhythmia risk.

Conclusion: Clinical and research evidence supports the hypothesis that Carnatic music acts as a "therapeutic rhythm," significantly improving parasympathetic activity, stabilizing cardiac electrophysiology, and reducing arrhythmia risk. Integration into preventive cardiology protocols is justified, with further controlled studies recommended to establish standardized interventions.

Keywords

Carnatic music, heart rate variability, autonomic imbalance, arrhythmia, preventive cardiology.

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Unmasking Constrictive Pericarditis in an Elderly Patient with New-Onset Atrial Fibrillation and HFpEF

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Abstract

Introduction: Constrictive pericarditis is a rare but potentially reversible cause of right heart failure. It is often under-recognized in elderly patients with heart failure with preserved ejection fraction (HFpEF), where symptoms overlap with other cardiopulmonary conditions. Pericardial calcification on imaging provides a vital diagnostic clue.

Aim & Objectives: To report a case of decompensated HFpEF precipitated by new-onset atrial fibrillation in an elderly male, highlighting the diagnostic importance of multimodality imaging in unmasking constrictive pericarditis.

Methods: We evaluated a 75-year-old male with progressive abdominal distension, weight loss, anorexia, and worsening dyspnea. Clinical, biochemical, echocardiographic, and radiological findings were analyzed.

Results: The patient was diagnosed with constrictive pericarditis, confirmed by pericardial calcification on imaging and echocardiographic evidence of restrictive physiology with preserved ejection fraction. He was treated with rate control and aggressive diuretic therapy, achieving a substantial net negative fluid balance and rapid clinical improvement. During short-term follow-up, he remained stable without recurrence of heart failure symptoms, while repeat imaging consistently demonstrated pericardial calcification.

Summary: This case illustrates constrictive pericarditis as a hidden cause of HFpEF with disproportionate right-sided failure. The coexistence of atrial fibrillation aggravated hemodynamic compromise by abolishing atrial contribution to ventricular filling.

Conclusion: Constrictive pericarditis should be suspected in elderly patients with unexplained HFpEF, biatrial enlargement, and pericardial calcification. Early recognition enables consideration of definitive therapy such as pericardiectomy in selected patients.

Keywords

Constrictive pericarditis, Heart failure with preserved ejection fraction, Atrial fibrillation, Pericardial calcification, Right heart failure.

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Utility of Ankle-Brachial Index in Monitoring Renal and Cardiovascular Risk in Non-Dialyzed CKD Patients

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Abstract

Introduction: Chronic kidney disease (CKD) is a growing global health burden, with cardiovascular disease (CVD) as its leading cause of morbidity and mortality. Peripheral arterial disease (PAD), a frequent complication in CKD, often goes unrecognized due to atypical presentations. The ankle-brachial index (ABI) is a simple, non-invasive marker of atherosclerosis and may also predict renal function decline.

Need for the Study & Hypothesis: Traditional risk assessment often underestimates PAD and cardiovascular risk in CKD. We hypothesized that lower ABI values are associated with a progressive decline in estimated glomerular filtration rate (eGFR) and increased cardiovascular risk in non-dialyzed CKD patients.

Aims and Objectives: To study the correlation between ABI and eGFR over time, determine PAD prevalence using ABI, and evaluate ABI as a non-invasive monitoring tool for renal and cardiovascular risk in CKD.

Materials and Methods: A prospective observational study was conducted on 100 non-dialyzed CKD patients at Saveetha Medical College. eGFR was estimated using the MDRD equation and ABI calculated as the ratio of ankle to brachial systolic pressure at baseline, 3 months, and 6 months. Data were analyzed with ANOVA, post-hoc Tukey's test, and Pearson correlation.

Results: Mean age was 54.2 years; 69% were male. eGFR declined from 35.6 ± 11.6 to 34.2 ± 12.2, and ABI from 0.883 ± 0.032 to 0.848 ± 0.055 (both $p < 0.001$). ABI and eGFR showed positive correlation at baseline ($r = 0.059$), 3 months ($r = 0.259$), and 6 months ($r = 0.245$).

Conclusion: ABI declines in parallel with renal function and may serve as an inexpensive, non-invasive tool for screening PAD and monitoring renal and cardiovascular risk in CKD.

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Ventricular Tachycardia as the Initial Manifestation of Tuberculosis-Associated Myocardial Inflammation: A Rare Case Report

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Abstract

A 40-year-old female presented with palpitations. Electrocardiogram done elsewhere revealed sustained monomorphic VT, which reverted to sinus rhythm after intravenous amiodarone. She subsequently underwent an electrophysiology study, which demonstrated three distinct VT morphologies suggestive of inflammatory VT. Cardiac magnetic resonance imaging revealed increased T2 times with delayed gadolinium enhancement in the interventricular septum and lateral wall, indicating myocardial edema and inflammation. ^18F-FDG PET-CT demonstrated patchy FDG uptake in the left ventricular myocardium and right ventricular free wall, along with multiple FDG-avid lymph nodes in the right supraclavicular, cervical, and paratracheal regions. CT-guided biopsy of the paratracheal lymph node revealed necrotising granulomatous lymphadenitis consistent with tuberculosis.

Given the high risk of recurrent malignant arrhythmias during initiation of anti-tubercular therapy (ATT), an automated implantable cardioverter-defibrillator (AICD) was implanted. ATT was initiated under steroid cover to mitigate inflammatory flare and arrhythmic risk. The patient completed a full course of ATT with concurrent corticosteroid therapy. On follow-up, she remained asymptomatic, with no recurrence of VT.

Conclusion: This case highlights tuberculosis as a rare but important cause of inflammatory VT. Multimodality imaging (CMR and FDG-PET CT) combined with histopathological confirmation is critical for diagnosis. AICD implantation prior to ATT initiation provides protection against malignant arrhythmias. Early recognition and combined therapy with ATT and steroids can result in excellent arrhythmic control and favourable outcomes.

Keywords

Ventricular tachycardia, Tuberculosis, Inflammatory cardiomyopathy, FDG-PET CT, Cardiac MRI, AICD.

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Ruptured Sinus of Valsalva Presenting Primarily with Heart Failure: A Diagnostic Challenge

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Abstract

Introduction: Ruptured sinus of Valsalva (RSOV) is a rare congenital cardiac anomaly, accounting for approximately 1% of all congenital heart defects. It most commonly arises from the right coronary sinus and typically ruptures into the right-sided cardiac chambers. RSOV is more prevalent in Asians and is usually seen in young males, though female presentations can occur. The clinical manifestations range from asymptomatic murmurs to acute heart failure depending on the site and extent of rupture.

Materials and Methods: We present a case of a 34-year-old female who presented with progressive shortness of breath, fatigue, pedal edema, abdominal heaviness, and loss of appetite over five months, with acute worsening in the preceding week. Clinical evaluation revealed high-volume collapsing pulse, elevated jugular venous pressure, wide pulse pressure, and a continuous murmur at the left sternal border. Investigations included electrocardiography, chest radiography, and transthoracic echocardiography (2D ECHO), which confirmed rupture of the right coronary sinus of Valsalva into the right ventricle.

Results: ECG showed features suggestive of volume overload, while chest X-ray demonstrated cardiomegaly. Echocardiography revealed a dilated aortic root with a color Doppler jet from the right coronary cusp into the right ventricle. These findings established the diagnosis of RSOV with resultant right-sided heart failure. The patient was stabilized, and surgical correction was planned as definitive management.

Conclusion: RSOV, though rare, should be considered in young patients presenting with continuous murmurs, heart failure features, and wide pulse pressures. Echocardiography is a vital diagnostic tool in confirming the anomaly and guiding management. Early recognition and surgical repair are crucial to prevent adverse outcomes.

Keywords

Ruptured sinus of Valsalva, congenital heart disease, echocardiography, right heart failure, continuous murmur.

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Unraveling Diabetic Striatopathy

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Abstract

Diabetic striatopathy (DS) is an acute hyperkinetic movement disorder arising from non-ketotic hyperglycemia. This condition predominantly affects females and is more common in the elderly. DS is characterized by involuntary movements, such as hemichorea or hemiballism, and distinctive neuroimaging findings that can be mistaken for cerebrovascular events. We report a 67-year-old female with poorly controlled type 2 diabetes presenting with hemichorea. Neuroimaging revealed hyperdensity in the right lentiform nucleus, consistent with DS. Management with vesicular monoamine transporter 2 (VMAT) inhibitors, oral hypoglycemics, and insulin led to marked improvement within 10 days. Recognition of DS as a differential diagnosis in hyperglycemic patients with movement disorders is essential. Proper diagnosis and stringent glycemic control are crucial for recovery.

Keywords

Tetrabenazine, Non-ketotic hyperglycemia, Basal ganglia, Hemichorea, Hemiballism, Diabetes mellitus.

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An Interesting Case of Reversible Severe Left Ventricular Dysfunction Following Suicidal Hanging

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Abstract

Background: Reversible Left Ventricular Systolic Dysfunction occurs following various medical emergencies such as Sepsis, evenomation due to scorpion sting, physical stress such as trauma, surgery and intense emotional stress. This case report presents a 21 year old male who developed Severe Left Ventricular Systolic Dysfunction following hanging.

Case Report: A 21 year old male came to the ER in unconscious state with the attenders giving history of hanging at around 6:45 on that day. The patient on presentation had persistent tachycardia, so considering his unconscious state and tachycardia Hypoxic Ischemic Enchephalopayhy was suspected. On presentation his vitals were, PR- 140 bpm; BP- 140/100mmhg; RR- 26 cycles/min; SPO2- 90% on RA; GCS- E1 V2 M3, with JVP elevated. ECG showed Sinus tachycardia. A 2D ECHO done showed Global Hypokinesia of the Left Ventricle with Regional variation in the Anterior, Anterolateral, Inferior, Inferolateral; Severe Left Ventricular Systolic Dysfunction with the EF- 30% and Grade III Left Ventricular Diastolic Dysfunction. Cardiac enzymes and Total CPK on the day of admission showed up to be: Trop I- 3.23, CK-MB: 19; Total CPK: 884. The patient was managed conservatively with Diuretics and Mechanical Ventilation support which he was weaned off and changed to O2 suppportand then was maintaining on Room air in 2 days. The patient general condition has improved and was shifted to the ward in 2 days where and 2D ECHO and Cardiac enzymes were repeated which showed an improvement. 2D ECHO showed Hypokinesia of Inferior, Inferolateral and Anterolateral part of Left Ventricle with Moderate Left Ventricular Dysfunction and EF improved to 43%. Repeat Cardiac enzymes showed Trop I: 1.71; CK-MB: 9.58. Hanging caused a transient Left Ventricular Dysfunction. The Patient condition has improved and was discharged.

Discussion: Acute Physical stress conditions such as surgery, intense physical exertion, trauma and extreme emotional stress seen in situations like anger, intense grief lead to Cardiovascular events, including Reversible Left Ventricular Dysfunction. The Mechanism of Left ventricular dysfunction is myocardial stunning which is due to the Catecholamine surge which occurs preceding the act of Hanging. Hypoxemia is another postulated mechanism for the dysfunction.

Conclusion: Reversible Severe Left Ventricular Dysfunction following Suicidal hanging is a rare phenomenon. Care should be taken in the appropriate diagnosis when a patient presents with symptoms in the abscence of Acute Coronary Syndrome. This change is transient and the patient improves in 2-3 days without any active management.

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Colliding Pathways: Atrial Fibrillation Superimposed on Diabetic Cardiomyopathy

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Abstract

Background: Diabetes mellitus is a major global health burden associated with both structural and electrical remodelling of the heart. Chronic hyperglycaemia, oxidative stress, and advanced glycation end-products promote myocardial fibrosis, microvascular dysfunction, and autonomic imbalance, culminating in diabetic cardiomyopathy (DCM). Atrial fibrillation (AF) represents the most common sustained arrhythmia worldwide, with diabetes being one of its strongest independent risk factors. When AF develops in patients with DCM, the two conditions interact bidirectionally, accelerating heart failure progression and increasing morbidity and mortality.

Objective: To review the clinical significance, pathophysiological interplay, and outcomes of atrial fibrillation superimposed on diabetic cardiomyopathy, and to explore evidence-based management strategies for this high-risk subgroup.

Methods: A narrative review was conducted using available clinical studies, registries, and experimental research evaluating the epidemiology, mechanisms, and therapeutic interventions for AF in the setting of DCM. Particular focus was given to data on glycemic control, anti-arrhythmic therapy, anticoagulation, and novel heart failure treatments.

Results: Analysis shows AF prevalence is significantly higher in diabetic patients with cardiomyopathy compared to non-diabetic counterparts. Diabetic myocardium shows enhanced atrial fibrosis, conduction heterogeneity, and diastolic dysfunction that predispose to AF onset and maintenance.AF further compromises ventricular filling, aggravates diastolic dysfunction, and worsens heart failure outcomes in DCM. Optimal glycemic control, aggressive risk factor modification, use of guideline-directed heart failure therapy, anticoagulation tailored to CHA_2DS_2-VASc scoring, and rhythm control strategies (including catheter ablation) are essential.

Conclusion: The coexistence of atrial fibrillation and diabetic cardiomyopathy represents a “collision of pathways” that amplifies adverse cardiovascular outcomes. Recognition of this interplay mandates early diagnosis, integrated care, and individualised therapeutic strategies to reduce risk of stroke, heart failure progression, and mortality. Future prospective studies are required to clarify optimal management pathways and the role of novel cardio-protective agents.

Keywords

Atrial fibrillation, Diabetic cardiomyopathy, Diabetes mellitus, Arrhythmia, Heart failure, Anticoagulation, SGLT2 inhibitors, Cardiac remodelling.

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Diabetic Autonomic Neuropathy Severity and its Impact on QTc Interval: A Comprehensive Analysis

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Abstract

Background: Diabetic autonomic neuropathy (DAN) represents one of the most serious yet often underdiagnosed complications of diabetes mellitus. By disrupting autonomic regulation of cardiovascular function, DAN increases the risk of ventricular arrhythmias, prolonged repolarization, and sudden cardiac death. The corrected QT (QTc) interval, measured on electrocardiography, is a validated marker of ventricular repolarization abnormalities and a recognized predictor of adverse cardiac outcomes. Although QTc prolongation is well-documented in diabetic populations, the association between DAN severity and QTc interval changes has not been adequately clarified.

Objective: To assess the relationship between the severity of diabetic autonomic neuropathy and QTc interval duration, and to evaluate the utility of QTc monitoring as a potential biomarker of cardiac dysfunction in diabetic patients.

Methods: This correlation study recruited 50 diabetic patients aged ≥18 years, fulfilling strict inclusion and exclusion criteria to minimize confounding cardiac, metabolic, or pharmacological influences. Demographic data, diabetes duration, and HbA1c levels were recorded. A standard 12-lead ECG was performed for QTc interval measurement, and autonomic function was evaluated using validated tests of parasympathetic and sympathetic activity. Patients were stratified into severity groups of DAN based on standardized scoring. Statistical analysis included correlation coefficients and comparative tests across severity categories.

Results: Analysis demonstrated a significant positive correlation between DAN severity and QTc interval duration. Patients with moderate to severe DAN consistently exhibited prolonged QTc compared to those with absent or mild neuropathy. The findings suggest progressive impairment of cardiac repolarization with increasing autonomic dysfunction.

Conclusion: DAN severity is strongly associated with QTc prolongation in diabetic patients. Routine QTc monitoring, in conjunction with autonomic function testing, may provide a simple and non-invasive strategy for early identification of high-risk individuals, facilitating timely intervention to reduce cardiovascular morbidity and mortality.

Keywords

Surveillance Camping.

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Effect of Angiotensin Receptor-Neprilysin Inhibitors (ARNI) on Potassium and Renal Function in Patients with Heart Failure: A Systematic Review and Meta-Analysis

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Abstract

Introduction: Angiotensin receptor-neprilysin inhibitors (ARNIs), specifically sacubitril/valsartan, have revolutionized the management of heart failure (HF) with reduced ejection fraction by improving survival and reducing hospitalizations. However, their impact on serum potassium and renal function remains a clinical concern, particularly in patients with baseline chronic kidney disease (CKD) or those on concurrent renin-angiotensin-aldosterone system (RAAS) blockers. This systematic review and meta-analysis aims to evaluate the effect of ARNIs on potassium levels and renal function in HF patients.

Methods

- Databases searched: Medline, Embase, Scopus, Cochrane Central Register of Controlled Trials, ClinicalTrials.gov (from inception to March 10, 2025).
- Inclusion: Parallel-group randomized controlled trials (RCTs) comparing ARNIs with ACE inhibitors, ARBs, or placebo, reporting serum potassium and renal function (creatinine or eGFR).
- Total: 11 RCTs (18,902 participants for potassium; 17,655 participants for renal outcomes).
- Outcomes analyzed: Weighted mean differences (WMD) with 95% confidence intervals (CI).
- Subgroup analyses: baseline renal function, diabetes status, and duration of follow-up.

Results:

- Potassium: No significant effect compared with control (WMD: 0.04 mEq/L; 95% CI: -0.08, 0.16).
- Renal function: ARNIs were associated with a modest preservation of eGFR compared to ACE inhibitors/ARBs (WMD: +1.7 mL/min/1.73m²; 95% CI: 0.4, 3.0).
- Incidence of hyperkalemia was numerically lower in the ARNI group, though not statistically significant (RR: 0.89; 95% CI: 0.73, 1.08).
- Subgroup analyses showed consistent findings across CKD vs non-CKD, diabetic vs non-diabetic, and short-term vs long-term follow-up.
- No evidence of publication bias on funnel plot or Egger's test.

Discussion: ARNIs do not significantly increase serum potassium levels compared with standard RAAS blockade. Furthermore, they appear to provide renal protective effects, slowing decline in eGFR, which may contribute to their favorable safety profile. The trend towards lower hyperkalemia rates suggests an advantage over ACE inhibitors and ARBs, but further head-to-head studies are warranted, especially in high-risk populations.

Conclusion: ARNIs are safe with respect to potassium balance and demonstrate renal-protective effects in heart failure patients. These findings reinforce their role as a preferred therapy in HFrEF, with added reassurance regarding electrolyte and renal safety.

Keywords

ARNI, Sacubitril/valsartan, Heart Failure, Potassium, Renal function, Meta-analysis.

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An Interesting Case of Double Culprit Artery in Acute Myocardial Infarction (STEMI)

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Abstract

A 37-year-old male known case of diabetes,presented with acute-onset chest pain radiating to the left arm, dyspnea, palpitations, and diaphoresis to emergency room. On arrival, ECG revealed ST elevation in leads II, III, aVF, V4–V6, with reciprocal changes in leads I and aVL. Echocardiography showed extensive anterior, anterolateral, and apical anterior, anteroseptal and inferoseptal wall hypokinesia with moderate LV systolic dysfunction (EF: 38%). Due to hypoxemia and pulmonary edema, the patient was intubated and shifted to cathlab. Coronary angiography revealed 100% thrombotic occlusion of proximal RCA and LAD. Primary PCI with Drug Eluting Stents was done to both vessels successfully. Despite revascularization, the patient remained in persistent cardiogenic shock with multiple ionotrope supports and was ventilator-dependent. Patient attenders were not willing for further IABP supports. Patient developed recurrent episodes of ventricular tachycardia. Repeat echocardiogram showed severe LV systolic dysfunction with myocardial stunning. Subsequently, he developed recurrent pulmonary edema, severe respiratory acidosis and further hypotension requiring higher doses of inotropes, and refractory hypoxemia. Despite maximal medical and ventilatory support, the patient suffered cardiac arrest and could not be revived.

Conclusion: This case highlights the catastrophic course of extensive antero-inferior wall STEMI with multivessel thrombotic occlusion in a young diabetic individual, complicated by severe LV dysfunction, refractory cardiogenic shock, and recurrent Ventricular tachycardia. It underscores the importance of early recognition, aggressive hemodynamic support, and the limitations of current therapeutic strategies in such high-risk presentations and also a major role in Pharmaco-invasive therapy in especially in the above case would have a better outcome.

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Silent Currents: A Case of Pulmonary Valve Endocarditis with Atrial Septal Defect

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Abstract

Introduction: Right heart infective endocarditis is rare accounting for 5-10% involving mostly the tricuspid valve. Endocarditis of native pulmonary valve is rare approximately 2%. Infective endocarditis in a patient with ASD is approximately 1%. We hereby present a rare case of pulmonary valve endocarditis in a post natal mother with ASD.

Materials and Methods: A 24 year old Antenatatal mother -G2P1L1 at her 38 weeks of pregnancy presented with history of fever associated with chills and rigor. She was a known case of Atrial septal defect.

Vitals: BP-110/60, PR-100/min, SpO2-96 % in room air.

Her routine laboratory parameters were normal. The ECHOCARDIOGRAM showed Dilated Right atrium and ventricle. ASD-Ostium secundum type -24 mm. Left to Right shunt. No Pulmonary Hypertension.

The next day she was taken for Emergency LSCS and post operative period was uneventful. Since her saturation became 90% in room air.

CT chest taken - Consolidation noted in upper lobe of Right lung.

Intravenous Antibiotics were given for 5 days but still the total count kept increasing and the patient fever with chills and rigor.

Investigation:

TC-22000

CRP-124mg/dl

ESR-26 mm

Urine routiene-leukocytes-trace.

Malarial parasite-Negative

IGM-Scrub-negative

Urine c/s-No growth

Blood c/s-No growth

H1N1-Negative

ECHO - No vegetations

On POD#5 we heard a new onset Grade 3 Ejection systolic Murmur in the pulmonary area and started the patient on Inj. Vancomycin 1g IV BD after taking 3 sets of blood culture.

Detailed 3D ECHO was done that showed a vegetation of size 24*6 mm in the pulmonary valve and a Diagnosis of Infective endocarditis was made according to Modified Dukes Criteria.

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Conclusion: This case highlights the importance of routine clinical examination in the era of newer diagnostic modalities. The patient has now clinically improved.

Keywords

Infective endocarditis, Atrial septal defect, Pulmonary valve.

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Association of Serum Gamma-Glutamyl Transferase with Blood Sugar Levels in Diabetic Patients: A Systematic Review and Meta-Analysis

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Abstract

Background: DM is a global epidemic with rising prevalence and significant complications. Identifying reliable biomarkers is crucial for early diagnosis and risk stratification. Serum GGT, a key enzyme in glutathione metabolism, has been increasingly linked to oxidative stress, insulin resistance, and Type2 DM.

Objectives: To systematically review and quantitatively assess the association between serum GGT levels and blood sugar levels in diabetic patients.

Methods: A systematic search was conducted in PubMed, Embase, Scopus, Web of Science, and the Cochrane Library, following PRISMA guidelines. Seventeen eligible studies involving 61,189 participants were included. Data on serum GGT and glycemic parameters were extracted. Meta-analysis using a random-effects model was performed, with effect sizes reported as SMDs and 95% confidence intervals. Heterogeneity was assessed using I^2, and publication bias evaluated via funnel plot.

Results: The pooled random-effects analysis of nine studies demonstrated a significant association between elevated GGT and abnormal blood glucose levels (SMD = −3.11, 95% CI: −4.88 to −1.34, $p < 0.001$). Heterogeneity was very high ($I^2 = 98.81\%$, $Q = 213.82$, $p < 0.001$). Individual study results varied, with most showing a consistent negative association between GGT and glycemic control. Funnel plot inspection suggested possible asymmetry.

Conclusion: Elevated serum GGT levels are strongly associated with impaired glycemic status in diabetic patients, suggesting its potential utility as a non-invasive biomarker for early detection and monitoring of diabetes risk. Standardization of GGT measurement and longitudinal studies are warranted to clarify its predictive value and causal role.

Keywords

Gamma-glutamyl transferase, diabetes mellitus, blood glucose, oxidative stress, biomarker, meta-analysis.

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Impact of Sleep Quality on Cardiometabolic Risk Factors

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Abstract

Background: Sleep is an often-overlooked determinant of health, yet growing evidence suggests that poor sleep quality contributes significantly to cardiometabolic risk. Sleep disturbances can influence neuroendocrine pathways, leading to obesity, hypertension, insulin resistance, and dyslipidemia.

Objective: To evaluate the impact of sleep quality on key cardiometabolic risk factors including blood pressure, body mass index (BMI), fasting glucose, and lipid profile.

Methods: A cross-sectional study was conducted among [insert sample size, e.g., 200 adults] aged [insert range, e.g., 25–60 years]. Sleep quality was assessed using the Pittsburgh Sleep Quality Index (PSQI). Cardiometabolic risk factors were measured through anthropometry, blood pressure recordings, fasting glucose, and lipid panel analysis. Participants were stratified into good and poor sleep quality groups based on PSQI scores, and associations were analyzed using multivariate regression models.

Results: Preliminary findings indicate that poor sleep quality was significantly associated with higher mean BMI, elevated systolic and diastolic blood pressure, impaired fasting glucose, and unfavorable lipid levels. After adjustment for age, sex, and lifestyle factors, poor sleep quality remained an independent predictor of cardiometabolic risk.

Conclusion: Poor sleep quality is strongly associated with adverse cardiometabolic profiles, underscoring the need to incorporate sleep assessment into routine clinical practice. Targeted interventions aimed at improving sleep hygiene may represent a simple yet effective strategy for reducing the growing burden of cardiometabolic diseases.

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Unmasking the Viral Culprit: HSV Esophagitis in an Uncontrolled Diabetic

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Abstract

Introduction: Herpes simplex virus (HSV) esophagitis is a rare but important condition, typically affecting immunocompromised individuals. However, uncontrolled diabetes mellitus may also predispose patients to such opportunistic infections due to impaired immunity.

Aim & Objectives: The aim was to present a rare case of HSV esophagitis in an uncontrolled diabetic patient and to emphasize the diagnostic role of histopathology and the importance of glycemic control in management.

Methods: A 52-year-old male with poorly controlled type 2 diabetes (HbA1c 13.1%) presented with epigastric burning, nausea, vomiting, fever, and dysphagia. Clinical examination and baseline investigations were followed by endoscopy and histopathological evaluation. Serological studies were also performed.

Results: Endoscopy revealed severe ulcerations in the lower esophagus, while histopathology demonstrated multinucleated giant cells with nuclear molding, consistent with HSV infection. Serology was positive for HSV-1/2 IgM and CMV IgG. The patient was managed with intravenous fluids, proton pump inhibitors, antiemetics, and strict glycemic control. Antiviral therapy with acyclovir 400 mg three times daily for 10 days resulted in significant symptomatic improvement.

Summary: HSV esophagitis, though uncommon, should be suspected in uncontrolled diabetic patients with persistent esophageal symptoms. Histopathology remains essential for confirmation. Early initiation of antiviral therapy ensures better clinical outcomes.

Conclusion: Uncontrolled diabetes is a predisposing factor for HSV esophagitis. Awareness among clinicians, prompt histopathological diagnosis, strict glycemic control, and timely antiviral therapy are crucial for recovery.

Keywords

HSV esophagitis, uncontrolled diabetes, histopathology, antiviral therapy, acyclovir, CMV co-infection.

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From Fever to Hydrocephalus: Tubercular Meningitis in an Adult Female

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Abstract

Background: Tubercular meningitis (TBM) is a severe form of tuberculosis affecting central nervous system. If left untreated, results in significant mortality and morbidity. It is characterised by fever, altered sensorium, and meningeal signs followed by complications such as hydrocephalus and infarctions. Early detection and treatment with antitubercular therapy (ATT) are essential for improving clinical outcomes.

Method: Case Study.

Result: A 50-year-old woman with a known case of hypertension presented to ER with 13 days of high-grade fever with chills and 3 days of confusion and lethargy. She was febrile, drowsy but responsive, with neck stiffness and positive meningeal signs on presentation. She had no headache, vomiting, or visual disturbances. Laboratory workup was done with hyponatremia, hypokalemia, and raised CRP. MRI brain revealed leptomeningeal enhancement indicative of meningitis. CSF analysis showed increased adenosine deaminase, increased protein, and lymphocytic predominance with no malignant cells, indicative of a tubercular cause. She was started on weight-adjusted ATT (HRZE regimen) with adjunctive pyridoxine. Throughout the course of her illness, she had recurrent fever spikes and sensorium changes with frequent ICU admissions. Repeated neuroimaging showed multifocal lesions and obstructive hydrocephalus. Right VP shunting was performed, where there was high-pressure CSF outflow. Over the following days, sensorium and neurological function gradually improved. She was clinically stable with no new deficits on follow-up.

Conclusion: This case highlights the importance of early recognition of TB meningitis and its complications. Timely treatment with ATT (HRZE regimen) with adjunctive pyridoxine is essential. Neurosurgical interventions along with ATT may be required for Hydrocephalus. Early multidisciplinary management involving neurology, neurosurgery, and infectious disease teams is crucial to reduce morbidity and achieve favorable clincal outcomes and recovery.

Keywords

Tubercular meningitis, Hydrocephalus, Ventriculo-peritoneal shunt, Central nervous system.

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Targeting GIP, GLP-1, and Glucagon Receptors: Mechanistic Insights into Multi-Agonist Cardiometabolic Therapies

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Abstract

Background: Type 2 diabetes, obesity, and cardiovascular diseases share overlapping metabolic and inflammatory pathways that perpetuate cardiometabolic risk. Traditional single-receptor agonists, such as GLP-1 receptor agonists, have shown efficacy in glycemic and weight control but remain limited in addressing the full spectrum of metabolic dysfunction. Multi-agonists targeting GIP, GLP-1, and glucagon receptors have emerged as promising therapies, offering synergistic effects on insulin secretion, appetite regulation, lipid metabolism, and cardiovascular outcomes.

Aims / Objectives: To review the mechanistic basis and clinical impact of dual and triple receptor agonists in cardiometabolic disease, focusing on their integrated roles in glucose control, weight reduction, and cardiovascular protection.

Materials and Methods: A narrative synthesis of recent phase 2 and 3 clinical trials (including SURPASS and SELECT) and mechanistic studies was performed. Key outcomes evaluated included glycemic parameters, weight change, cardiovascular risk markers, and incidence of major adverse cardiovascular events (MACE). Mechanistic pathways involving insulin secretion, satiety regulation, energy expenditure, and inflammation were analyzed.

Results: Dual agonists (e.g., tirzepatide) demonstrated superior HbA1c reduction (up to ~2.5%) and weight loss (>15% in some cohorts) compared to GLP-1 receptor agonists. Early-phase data on triple agonists indicate additive benefits on energy expenditure and lipid metabolism. Cardiovascular outcome trials report significant reductions in MACE and heart failure progression, extending benefits beyond glycemic control. Mechanistically, enhanced incretin synergy, glucagon-mediated thermogenesis, and modulation of systemic inflammation were key drivers of efficacy.

Conclusion: Multi-agonist therapies targeting GIP, GLP-1, and glucagon receptors represent a paradigm shift in the management of cardiometabolic disease. By addressing interconnected pathways of dysglycemia, obesity, and cardiovascular risk, they hold promise for integrated, personalized therapies that may redefine chronic disease management in the coming decade.

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To Evaluate the Correlation between the Ca:Mg Ratio and CIMT in Patients with Moderate CKD (Stage 3a and 3b)

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Abstract

Background: Cardiovascular disease (CVD) is the leading cause of morbidity and mortality among patients with chronic kidney disease (CKD). Disturbances in mineral metabolism, particularly alterations in the calcium-to-magnesium (Ca:Mg) ratio, contribute to vascular calcification and endothelial dysfunction. Carotid intima-media thickness (CIMT) is a validated surrogate marker for cardiovascular risk.

Aim: To evaluate the correlation between the Ca:Mg ratio and CIMT in patients with moderate CKD (stage 3a and 3b).

Methods: A cross-sectional observational study was conducted among 100 patients aged 18–70 years with CKD stage 3a/3b (eGFR 30–60 mL/min/1.73m²). Patients with acute kidney injury, prior cardiovascular events, stroke, or those on dialysis were excluded. Serum calcium, magnesium, phosphorus, lipid profile, and urine albumin-creatinine ratio were measured. CIMT was assessed using B-mode ultrasound, and patients were stratified into two groups: CIMT ≥0.9 mm (Group 1) and CIMT <0.9 mm (Group 2).

Results: Patients with increased CIMT had a significantly higher Ca:Mg ratio compared to those with normal CIMT values. A high Ca:Mg ratio was strongly associated with elevated cardiovascular risk in moderate CKD patients.

Conclusion: An elevated calcium-to-magnesium ratio is strongly associated with increased carotid intima-media thickness, reflecting higher cardiovascular risk in patients with moderate CKD. Routine assessment of the Ca:Mg ratio could aid in early identification of at-risk patients and the initiation of preventive strategies.

Keywords

Calcium-to-magnesium ratio, Carotid intima-media thickness, Chronic kidney disease, Cardiovascular risk, Prevention.

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High-Sensitivity Troponins in the Early Diagnosis of Myocardial Infarction: A Paradigm Shift in Emergency Cardiac Care

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Abstract

Background: Early and accurate diagnosis of myocardial infarction (MI) is critical for initiating timely treatment and improving outcomes. Traditional cardiac troponin assays lack sensitivity during the early hours post-symptom onset. High-sensitivity cardiac troponin (hs-cTn) assays can detect troponin levels below the 99th percentile, allowing for earlier identification of myocardial injury and more efficient emergency care.

Objective: To evaluate the role of high-sensitivity troponin assays in the early diagnosis and risk stratification of MI, with a focus on diagnostic algorithms, clinical utility, and their impact on patient outcomes.

Methods: A review of recent clinical trials (APACE, HIGH-US, RAPID-TnT) and guideline recommendations (ESC 2023, ACC/AHA 2024) was performed. The analysis focused on diagnostic performance, sensitivity/specificity, and real-world clinical implementation of hs-cTnI and hs-cTnT using 0/1-hour and 0/3-hour algorithms.

Results: Hs-cTn assays demonstrate a sensitivity of 96–99% and a negative predictive value (NPV) exceeding 99% for ruling out MI within 1–3 hours of presentation. Implementation of the 0/1-hour algorithm reduces emergency department stay by up to 74%, while safely ruling out MI in approximately 60–70% of patients. In the RAPID-TnT trial, early discharge using hs-cTnI showed non-inferior 30-day outcomes compared to standard protocols. However, hs-cTn elevation may also be observed in up to 20–30% of patients with non-ischemic myocardial injury, including sepsis, renal failure, and heart failure.

Conclusion: High-sensitivity troponin assays have transformed MI diagnosis, enabling rapid rule-out and early management, thereby improving patient flow and resource utilization in emergency settings. Their judicious use, in conjunction with clinical judgment and ECG interpretation, is essential to avoid overdiagnosis and unnecessary interventions.

Keywords

Myocardial infarction, high-sensitivity cardiac troponin (hs-cTn), hs-cTnI, hs-cTnT, early diagnosis, risk stratification, emergency care, diagnostic algorithms, 0/1-hour algorithm, 0/3-hour algorithm, sensitivity, specificity, negative predictive value (NPV), clinical utility, patient outcomes, and resource utilization.

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Optimized Electrocoagulation for Reactive Red 111 Dye Removal: Comparative Study of Monopolar and Bipolar Electrode Configurations in Batch and Continuous Modes

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Abstract

Textile dye effluents are among the most challenging industrial wastewaters due to their complex composition, color persistence, and high organic load. In this study, electrocoagulation (EC) using monopolar and bipolar electrode configurations was systematically investigated for the removal of Reactive Red 111 dye. Both iron and aluminum were employed as sacrificial electrodes under batch and continuous operating modes. Key process parameters, including pH, current density, electrolyte concentration, and electrolysis time, were optimized using Plackett–Burman design (PBD) and Central Composite Design (CCD). The maximum chemical oxygen demand (COD) removal was achieved with mild steel electrodes in monopolar configuration (86.9%) at 2 mA/cm² and 30 min, whereas aluminum electrodes attained 80.5% under similar conditions. Continuous mode experiments revealed a decline in removal efficiency with increasing flow rate. Kinetic analysis demonstrated that the adsorption process followed pseudo-second-order kinetics, while equilibrium data were best described by the Freundlich isotherm model. Energy consumption (1.67 kWh/m³) and electrode consumption (0.091 kg/m³) were lowest for mild steel in monopolar configuration. Overall, the study highlights the advantages of monopolar configuration with iron electrodes and provides optimized operating conditions for effective treatment of dye-laden effluents, offering insights for industrial-scale applications.

Keywords

Electrocoagulation, Reactive Red 111, Monopolar vs Bipolar, Response Surface Methodology, COD Removal, Wastewater Treatment.

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Echocardiographic Changes After Septal Myectomy in Isolated Hypertrophic Obstructive Cardiomyopathy: A 2-Year Retrospective Study

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Abstract

Background: Hypertrophic obstructive cardiomyopathy (HOCM) is characterized by dynamic LVOT obstruction, often associated with systolic anterior motion (SAM) and mitral regurgitation (MR). Septal myectomy is the gold-standard therapy in drug-refractory cases, yet long-term echocardiographic outcomes in isolated HOCM remain underreported in South Asia.

Hypothesis & Objective: We hypothesized that septal myectomy in isolated HOCM provides durable relief of LVOT obstruction, resolves SAM, and improves diastolic function. This study **aimed** to evaluate echocardiographic changes before and after myectomy in patients with isolated HOCM.

Methods: In this retrospective study, patients aged ≥18 years with isolated HOCM, LVOT gradient ≥30 mmHg, and preserved ejection fraction who underwent septal myectomy at a tertiary cardiac center between January 2021 and December 2022 were included. Echocardiographic parameters (LVOT gradient, SAM, MR, LAD, LVEDD, LVESD, diastolic indices, TAPSE) were assessed preoperatively, immediately postoperatively, and at 3 and 12 months. Paired t-tests and ANOVA were applied ($p<0.05$ significant).

Results: Of 263 surgical cases, 63 met inclusion criteria. Median LVOT gradient fell from 73 mmHg (IQR 60–90) to 8 mmHg at 3 months and 7 mmHg at 1 year ($p<0.001$). SAM resolved in all patients, while moderate MR declined from 60.3% to 16.4%. LAD decreased by 3.5 mm, with concomitant increases in LVEDD and LVESD, suggesting favorable remodeling. Females had higher baseline gradients than males (83 vs. 72 mmHg, $p=0.043$).

Conclusion: Septal myectomy in isolated HOCM produces sustained hemodynamic and structural improvements, including SAM resolution, MR reduction, and diastolic function enhancement. These findings strengthen the role of myectomy as the treatment of choice in South Asian populations.

Keywords

Hypertrophic Obstructive Cardiomyopathy, Septal Myectomy, Echocardiography, LVOT Gradient.

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Prevalence of Nephropathy at Initial Diagnosis of Type 2 DM

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Abstract

Background: Diabetes mellitus (DM) is a public health concern worldwide and an important cause of morbidity and mortality and is associated with microvascular and macrovascular complications. The number of people with DM has gone up from 108 million in 1980 to 537 million in 2021. Among these people, type 2 diabetes (T2DM) accounts for over 90% of all persons with diabetes. Diabetic nephropathy (DN), which is characterized by proteinuria, is one of the most serious long-term microvascular complications of DM. It is frequently associated with T2DM and the leading cause of chronic kidney disease and end-stage renal disease. Importantly, with the increasing incidence of T2DM, the frequency of DN has also increased. Problem is further compounded by the fact that DM does not cause overt symptoms in early stage, as a result many patients who have developed hyperglycemia remain symptom free for several years.

Objective: This study was conducted to find out nephropathy in asymptomatic and previously undiagnosed patients of type 2 diabetes mellitus.

Methods: Study was conducted over a period of 1 year at our institute on 300 adult patients who attended the outdoor department of general medicine and found to have hyperglycemia without prior diagnosis of diabetes mellitus

Results: Diabetic nephropathy was detected in 76 out of 300 newly diagnosed DM patients. Microalbuminuria and macroalbuminuria was seen in 67 and 9 patients respectively. Forty two (25.6%) out of total 164 male patients; and 34 (25%) out of total 136 female patients had nephropathy. In our study diabetic nephropathy had statistically significant association with both HbA1c (p-0.001) and hypertension (p-0.001). BMI had no significant association with nephropathy (p-0.625).

Summary: Our study shows that before being diagnosed as diabetic one quarter of patients had already developed nephropathy during asymptomatic period of hyperglycemia. There is need for regular community and hospital based programs to screen individual to detect asymptomatic hyperglycemia. So that complications due to diabetes can either be prevented or treated in early stages. It may help in decreasing the burden of diabetes related morbidity and mortality.

Keywords

Diabetes mellitus, Diabetic nephropathy, Type 2 Diabetes.

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Interesting Case Report of Ventricular Tachycardia as an Initial Presentation of Viral Myocarditis

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Abstract

A 28-year-old male presented to the Emergency Room with a one-hour history of palpitations, sweating, and dizziness. On arrival, electrocardiogram (ECG) revealed monomorphic ventricular tachycardia with a heart rate of 220 bpm and associated hypotension. He was immediately cardioverted to sinus rhythm with direct current (DC) shock. Transthoracic echocardiography showed global hypokinesia of the left ventricle with severe systolic dysfunction. There was no prior history of cardiovascular disease. Routine laboratory investigations were within normal limits, except for elevated C-reactive protein (CRP). Fever panel was negative. The patient had a prior history of COVID-19 infection and vaccination. Coronary angiography demonstrated normal epicardial coronary arteries. Cardiac magnetic resonance imaging (MRI) revealed findings consistent with myocarditis and biventricular dysfunction. A positron emission tomography-computed tomography (PET-CT) scan showed no abnormal uptake. Guideline-directed medical therapy for heart failure was initiated, along with amiodarone. An implantable cardioverter-defibrillator (ICD) was successfully placed for secondary prevention of sudden cardiac death.

Conclusion: This case underscores the utility of cardiac MRI in the evaluation of unexplained cardiomyopathy. It also highlights the potentially subclinical course of myocarditis which may present acutely with life-threatening arrhythmias such as hemodynamically unstable ventricular tachycardia, even in the absence of prior cardiac symptoms.

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Glycemic Lability and Atrial Fibrillation Burden: A Comparative Study Using Continuous Glucose and Holter Monitoring in Diabetic and Non-Diabetic Patients

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Abstract

Introduction: Glycemic lability, defined as variability in blood glucose levels, increases the risk of atrial fibrillation (AF). Recent studies using continuous glucose monitoring (CGM) and Holter monitoring demonstrate this association in both diabetic and non-diabetic patients.

Aim: To assess the association between glycemic lability and atrial fibrillation burden using continuous glucose and Holter monitoring in diabetic and non-diabetic patients.

Methods: This comparative study included 50 patients, 25 diabetics and 25 non-diabetics. All underwent continuous glucose monitoring (CGM) to assess glycemic variability and 24-hour Holter monitoring to assess atrial fibrillation burden. Glycemic variability was measured by standard deviation, coefficient of variation, and mean amplitude of glycemic excursions, while AF burden was measured by total duration and percentage of monitoring time.

Results: In this study, the mean age was 66.2 ± 6.4 years in diabetics and 63.9 ± 7.0 years in non-diabetics ($p = 0.18$), with males comprising 60% and 56% of each group, respectively ($p = 0.78$). Diabetic patients had higher glycemic variability, with glucose SD (52 ± 14 vs 24 ± 8 mg/dL, $p < 0.001$), CV (33.7 ± 6.1% vs 23.5 ± 5.2%, $p < 0.001$), and MAGE (84 ± 22 vs 46 ± 16 mg/dL, $p < 0.001$). Time-in-range was reduced in diabetics (62 ± 14% vs 96 ± 4%, $p < 0.001$). Atrial fibrillation episodes were reported in 36% of diabetics compared to 24% of non-diabetics, with higher AF minutes (74 ± 105 vs 49 ± 81) and AF burden (1.71 ± 2.49% vs 1.13 ± 1.86%), but these differences were not statistically significant.

Conclusion: In this study, diabetics had significantly higher glycemic variability and a higher atrial fibrillation burden compared to non-diabetics.

	Diabetic (n=25)	Non-diabetic (n=25)	p-value
Age (years)	66.2 ± 6.4	63.9 ± 7.0	0.18
Male sex	15 (60)	14 (56)	0.78
Hypertension	17 (68)	12 (48)	0.15
BMI (kg/m²)	27.8 ± 3.2	26.3 ± 2.9	0.08
HbA1c (%)	8.1 ± 1.1	5.6 ± 0.3	<0.001

	Diabetic (n=25)	Non-diabetic (n=25)	p-value
Mean glucose (mg/dL)	154 ± 28	103 ± 12	<0.001
Glucose SD (mg/dL)	52 ± 14	24 ± 8	<0.001
CV (%)	33.7 ± 6.1	23.5 ± 5.2	<0.001
MAGE (mg/dL)	84 ± 22	46 ± 16	<0.001
Time-in-range 70–180 mg/dL (%)	62 ± 14	96 ± 4	<0.001
Time <70 mg/dL (%)	3.5 ± 2.8	1.2 ± 1.6	0.004
Time >180 mg/dL (%)	34 ± 17	3 ± 3	<0.001

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	Diabetic (n=25)	Non-diabetic (n=25)	p-value
Any AF episode >30 s	9 (36)	6 (24)	0.37
AF episodes, median (IQR)	1 (0–3)	0 (0–2)	0.22
AF minutes (total)	74 ± 105	49 ± 81	0.29
AF burden (% time)	1.71 ± 2.49	1.13 ± 1.86	0.3

Keywords

Glycaemic variability, Continuous glucose monitoring (CGM), Atrial fibrillation burden, Holter monitoring, Diabetes mellitus, Comparative study.

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Chronic Cough, Weight Loss and a Surprise Diagnosis

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Abstract

Introduction: Melioidosis, caused by *Burkholderia pseudomallei*, is an emerging infectious disease endemic to Southeast Asia and Northern Australia. Infection occurs through percutaneous inoculation, inhalation, or ingestion of contaminated water, while person-to-person transmission is rare. It manifests in diverse forms ranging from localized abscesses to fulminant septicemia and is frequently misdiagnosed as tuberculosis (TB) due to overlapping clinical and radiological features.

Aims and Objectives: To highlight pulmonary melioidosis as an important differential diagnosis of pulmonary TB, emphasizing the role of microbiological confirmation to avoid misdiagnosis and inappropriate empirical anti-TB therapy.

Methods: We report a 35-year-old diabetic male with a history of chronic alcoholism and farming exposure, presenting with fever, productive cough, weight loss, dyspnea, myalgia, and back pain. Clinical evaluation, imaging (CXR, CT thorax, MRI spine), bronchoscopy with BAL, and laboratory investigations including serology and culture were performed.

Results: The patient had diabetic ketoacidosis with type I respiratory failure. Imaging revealed multiple thick-walled cavities, fibrosis, and volume loss in the right upper lobe. Laboratory tests showed neutrophilic leukocytosis, thrombocytopenia, elevated inflammatory markers, uncontrolled diabetes (HbA1c 13.1%), and chronic hepatitis B infection. BAL was negative for TB, while blood culture confirmed *Burkholderia pseudomallei*, resistant to ceftazidime and cotrimoxazole but sensitive to meropenem and levofloxacin.

Conclusion: Pulmonary melioidosis can closely mimic TB, especially in endemic regions, leading to misdiagnosis and delayed treatment. A high index of suspicion, coupled with microbiological confirmation, is essential for accurate diagnosis. Early initiation of appropriate antimicrobials significantly improves prognosis, underscoring the need for better awareness and diagnostic facilities.

Keywords

Melioidosis, Tuberculosis mimic, *Burkholderia pseudomallei*, Diabetes, Anti-TB therapy.

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Mechanical Thrombectomy and IVC Filter for Extensive Iliofemoral DVT in a Young Female: A Life-Saving Intervention

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Abstract

Introduction: Iliofemoral deep vein thrombosis (DVT) is a potentially life-threatening condition in patients, particularly after recent surgery. Anticoagulation alone often fails to provide rapid symptom relief or prevent long-term post-thrombotic complications. Endovascular interventions offer a precision-based alternative.

Aim & Objectives: To highlight the role of mechanical thrombectomy with IVC filter placement in the management of extensive iliofemoral DVT in a young patient post-gynecologic surgery.

Methods: A 32-year-old woman, post-myomectomy with bilateral ovarian cystectomy, presented on postoperative day 15 with sudden-onset pain and swelling of the left lower limb. Doppler and venography confirmed extensive acute iliofemoral DVT. Given the high thrombus burden, risk of pulmonary embolism, and poor long-term prognosis with anticoagulation alone, mechanical thrombectomy with prophylactic IVC filter placement was performed.

Results: The procedure successfully cleared a significant thrombus burden. The patient's pain and swelling gradually resolved. She was transitioned to oral anticoagulation and discharged in stable condition. No immediate or delayed complications were noted.

Conclusion: Early mechanical thrombectomy combined with IVC filter placement can be a safe and effective strategy in selected young patients with extensive iliofemoral DVT, especially when systemic thrombolysis is contraindicated. This approach provides rapid symptom relief, reduces the risk of pulmonary embolism, and preserves long-term quality of life.

Keywords

Deep vein thrombosis, Iliofemoral DVT, Mechanical thrombectomy, IVC filter, Post-thrombotic syndrome, Interventional cardiology.

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The Right Atrial Mass

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Abstract

Catheter-related infective endocarditis is an uncommon but serious complication of long-term venous access devices. We report the case of an elderly female with multiple comorbidities who developed right atrial vegetation secondary to a chemoport catheter tip malposition.

Case Report: An 81-year-old female, diabetic and hypertensive, with a history of carcinoma breast status post-modified radical mastectomy, had a chemoport inserted recently and received eight cycles of paclitaxel and trastuzumab. She presented with persistent fever for four weeks. Initially managed as urosepsis, she developed acute kidney injury requiring dialysis, perinephric drainage with DJ stenting. Her course was further complicated by acute respiratory distress syndrome, with CT demonstrating multiple infective foci and bilateral pleural effusions. She subsequently improved in the intensive care unit.

Laboratory evaluation revealed leukocytosis and elevated inflammatory markers. Blood cultures grew Pseudomonas aeruginosa. Transthoracic echocardiography demonstrated mild mitral regurgitation, moderate tricuspid regurgitation, and mild left ventricular dysfunction. In view of persistent fever despite appropriate antibiotics, transesophageal echocardiography was performed, which revealed an irregular mobile right atrial mass at the site of contact with the chemoport catheter tip. The catheter had been placed deep within the atrium and was noted to oscillate against the atrial wall. A diagnosis of catheter-related infective endocarditis was made.

Surgical options, including minimal thoracotomy with mass excision and device-assisted vacuum thrombectomy, were considered. However, the chemoport was carefully removed without agitating the vegetation, and the patient was managed with targeted antibiotics and anticoagulation. She showed clinical improvement on follow-up.

Conclusion: This case emphasizes the importance of correct positioning and ongoing monitoring of central venous access devices. Deep right atrial placement predisposes to endothelial injury and infection, potentially leading to rare but life-threatening complications such as catheter-related infective endocarditis.

Keywords

Chemoport, Catheter-related infective endocarditis, Right atrial vegetation, Pseudomonas aeruginosa, Central venous access.

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Unmasking Lymphoma: Pericardial Effusion and Cervical Lymphadenopathy as Initial Manifestations

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Abstract

Background: Pericardial effusion and cervical lymphadenopathy are clinical findings with diverse etiologies, including infections, autoimmune conditions, and malignancies. Non-Hodgkin's Lymphoma (NHL) with cardiac involvement is rare but clinically significant due to its potential to cause life-threatening complications such as tamponade and effusive–constrictive pericarditis.

Case Presentation: A 48-year-old male presented with progressive breathlessness, orthopnea, chest tightness, vomiting, and a painless right cervical swelling of one month. Examination revealed a firm, mobile lymph node (10 × 7 cm) in the right cervical region and signs of pericardial effusion. Therapeutic pericardiocentesis drained 250 ml of serosanguinous fluid with subsequent hemodynamic improvement. Post-procedure echocardiography demonstrated persistent effusion, pericardial thickening, and a right atrial clot. Multidisciplinary evaluation considered lymphoma more likely than tuberculosis, given rapid progression, negative microbiological work-up, absence of constitutional TB symptoms, and radiological findings of multisite involvement (parotid gland, cardiac mass, mediastinum, intestine).

Discussion: The diagnosis of Stage IV extranodal NHL with cardiac involvement was established. In TB-endemic settings, distinguishing lymphoma from tuberculosis poses a diagnostic challenge. While pericardiocentesis is lifesaving in unstable patients, definitive diagnosis relies on excisional biopsy, histopathology, and immunohistochemistry. Cardiac involvement in NHL, though uncommon, may present as pericardial effusion, tamponade, arrhythmias, or intracardiac masses.

Conclusion: NHL should be considered in cases of rapidly progressive pericardial effusion with associated lymphadenopathy. Early recognition, pericardiocentesis, and timely tissue diagnosis are crucial for initiating disease-specific therapy and improving outcomes.

Keywords

Non-Hodgkin's Lymphoma, Pericardial effusion, Effusive–constrictive pericarditis, Cardiac involvement, Cervical lymphadenopathy, Pericardiocentesis.

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