2023 Interesting Case Study by Our Experts

Sri Ramakrishna
Hospital (Multi-Speciality)

We pioneered and many learnt from us

FOREWARD MESSAGE

A clinical case presentation is a formal communication between health care professionals such as doctors and nurses regarding a patient's clinical information. Essential parts of a case presentation include, reasons for consultation/admission. A case report which should be chronological and details of the history, physical findings, and investigations followed by the patient's course of illness.

In most clinical teaching settings, case presentation is the most frequently used teaching and learning activity. From an educational viewpoint, the two important roles of case presentations are the presenter's opportunity for case presentation and the clinician educator's clues to the presenter to diagnose.

SHRI.D.LAKSHMINARAYANASWAMY
Managing Trustee

Book Title: Sri Ramakrishna Hospital's 2023 Interesting Case Study by our Experts

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From the EDITORIAL BOARD

Sri Ramakrishna Hospital's 2023 Interesting Case Studies on different complex and rare medical conditions diagnosed and treated by our SRH expert doctors in various departments like Oncology, Neurology, Nephrology, Obstetrics and Gynecology, Orthopedics, Urology, Vascular surgery, and many more.

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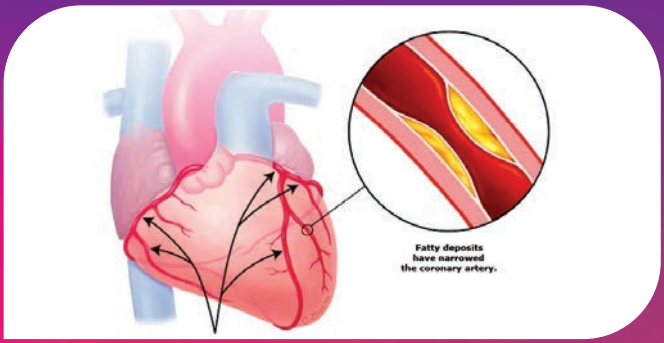


Anomalous Origin of Coronary Arteries

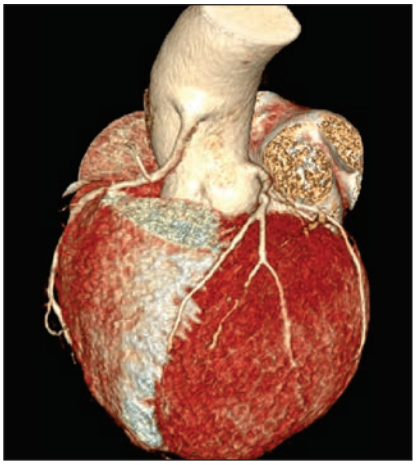
Coronary artery anomalies are observed in approximately 5% of the coronary angiograms performed in any cardiac catheterization laboratory. The observed coronary anomalies include anomalies in origin, course , associated intrinsic defects and their termination.

We present two cases where the right coronary artery arises from the ascending aorta, just above the right coronary sinus, one as an isolated anomaly and the other with left coronary artery arising from right coronary artery.

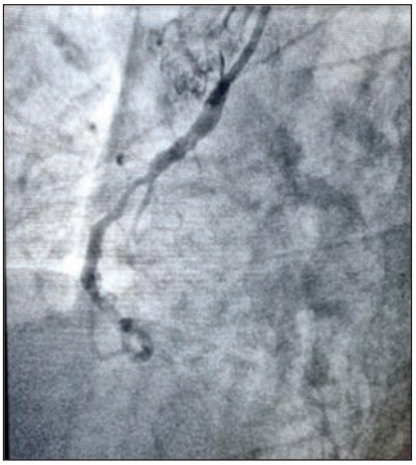
The right coronary artery, after its origin courses vertically downwards, and reaches the right atrio ventricular groove. The coronry orifice is usually slit like in this anomaly and atherosclerosis is a common feature.

There could be technical difficulties in engaging this artery during coronary angiography or PTCA using regular RCA catheters.

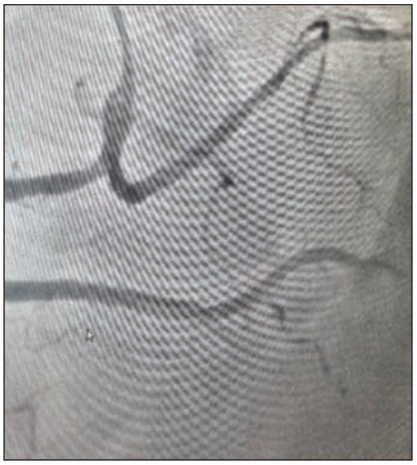
Multi purpose catheter is very helpful in engaging this anomalous artery.



RCA arising from ascending aorta



RCA arising from ascending aorta with signicant proximal stenosis



RCA arising from ascending aorta with LCA arising from RCA (single coronary artery)

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Coronary Angiogram

Myocardial Infraction

Bypass Surgery

Valve Surgery

Aortic Surgery

Advancements in Interventional Cardiology: Pioneering Techniques and Technologies

Introduction

Interventional cardiology has made remarkable strides in recent years, revolutionizing the diagnosis and treatment of cardiovascular diseases. As one of the most dynamic fields in medicine, interventional cardiology constantly evolves, introducing innovative techniques and cutting-edge technologies that enhance patient outcomes and improve quality of life. In this article, we will explore some of the newer developments in interventional cardiology that are shaping the future of cardiovascular care.

Primary angioplasty

Primary angioplasty is now offered 24 X 7 for all acute MI patients and timely reperfussion has revolutionised and shortened acute MI treatment.

Transcatheter Aortic Valve Replacement (TAVR)

Transcatheter aortic valve replacement, or TAVR, has emerged as a game-changer in the treatment of aortic stenosis, a condition characterized by the narrowing of the aortic valve. This minimally invasive procedure allows the replacement of the damaged valve without the need for open-heart surgery. TAVR has become increasingly popular due to its reduced recovery time, lower risk of complications, and improved patient outcomes, especially among high-risk or elderly patients who may not be suitable candidates for traditional surgery.

Stent Technology

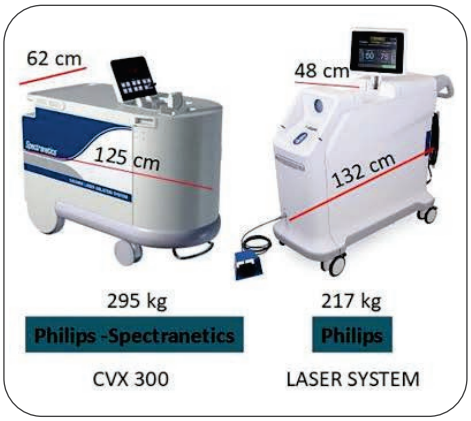
Traditional metal stents have been a standard treatment for coronary artery disease for decades. Stent struts have become thinner and drug and polymer technologies have evolved making stent delivery in complex lesions easier. Bioresorbable stents provide mechanical support to the artery during the healing process and then disappear, allowing the vessel to return to its natural state. However this technology has setbacks and has not reached prime time use.

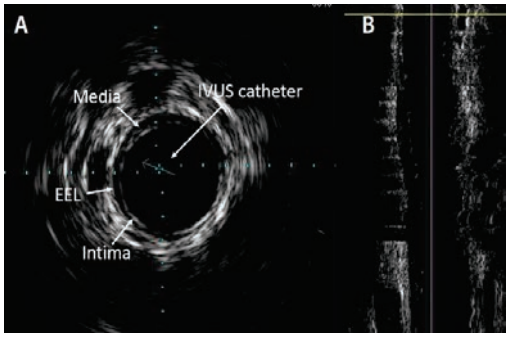
Robot-Assisted Intervention

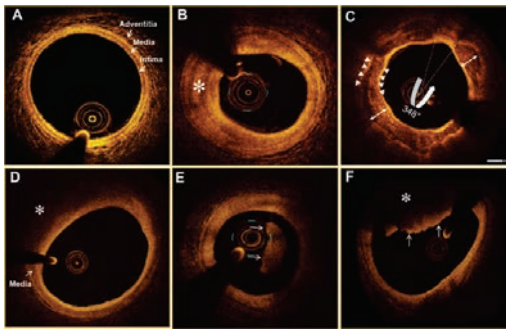
Robot-assisted interventions have gained traction in interventional cardiology. These systems provide greater precision and control during procedures, enhancing the safety and accuracy of interventions. Robotic platforms allow cardiologists to perform complex procedures with smaller incisions, reducing patient discomfort and speeding up recovery times. Furthermore, they reduce radiation to operators.

Fractional Flow Reserve (FFR) and Instantaneous Wave-Free Ratio (iFR)

Fractional Flow Reserve (FFR) and Instantaneous Wave-Free Ratio (iFR) are advanced physiological measurement techniques used to assess the severity of coronary artery blockages. These technologies help cardiologists determine the need for stenting or intervention more accurately. By measuring blood pressure changes across a narrowed segment of an artery, FFR and iFR provide real-time data on blood flow, assisting in the decision-making process and reducing unnecessary interventions.







Advanced Imaging Modalities

In recent years, interventional cardiology has benefited significantly from advancements in imaging technologies. High-resolution intravascular ultrasound (IVUS) and optical coherence tomography (OCT) have become indispensable tools for visualizing coronary arteries during procedures. These technologies provide cardiologists with detailed, real-time images, enabling precise placement of stents and thorough assessment of arterial health.

Cardiac resynchronisation therapy & EP interventions

This field has evolved significantly and 3D mapping and other EP ablations have become simpler. CRT implantation helps a lot of heart failure patients.

Laser assisted interventions

Use of laser has evolved and is now available for variety of applications; Laser can be used to vaporise thrombus during primary angioplasty and has a role in stent restenosis interventions. It is also useful for pacemaker lead retrievals.

Drug-Coated Balloons

Drug-coated balloons are another innovative intervention in the fight against coronary artery disease. These balloons, when inflated at the site of a narrowed artery, deliver a drug to prevent restenosis and promote healing. They offer a less invasive alternative to traditional stenting, particularly in cases where stent placement may be challenging.

Artificial Intelligence (AI) and Machine Learning

Artificial intelligence and machine learning are rapidly being integrated into interventional cardiology. These technologies help cardiologists analyze large datasets, predict patient outcomes, and optimize treatment strategies. AI-driven algorithms can assist in diagnosing heart conditions, personalizing treatment plans, and even predicting adverse events, ultimately improving patient care and outcomes.

Cardiac Transplantation

Transplantation is one modality that has also seen great advances and patients are now living longer after heart transplants when all other modalities of treatment have been exhausted. ECMO & Left ventricular assist devices have also become handy in selected patients waiting for transplant.

Conclusion

Interventional cardiology continues to evolve, with newer developments offering improved patient outcomes, reduced risks, and enhanced precision in diagnosing and treating cardiovascular diseases. From TAVR to bioresorbable stents, robot-assisted interventions, advanced imaging, physiological measurements, and the integration of AI and telemedicine, the field is at the forefront of medical innovation. As technology continues to advance, interventional cardiologists are better equipped than ever to provide timely and effective care, ultimately improving the quality of life for patients with heart conditions. These developments represent a promising future for interventional cardiology, where innovation and patient-centered care go hand in hand. Cardiology department at Sri Ramakrishna hospital has 4 state of art Cath labs. Facilities include Rotablation, IVUS, OCT, FFR , 3D mapping and EP lab . A laser has also being installed and this will be the first facility in Tamilnadu after Chennai. Primary angioplasty is done 24 x 7 for all acute MI patients at our centre.

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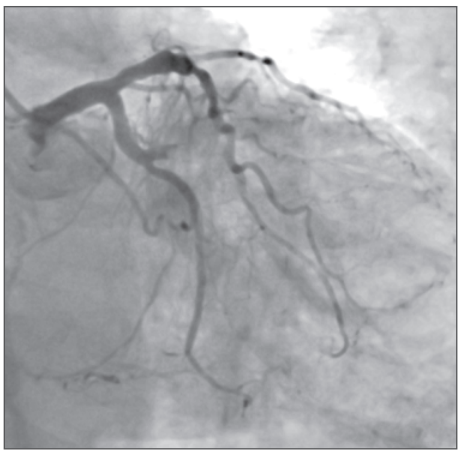
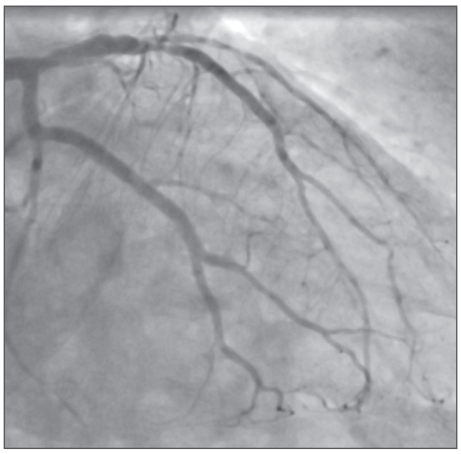
Unmasking the Cardiac Wolf in Sheep's Clothing: A Suspected 'Gastritis' Case



LCX Before PTCA



LCX After PTCA

We present an intriguing case that underscores the significance of maintaining a high index of suspicion and considering repeat cardiac evaluation in patients presenting with ischemic symptoms, even if prior assessments show normal results. In this report, we discuss the case of a 70-year-old male who underwent urological surgery and subsequently experienced epigastric and retrosternal pain, highlighting the need for timely intervention.

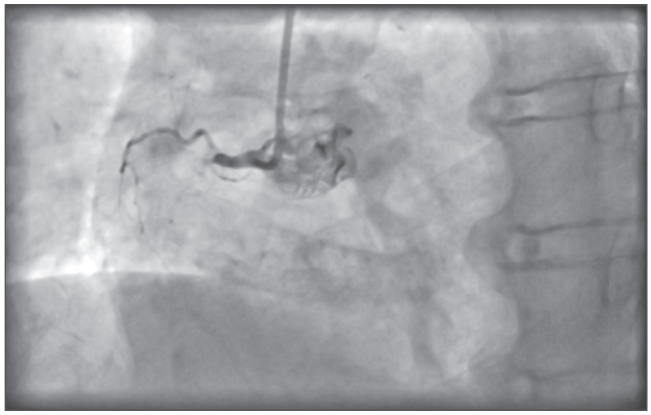
The patient initially sought care at an outside hospital, where he underwent cardiac evaluation, including an electrocardiogram (ECG) and echocardiogram (Echo), both of which turned to be normal findings. With this seemingly reassuring cardiac assessment, he was deemed fit for his planned urological surgery. However, a few days following his discharge, the patient's symptoms persisted, leading him to believe he was suffering from gastritis, given his recent cardiac evaluation and clearance.

In his quest for an alternative approach to address his discomfort, the patient sought consultation at a local Gastroenterology clinic. Dissatisfied with the clinic's environment, he declined an endoscopy and, instead, sought the opinion of Dr. Rajamani MS, McH, who wisely recommended further cardiac evaluation, despite the patient's prior cardiac assessment.

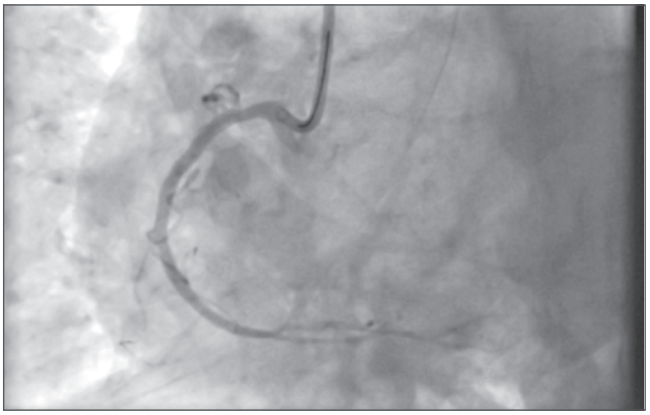
Upon presentation to our clinic, the patient's ECG revealed a startling finding: an Acute Inferior wall myocardial infarction (MI). Subsequent coronary angiography confirmed triple vessel disease, with complete occlusion of both the left circumflex artery (LCX) and right coronary artery (RCA), necessitating immediate primary percutaneous transluminal coronary angioplasty (PTCA) procedures on the LCX and RCA. PTCA of the left anterior descending artery (LAD) was performed subsequently.

This case serves as a poignant reminder of the importance of not solely relying on a patient's previous cardiac evaluation, especially in the presence of ongoing or new ischemic symptoms.

The seemingly normal preoperative ECG and Echo results did not rule out the possibility of underlying coronary artery disease. In this instance, a timely repeat ECG proved pivotal in uncovering a



RCA Before PTCA



RCA After PTCA

potentially life-threatening condition, ultimately leading to prompt intervention and a more favorable outcome for the patient.

In conclusion, we emphasize that clinicians should maintain a vigilant approach to patients presenting with ischemic symptoms, regardless of prior cardiac evaluations. This case underscores the critical role of repeat ECG assessments in the diagnostic workup, as it can reveal evolving cardiac conditions that may have been missed during initial evaluations. Early detection and intervention can make a substantial difference in patient outcomes.

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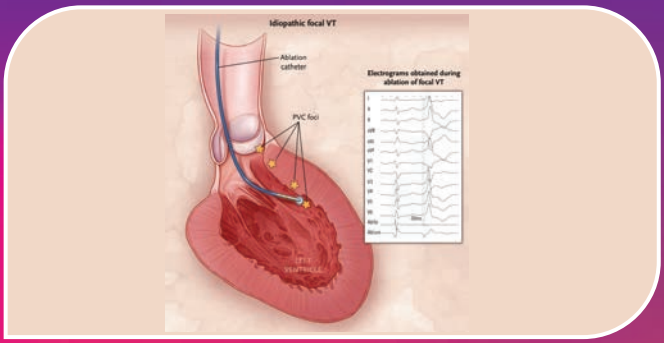
CT - Coronary Angiogram



Radiofrequency Ablation (RFA) of Ventricular Tachycardia (VT) in a Young Patient

Case Presentation

A 24-year-old female presented with palpitation followed by presyncope. Her pulse rate was 200 per minute and blood pressure was 90/70 mmHg. Her 12-lead ECG showed monomorphic VT with LBBB morphology (Figure 1). She was DC cardioverted in the ER. Following cardioversion, her baseline showed normal sinus rhythm without any ischemic changes.

Her labs were normal. Her echocardiogram showed normally functioning heart. She underwent cardiac MRI to look for any inflammatory or infiltrative cause. Cardiac MRI did not reveal any abnormality. She was diagnosed as a case of Monomorphic VT arising from outflow tract of the ventricle based on ECG morphology.

Electrophysiological study and radiofrequency ablation of LVOT VT

The patient was taken up for electrophysiology procedure. The right groin was infiltrated with 1% Lidocaine and accessed using a modified Seldinger technique and three venous sheaths (7, 7 & 6 French) were introduced into the right femoral vein under ultrasound guidance. Using similar technique, one 7 French sheath was introduced into the right femoral artery.

A decapolar electrophysiology catheter was placed in the coronary sinus. The mapping and ablation catheter was used to record a His bundle electrogram and was then placed in the right ventricle. A comprehensive EP study was performed, including: pacing and recording in the right atrium, right ventricle, and His bundle recording. Attempted induction of VT was performed using ventricular burst and extrastimulus pacing. Sustained ventricular arrhythmias were noted. Using a combination of pace mapping and activation mapping, the right ventricle was initially mapped. Later, left ventricular outflow tract was mapped.

The origin of the VT was mapped with electroanatomic (Ensite) and catheter mapping to the aortomitral continuity region of left ventricular outflow tract. (Figure 2 and 3) Radiofrequency energy with maximum power of 30 W and temperature of 50 degrees centigrade was applied to this region using an open irrigated 3.5 mm ablation catheter. Following ablation, VT was unable to be reinduced.

All antiarrhythmic drugs were stopped and there was no further episodes of VT during one year follow-up period.

Highlights:

Catheter ablation has emerged as the primary treatment of idiopathic VT and an additional tool for reducing VT burden in ischemic and scar VT.

Catheter ablation offers cure rates of over 90% and is the treat¬ment of choice for significantly symptomatic patients.

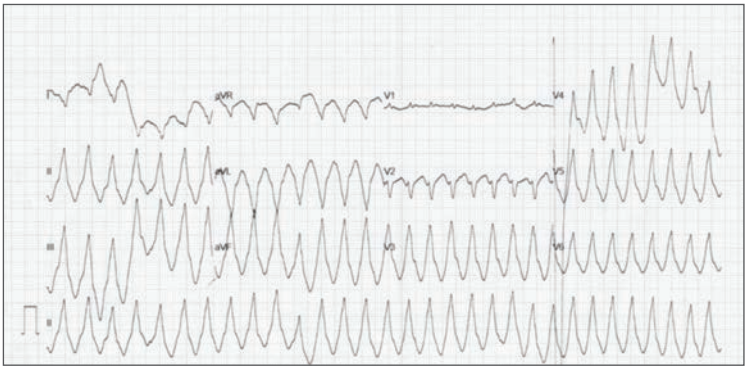


FIGURE 1
Twelve Lead ECG Showing Monomorphic Ventricular Tachycardia (VT)

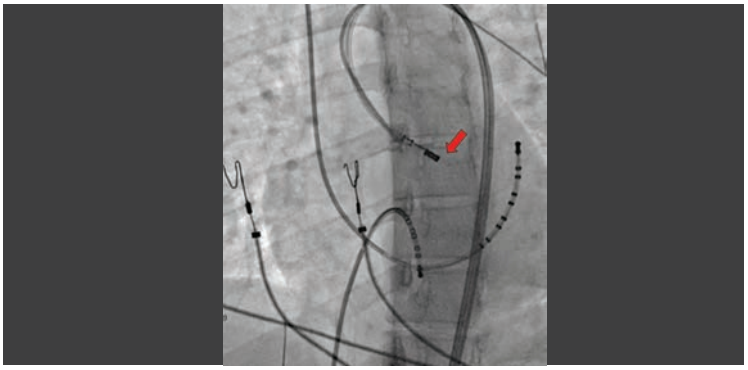


FIGURE 2
Fluoroscopic Image of Radiofrequency Ablation Catheter (arrow) Below The Left Coronary Cusp In Left Ventricular Outflow Tract

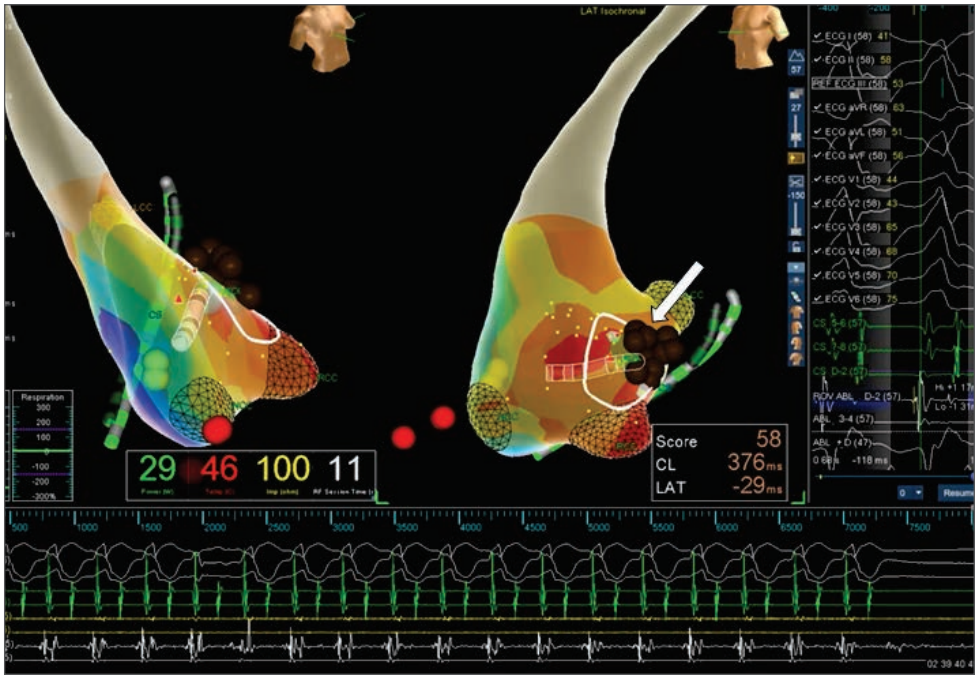


Figure 3
3d – Electroanatomical Map of Left Ventricle and Successful Site Of Ablation (arrow) (below Left Coronary Cusp)

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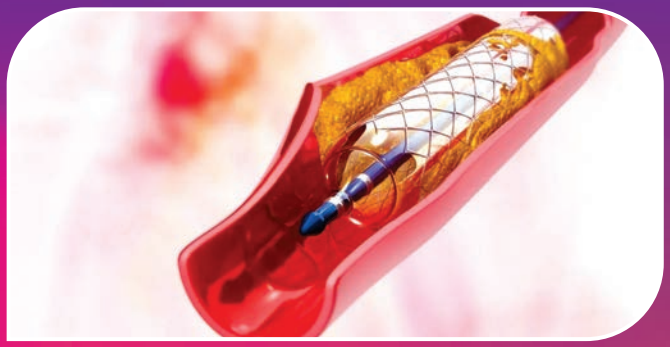
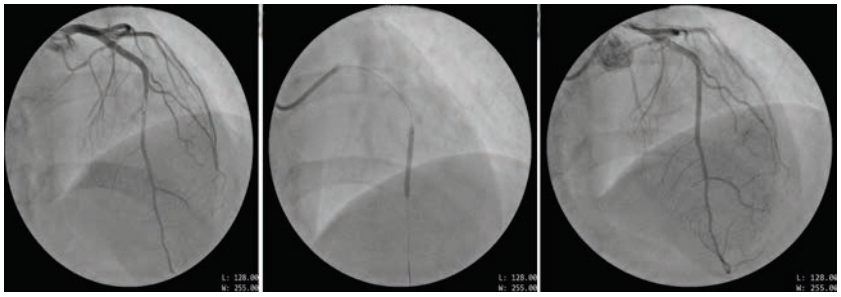


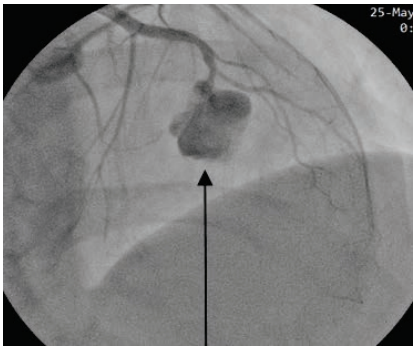
An Interesting Case of Stent Failure

Case Report

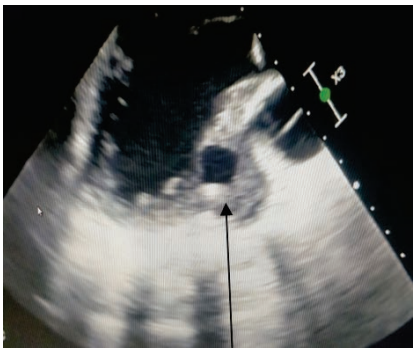
30 years Old, Male, Had anterior wall MI, CAG was done which revealed Single vessel disease and underwent PTCA (DES) – LAD on 13/3/2023.



- Immediately after PTCA he got discharged against medical advice without proper perioperative antibiotic coverage.
- Now admitted with complaints of recurrent high grade fever for 15days. ECG - F/S/O old anterior wall MI. Echo showed Moderate LV systolic function (EF-45%). CAG showed ISR with Aneurysm in LAD stent site.
- Median sternotomy, Pericardial adhesions released. While releasing the pericardium around the aneurysm gush of pus came out - C/S sent.
- Aorta Bi-caval cannulation, Aorta cross clamped, Antegrade root plegia. LAD aneurysm dissected out clots evacuated.

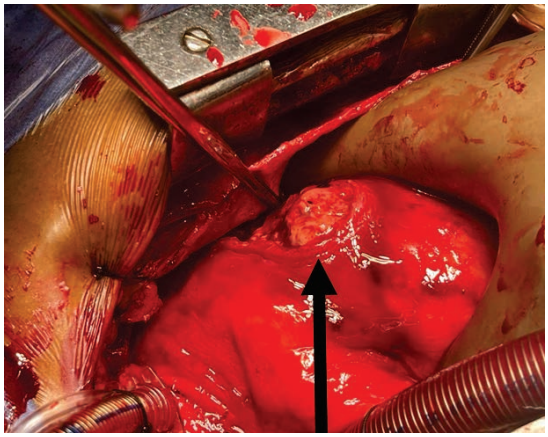


Aneurysm in Previously stented LAD

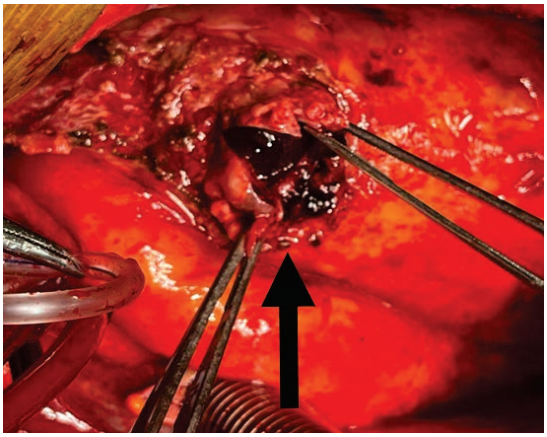


TEE showed collection anterior to Left ventricle within the LAD Stent

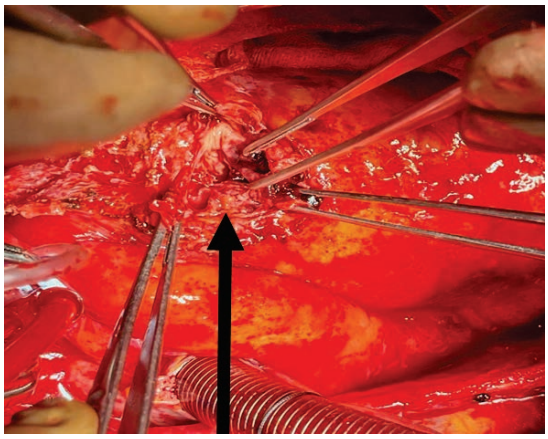
- LAD orifices sutured with pledgetted 4-0 prolene. Cavity cleaned well hemostasis achieved.
- Post operative period was uneventful. His cultures were sterile.He is having EF of 45 % and doing well in his follow-up periods.
- Take home message: Strict adherence to Peri-procedure antibiotics.Aggressive surgical management when medical management fails.



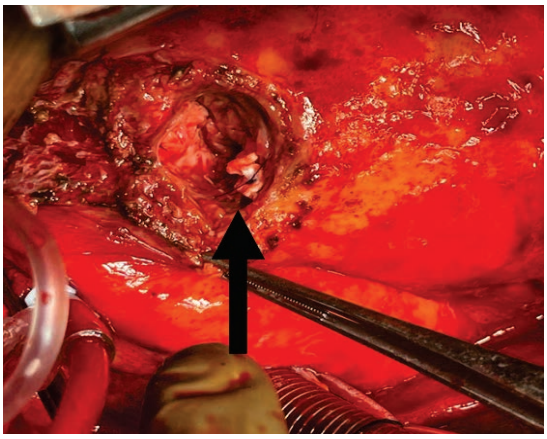
Aneurysm seen



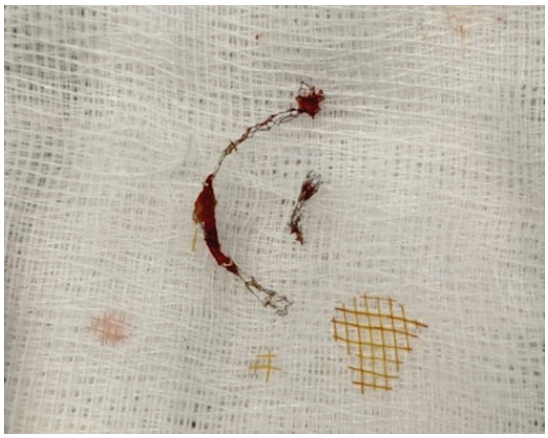
Aneurysm opened clots evacuated



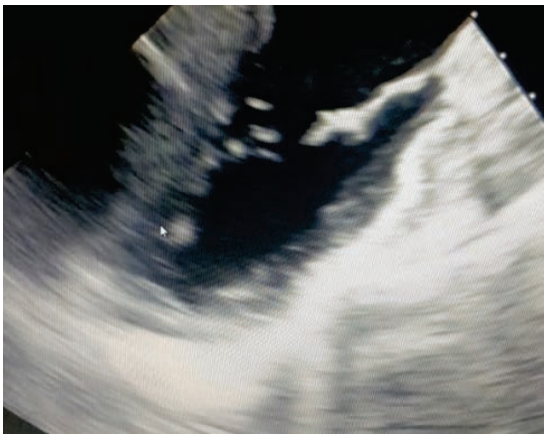
Stent seen protruding



Stent removed and LAD orifice closed.



Excised stent



No residual collection seen

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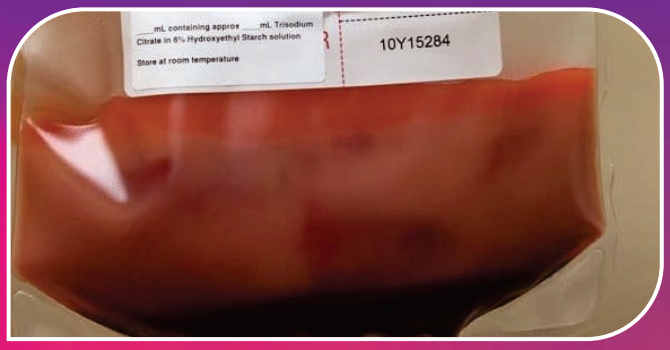

The Power of "Granulocyte Transfusion" in combating Multi-Drug Resistant Sepsis

Case Report

The emergence of multidrug-resistant organisms have become a major threat in day-to-day clinical practice in Haemato-oncology patients. We successfully treated sepsis in a neutropenic patient undergoing chemotherapy with serial granulocyte transfusions. Granulocyte transfusion shall be considered as a treatment option for severe infection in patients with profound neutropenia as a 'bridge' in imminent marrow recovery.

23 year old gentleman, a diagnosed case of **B-Acute Lymphoblastic Leukaemia (B-ALL),**who has achieved complete remission **(MRD-Minimal Residual Disease- Negative),** post-induction chemotherapy. He was admitted for consolidation chemotherapy with 'medium dose Methotrexate (2gm/m2)' as a part of routine chemotherapy (ALL-BFM) protocol.

He sustained multiple infections during the course of chemotherapy. He developed fever (Temp-103F) on day 4 of chemotherapy. Basic workup for fever like C-reactive protein level became elevated and Procalcitonin was positive. Broad spectrum antibiotic was started after blood culture, which showed **Enterobacter cloacae [Amp C].** His urine culture grew **Escherichia coli [AmpC Producer + Carbapenem Resistant].** His antibiotics were modified as per sensitivity pattern, but his fever pattern continued. His central venous access which was installed for chemotherapy was removed (as it was thought to be the source) and the Tip of catheter was sent for culture which grew **Klebsiella pneumoniae [AMPC].** Despite that he continued to have very high fever(104F). He slowly started detoriating, as he developed AKI (Acute Kidney Injury) with raise in Creatinine (2.6mg/dl) and Acute Liver Injury in the form of Direct Bilirubinemia [Bilirubin- 4.0 mg/dl (Direct-3.2mg/dl) and Transaminitis (SGOT-727u/l, SGPT-669u/l]. The further woke up of fever including CT thorax was not showing any signs of fungal infection. He was also empirically added on with antifungal (Anidulafungin) but his fever pattern persisted. He also developed extensive exfoliation of skin which was diagnosed as **TEN (Toxic Epidermal Necrolysis).** Dermatologist suggested possibilities of Drug **induced/ Sepsis induced** as a cause of TEN and advised to downgrade and terminate the offending antibiotics. His Total WBC count was only 50 blood cells/ul (Normal range- 4000-10,000 cells/ul) and Absolute Neutrophil Count(ANC) was less than 10cells/ul), which warranted continuation of high-end antibiotics. Hence we have decided to plan for Granulocyte Transfusion (GT). Family members were counseled regarding the need for GT and arranged for GT Blood Donors.

GT donor was stimulated with a single dose of subcutaneous Granulocyte Colony-Stimulating Factor (G-CSF; 5 µg/Kg) and oral Dexamethasone (8 mg) simultaneously 12h before leukapheresis (Granulocyte Apheresis). Granulocytes were collected by standard centrifugation leukapheresis

(Spectra Optia Apheresis System) with processing of approx 7.5 liters of blood in approximately 2.5 h via peripheral venous access. The collected granulocytes were promptly irradiated with 30 Gy [to prevent Graft versus Host Disease (GVHD)] and immediately transfused to patient without any delay.

Post one GT infusion, his fever pattern improved (Temp-99F) and he showed signs of clinical improvement. Since neutrophils could not survive for more than 48 h and moreover began to lose their function in less than 6 h, 2nd GT was performed (different GT Donor with similar stimulation).

The amount of granulocytes harvested (transfused) resulted in a mean of **4.0×10^{10}/day.** The in-vivo neutrophil increment was determined 14 to 16 h after GT and resulted in a mean of 1,015/µl. The fever subsided, the procalcitonin level decreased, the infection symptoms improved once the neutrophil count increased above 500/µl. He also showed signs of **'Bone marrow recovery-post chemotherapy'** and the absolute neutrophil count (without GT) reached 500/µl on day 21 post chemotherapy. His skin also showed signs of improvement and was successfully discharged.

Granulocyte transfusions have been used to treat and prevent infections (both bacterial and fungal) in neutropenic patients for more than 20 years. With the availability of High-end antibiotic (antibacterial, antifungal), the need for the GT became reduced. Two methods which are commonly used for Granulocyte Collections are "Buffy Coat" and "Granulocyte Apheresis". Granulocyte Apheresis collections is Qualitatively and Quantitatively superior and hence we opted for Apheresis based collection.

The use of GT is complicated by the technical difficulty of daily procurements of granulocytes for patients. The complexity of donor recruitment, screening, and care is also prohibitive as part of routine treatment for the infected patients with neutropenia. However, the use of a combination of G-CSF and Dexamethasone to mobilize granulocytes resulted in a sufficient yield of granulocytes. The efficacy of GT and the availability of G-CSF allow us to consider the feasibility of using GT for severe infection in patients with prolonged neutropenia.

The most important question that remains unanswered is, in which set of patients the administration of granulocytes will be beneficial? The preponderance of evidence suggests that granulocyte transfusions may be efficacious in few select cases as a temporary measure to control an infection that is expected (or proven) to be refractory to optimal antimicrobial treatment, and that could otherwise be controlled by 'marrow recovery', which is expected to happen. In this regard, they are best considered as a **"bridge"** that grants enough time for the recipient to develop their own response to the infection.

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Diabetes With Fractures

A curious case of diabetes with fractures in a young lady with weight gain

A 32 year old unmarried female was referred by an orthopedician with history of recurrent stress fractures. Upon detailed history, the patient had fatigue, generalised muscle weakness, and proximal myopathy. She had severe pains and progressive weight gain, oligoamenorhea. She was on the treatment for type 2 diabetes with Oral agents and had severe gastritis. Patient had hypertension on treatment and found no history of steroid use and unproven medication use. Mild hirsutism with round facies was present.

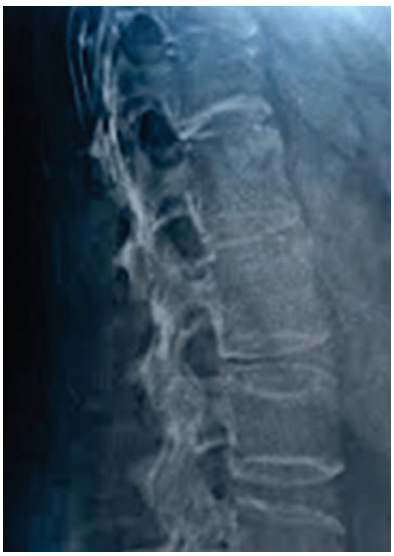
A provisional diagnosis of obesity, type 2 diabetes, PCOS, with work up needed for pathological stress fractures. Lab work showed patient had diabetes, normal prolactin, dyslipidemia normal LFT, RFT, electrolytes and thyroid function tests, calcium being normal. Vitamin D correction was done. Morning cortisol was normal > 5µg/dl. USG showed PCO. Xrays showed spine fractures with severe diffuse osteopenia elsewhere. BMD/DXA showed osteoporosis. Serum protein electrophoresis was normal.

All work ups for premature osteoporosis was normal except hypercortisolism which needs to be ruled out. Patient tested positive for 24 hour urinary free cortisol, LDDST , ONDST, 11 pm cortisol all being positive for hypercortisolism and ACTH being less than 5 and DHEAS negative indicative of Endogenous ACTH independent Hypercortisolism.

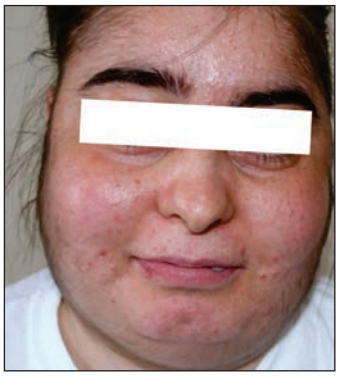
	Basal (morning)	ONDST	LDDST	11pm
Cortisol	17.6 µg/dl	24.6 µg/dl(< 2)	18 µg/dl(<2)	19 µg/dl(<2)

For Imaging a DOTAPET WHOLE BODY PET CT SCAN showed A right ADRENAL GLAND ADENOMA around 3 cm with rest unremarkable. Laproscopic adrenalectomy was done and patient post operatively went into hypocortisolism with remission of diabetes and hypertension, weight loss, muscle power improvement, and HPE of adenoma showed features of cortisol secreting adenoma. The patient is on follow up with hydrocortisone replacement and antiosteoporotic therapy.

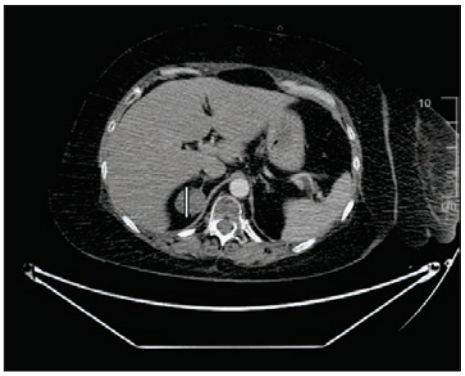
Any young lady with stress fractures with PCOS features / metabolic syndrome / Diabetes, Cushings syndrome needs to be in the differential diagnosis.

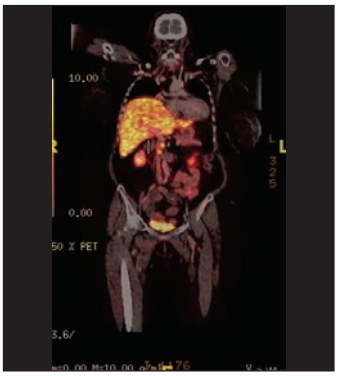


X ray spine showing osteopenia and fracture

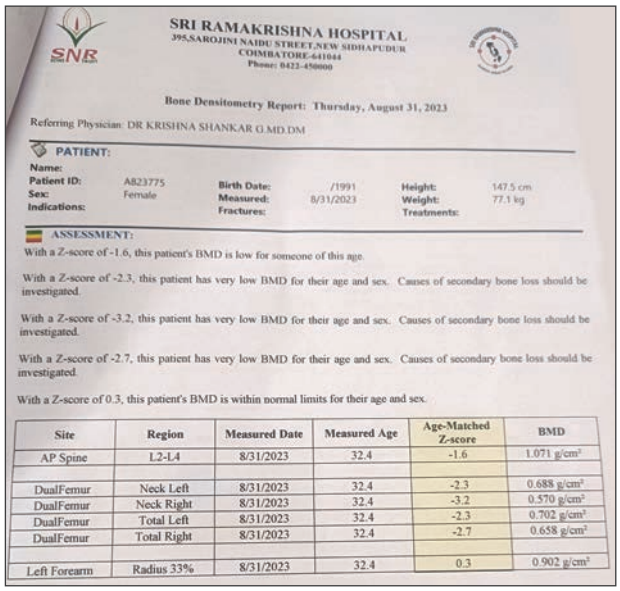


Model image:
Original image of patient not given due to patient denial





PET CT SCAN IMAGING OF RIGHT ADRENAL GLAND ADENOMA



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COIMBATORE-641044
Phone: 0422-450000

Bone Densitometry Report: Thursday, August 31, 2023

Referring Physician: DR KRISHNA SHANKAR G.MD.DM

PATIENT:

Name:
Patient ID: A823775
Sex: Female
Indications:
Birth Date: /1991
Measured: 8/31/2023
Fractures:
Height: 147.5 cm
Weight: 77.1 kg
Treatments:

ASSESSMENT:

With a Z-score of -1.6, this patient's BMD is low for someone of this age.

With a Z-score of -2.3, this patient has very low BMD for their age and sex. Causes of secondary bone loss should be investigated.

With a Z-score of -3.2, this patient has very low BMD for their age and sex. Causes of secondary bone loss should be investigated.

With a Z-score of -2.7, this patient has very low BMD for their age and sex. Causes of secondary bone loss should be investigated.

With a Z-score of 0.3, this patient's BMD is within normal limits for their age and sex.

Site	Region	Measured Date	Measured Age	Age-Matched Z-score	BMD
AP Spine	L2-L4	8/31/2023	32.4	-1.6	1.071 g/cm²
DualFemur	Neck Left	8/31/2023	32.4	-2.3	0.688 g/cm²
DualFemur	Neck Right	8/31/2023	32.4	-3.2	0.570 g/cm²
DualFemur	Total Left	8/31/2023	32.4	-2.3	0.702 g/cm²
DualFemur	Total Right	8/31/2023	32.4	-2.7	0.658 g/cm²
Left Forearm	Radius 33%	8/31/2023	32.4	0.3	0.902 g/cm²

BMD/DXA showing osteoporosis

Dr. G. KRISHNA SHANKAR
MBBS., MD(Gen Med)., DM(Endo & Diab).,
MRCP(UK)., SP.CERT(Endo & Diab)

Consultant in Diabetes, Thyroid and Endocrinology

Management of shock in the Older Adult

Critical illness can be present without marked vital sign abnormalities. Clinicians should be aware of alterations in potential presenting features of critical illness and decreased perfusion in older adult so as not to miss occult shock or impending decompensation .

Initial Steps

Although critically ill patients usually receive simultaneous interventions, initial steps should follow the standard "C-A-B" algorithm, actively working to stabilize hypotensive patients to optimize hemodynamics and avoid peri-intubation cardiac arrest .Large-bore intravenous (IV) access is ideal for resuscitation, both for rapidity of fluid infusion and for vasopressor use. A full set of laboratory tests should be obtained. Additional diagnostics depend on patient presentation and etiology of shock. Bedside ultrasound isa key diagnostic toolin undifferentiated shock and to guide resuscitation.

Hypovolemic Shock

Older patients with hypovolemic shock should be resuscitated with crystalloid orblood products as appropriate. Given the greater difficulty in maintaining appropriateacid-base balance in older adults,balanced solutions such as plasmalyte or lactatedRinger's, should be used. The physician should use cardiac echocardiographic to determine if right heart strain, diastolic dysfunction, or reduce dejection fraction necessitate a slower infusion to prevent exacerbating heart failure or precipitating pulmonary edema. Patients with hemorrhagic shock should be transfused with whole blood. Prompt,definitive hemostasis remains key to prevent prolonged hypoperfusion to organ systems and to improve outcomes regardless of age.

Cardiogenic Shock

There are much higher incidences of primary cardiac illness, such as heart block or myocardial infarction (MI) in older adults. When heart function is worsened or there is development of new heart failure secondary to an acute insult such as MI or PE, treatment of the underlying pathology with support of cardiac function is key. A cardiogenic component to shock can accompany other types of shock as well. Mixed venousoxygen (ScvO2) less than 70% from a central line catheter could be indicative of cardiogenic shock,but may fail to detect the cardiac component in states of decreased oxygen requirement, suchas neuromuscular blockade or high blood flow with decreased extraction, such as sepsis.Likewise, it would be incorrect to assume cardiogenic shock in high demandstates such as after a seizure, in hypoxemic states such as acute respiratorydistress syndrome (ARDS), or in the setting of severe anemia.

Epinephrine at inotropic doses is generally recommended in the emergency department due to the easy titratability and vasoconstrictive effectsof epinephrine, which can obviate the need for other vasopressors. Dobutamine and milrinone, while providing good inotropic effect, usually cause peripheral vasodilation often requires the addition of norepinephrine. In the case of cardiogenicshock secondary to acute MI, norepinephrine is recommended over epinephrinedue to higher incidence of refractory shock with epinephrine use.physicians should be prepared for secondary arrhythmias arising from use of inotropic medications given their arrhythmogenicity and the increased pr opensity of the older and critically ill populations to develop arrhythmias such as rapid atrial fibrillation orventricular tachycardia.In borderline hypotensive patients or those on vasopressors, the options to manage these rhythms are limited to relatively

hemodynamicallystable medications such as digoxin (for atrial fibrillation) or slow amiodaronebolus, or even electric cardioversion if hemodynamics are worsened.

Septic Shock

In patients with septic shock, existing evidence supports the avoidance of over aggressive IV fluid resuscitation and points to potential benefits with earlyadministration of vasopressors. Although the Surviving Sepsis Campaign guidelines make a general recommendation for a mean arterial pressure goal of 65 mm Hg orgreater in septic shock,the recent 65 Trial indicates that a lower goal of 60 mmHg may be a safe alternative in patients older than 65 years. Current guidelines in septic shock call for early source control, appropriate antibiotics,and norepinephrine as the first-line vasopressor, vasopressin as a second-line agent.

Clinics Care Points

Assessment of mental status, the shock index, and capillary refill time are better indicators of perfusion status and potential shock state.

The standard medications for RSI (rapid sequence inubation)are generally safe in older patients, but decreased dosing ofsedative agents is recommended

Management of the various shock states is generally the same; geriatric patients are athigher risk for pulmonary edema and arrhythmias in response to fluid resuscitation and intravenous catecholamines, and may require less aggressive options if they are too sick.

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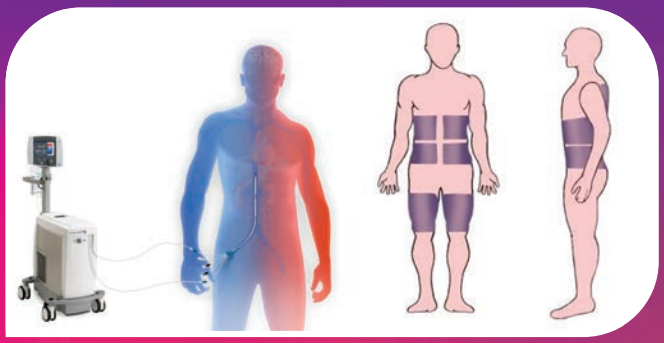
M.D.,
E.R.Consultant



Targeted Temperature Management (TTM)

Introduction

Targeted temperature management (TTM), previously known as mild therapeutic hypothermia, in selected patients surviving out-of-hospital sudden cardiac arrest (OHCA) can significantly improve rates of long-term neurologically intact survival, and it may prove to be one of the most important clinical advancements in the science of resuscitation in Emergency Department. TTM is an active treatment that tries to achieve and maintain a specific body temperature in a person for a specific duration of time in an effort to improve health outcomes during recovery after a period of stopped blood flow to the brain. This is done in an attempt to reduce the risk of tissue injury following lack of blood flow. Periods of poor blood flow may be due to cardiac arrest or the blockage of an artery by a clot. Targeted temperature management is thought to prevent brain injury by several methods, including decreasing the brain's oxygen demand, reducing the production of neurotransmitters like glutamate, as well as reducing free radicals that might damage the brain.

Guidelines

The American Heart Association (AHA) guidelines on TTM can be summarized as follows:

- Induce hypothermia for unconscious adult patients with return of spontaneous circulation (ROSC) after OHCA when the initial rhythm was ventricular fibrillation (VF) or pulseless ventricular tachycardia (pVT)
- Similar therapy may be beneficial for patients with non-VF/non-pVT (nonshockable) OHCA or with in-hospital arrest
- The temperature should be maintained between 32ºC and 36ºC
- It is reasonable to maintain TTM for at least 24 hours
- Routine prehospital cooling of patients with ROSC with intravenous (IV) rapid infusion is not advised
- It is reasonable to prevent fever in comatose patients after TTM
- Hemodynamically stable patients with spontaneous mild hypothermia (>33°C) after resuscitation from cardiac arrest should not be actively rewarmed

Inclusion criteria

Patients who have been shown to benefit from induced hypothermia include the following:

- Intubated patients with treatment initiated within 6 hours after cardiac arrest (nonperfusing VT or VF)
- Patients able to maintain a systolic blood pressure above 90 mm Hg, with or without pressors, after cardiopulmonary resuscitation (CPR) [2, 3, 4]
- Patients in a coma at the time of cooling

Exclusion criteria

Patients for whom hypothermia may theoretically carry increased risk include those with the following conditions:

- Recent major surgery within 14 days - Possible risk for infection and bleeding
- Systemic infection/sepsis - Small increase in risk of infection
- Coma from other causes (drug intoxication, preexisting coma prior to arrest)
- Known bleeding diathesis or with active ongoing bleeding - Hypothermia may impair the clotting system (however, patients may receive chemical thrombolysis, antiplatelet agents, or anticoagulants if deemed necessary in the treatment of the primary cardiac condition)
- In addition, hypothermia is inappropriate in patients with a valid do not resuscitate order (DNR)
- patients may receive chemical thrombolysis, antiplatelet agents, or anticoagulants if deemed necessary in the treatment of the primary cardiac condition)

Cooling Methods

- Surface cooling with ice packs
- Surface cooling with blankets or surface heat-exchange device and ice
- Surface cooling helmet
- Internal cooling methods using catheter-based technologies
- Internal cooling methods using infusion of cold fluids
- with a valid do not resuscitate order (DNR)

Treatment protocols

The goals of treatment include achieving the target temperature as quickly as possible; in most cases, this can be reached within 3-4 hours of initiating cooling. Three phases of TTM include induction, maintenance, and

rewarming. Rewarming can be begun 24 hours after the time of initiation of cooling, with avoidance of hyperthermia. External cooling with cooling blankets or surface heat-exchange device and ice. Before initiating cooling, confirm eligibility and gather materials.

- Obtain 2 cooling blankets and cables (one machine) to "sandwich" the patient; each blanket should have a sheet covering it to protect the patient's skin
- Alternatively, place heat-exchange pads on the patient per the manufacturer's recommendation
- Pack the patient in ice (groin, chest, axillae, and sides of neck); use additional measures as needed to bring the patient to a temperature between 32°C and 36°C; avoid packing ice on top of the chest, which may impair chest wall motion
- Monitor vital signs and oxygen saturation and place the patient on a continuous cardiac monitor, with particular attention to arrhythmia detection and hypotension
- Once a temperature below the goal temperature is reached, remove ice bags and use the cooling blanket or heat-exchange device to maintain temperature between 32°C and 36°C

Supportive therapy

- A mean arterial pressure (MAP) goal of more than 80 mm Hg is preferred; hypertension is potentially additive to the neuroprotection of hypothermia
- Norepinephrine can be used, starting at 0.01 mcg/kg/min and titrated to a MAP above 80 mm Hg
- Practice standard neuroprotective strategies such as placing the head of the bed at 30°
- Obtain a 12-lead electrocardiogram (ECG) after ROSC to evaluate for the presence of ST-elevation (class I, level of evidence B)
- Monitor for dysrhythmia (most commonly bradycardia) associated with hypothermia
- If life-threatening dysrhythmia arises and persists, or hemodynamic instability or bleeding develops, discontinue active cooling and rewarm the patient
- During cooling, an ECG Osbourne or camel wave may be present; heart rate less than 40 bpm is common and is not a cause for concern in the absence of other evidence of hemodynamic instability
- Check skin every 2-6 hours for thermal injury caused by cold blankets
- Regularly check the patient's temperature with a secondary temperature monitoring device when cooling
- After TTM, fever should be avoided
- Maintain oxygen saturation above 94%
- Do not provide nutrition to the patient during the initiation, maintenance, or rewarming phases of the therapy)

Controlled rewarming

Begin rewarming of the patient 24 hours after the initiation of cooling.

- Rewarm slowly at a rate of 0.3-0.5°C every hour
- Rewarming will take approximately 8-12 hours
- Remove cooling blankets (and ice if still in use)
- One method is to set the water temperature in the cooling device to 35°C and then increase the water temperature by 0.5°C every 1-2 hours until a stable core body temperature of 36°C has been reached for 1 hour
- Maintain the paralytic agent and sedation until the patient's temperature reaches 36°C; if infusing, discontinue the paralytic agent first; the sedation may be discontinued at the practitioner's discretion
- Monitor the patient for hypotension secondary to vasodilation related to rewarming
- Discontinue potassium infusions
- Avoid hyperthermia

Overview

The incidence of out-of-hospital sudden cardiac arrest (OHCA) in industrial countries is reported to be between 35.7 and 128.3 cases per 100,000, with a mean of 62 cases per year. Despite nearly 40 years of prehospital advanced life support, the survival rate of OHCA is very poor.

Less than half of victims who develop return of spontaneous circulation (ROSC) survive to leave the hospital alive, and the cause of death is anoxic brain injury in most patients with ROSC who die within one month of the cardiac arrest. Inducing mild therapeutic hypothermia in selected patients surviving OHCA has a major impact on long-term neurologically intact survival and may prove to be one of the most important clinical advancements in the science of resuscitation in emergency department. Some early great physicians, including Hippocrates, recognized the utility of hypothermia in attenuating injury.

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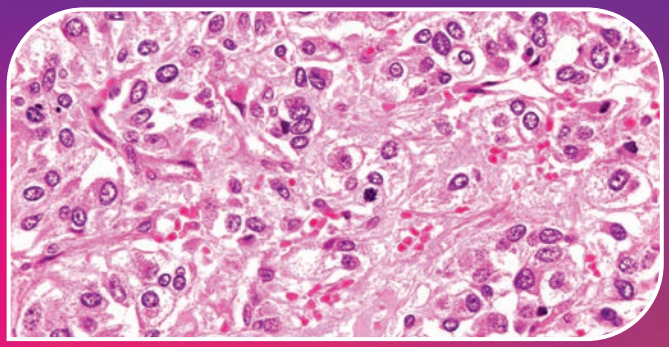

A Giant Cystic Phaeochromocytoma Mimicking Liver Abscess - an Unusual Presentation

Introduction

Cystic phaeochromocytoma is a rare neuro-endocrine tumour and very rarely they may present as predominantly cystic masses. The presentations of such cystic pheochromocytomas mimics cysts of liver, pancreas, kidney and rarely imitate liver abscess. Here we present such a case report.

Case Report

A 59 year old known hypertensive female attended the emergency department with complaints of right upper abdominal discomfort and high grade fever. On examination patient had hypotension with feeble peripheral pulses and cold peripheries. Systemic examination was normal except for tenderness over right hypochondrium. Bed side sonography and haematological investigations revealed a 12X12 cm abscess in right lobe of liver, leucocytosis with neutrophilia, haemoglobin of 10 gm/dl levels respectively. A provisional diagnosis of liver abscess with septic shock was arrived. After stabilisation, dark coffee coloured fluid was aspirated from liver abscess under sonographic guidance.

A follow up sonography revealed a large cyst in upper pole of right kidney with normally appearing liver parenchyma. Further evaluation with contrast enhanced computed tomography revealed a large cystic lesion in the right suprarenal region measuring 11.2 x 9.6 x 9.8cm (Fig.1). The cyst showed a thin enhancing wall, small nodular solid non-enhancing components within the cyst and was reported to be a simple adrenal cyst or a complex cystic neoplasm of right adrenal gland. Serum, urinary biochemistry and tumour marker assays were within normal limits.

An adrenal cyst excision with right adrenalectomy through conventional open retroperitoneal approach was planned and proceeded. A cyst of about 11X9X9 cm was noted in the right supra renal region (Fig 2a). The walls of the cyst was removed along with right adrenal gland and sent for histopathological examination(Fig 2b).The nature of aspirate from cyst was similar to the aspiration done earlier. The intra-operative period was characterised by wide fluctuation in the blood pressure requiring use of supportive drugs intra operatively. The patient was normotensive in postoperative period. The patient's postoperative recovery was uncomplicated. The histopathological report revealed that the cyst was negative for malignancy and was a predominantly cystic pheochromocytoma with matured clots inside the cyst.

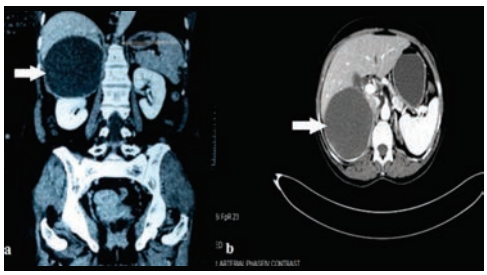

Fig.1(a) Contrast enhanced computed tomography, solid arrow showing the adrenal cyst in axial cut **(b)** Contrast enhanced computed tomography, solid arrow showing the adrenal cyst in coronal cut

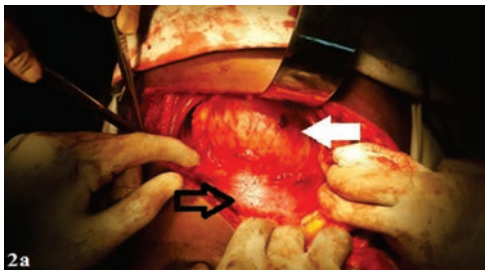

Fig.2a Intraoperative photograph, solid arrow showing the adrenal cyst and outlined arrow showing the right kidney

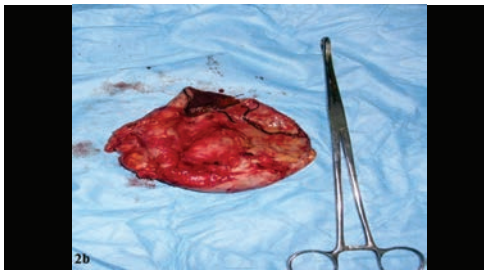

Fig.2b Postoperative photograph of the adrenal cyst specimen

Discussion

Cystic adrenal masses are uncommon and have been reported to have an incidence of 0.064-0.18% in autopsy series; cystic masses account for about 4-22% of all adrenal incidentalomas .Pheochromocytomas usually present with triad of episodic headache, sweating, and palpitations .More than 90% of patients will have one or more symptoms of the classic triad. Other symptoms include pallor, nausea, tremor or trembling, fatigue, anxiety, pain, and flushing. Cystic pheochromocytomas are unusual and rare variants of pheochromocytomas. These may not demonstrate the classical clinical, biochemical or radiological features of phaeochromocytomas. Cystic pheochromocytomamay have non-specific abdominal symptoms as presenting complaints .They may even confuse it with hepatic cysts and neoplasms. Large cystic pheochromocytomas are often asymptomatic because the secreted catecholamines are metabolized within the tumour, and only a small amount, if any is released into the circulation and are not high enough to provide abnormal urinary values, although are sufficient to provoke the typical symptomatology like hypertension.

They tend to yield negative biochemical analysis. These features deter surgeons from conducting a full evaluation for phaeochromocytoma and mislead the final diagnosis. But most of the metabolic products are proposed to be stored in capsular mass and are released when isolating the mass during surgery or during needle biopsy resulting in alarming fluctuations of blood pressure. It has been postulated that when the tumour outgrows its blood supply, there occurs haemorrhage into tumour followed by necrosis and eventually contents are liquefied and resorbed. They show areas of low attenuation, with Hounsfield units in the range of 5 to 15 and rim enhancement on contrast enhanced computed tomography.

The use of MIBG radionucleotide scan is highly recommended for identifying atypical pheochromocytomas like the cystic pheochromocytoma and differentiating them from benign adrenal cysts. But availability and affordability of radionucleotide scans at all centres in developing countries is at doubt. For an adrenal neoplasm, resection is the curative treatment.

The indication of surgery in adrenal incidentalomas have been published and accepted but indication of surgery in largely or purely cystic adrenal masses is less clear. Though laparoscopic adrenalectomy is safe, effective, and minimally invasive, gold standard in the surgical management of giant cysts is traditional open surgery. The timing of the ligation of the central vein should be decided based on the function of the giant cystic pheochromocytoma. The central adrenal vein should be dissected and ligated earlier during the resection to reduce tumour size and control blood pressure. Moreover, blood loss would be decreased because most catecholamines would not drain into the blood, resulting in hypotension.

High index of suspicion of pheochromocytoma in adrenal cystic lesions should be maintained even in absence of characteristic symptoms and negative biochemical analysis, as it could be an extremely rare functioning cystic phaeochromocytoma. Failure to recognize cystic pheochromocytoma before resection may lead to uncontrollable hypertension in the operating room, with potentially serious consequences. Variants of pheochromocytoma must be kept in the list of the differential diagnosis of large cysts in upper abdomen and cystic adrenal lesions, as they are difficult to suspect and diagnose preoperatively. Computed tomography, magnetic resonance imaging and radio nucleotide studies reveal more information about the location of such giant cysts when in doubt than sonography.

Too much dependence on preoperative biochemical analysis of urine and serum might misguide the surgeon from the diagnosis. High level of preparedness to tackle crisis intra operatively is a must while approaching such cysts. The rarity of this entity is due to the various mimicking patterns, diagnostic difficulties and even more normal biochemical values. Actual rarity of incidence reported is not of rarity in occurrence but due to the difficulty in diagnosing cystic pheochromocytoma. Most of them are misdiagnosed leading to their rarity.

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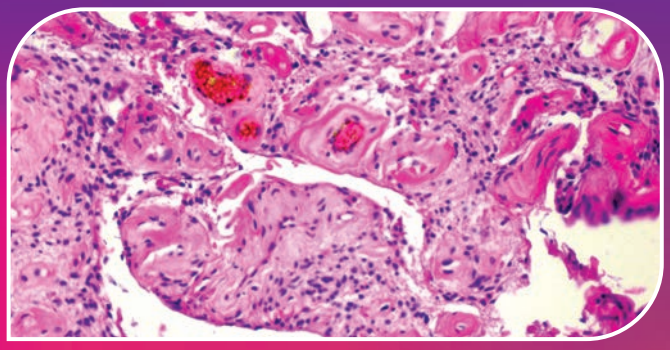


Painless Left Inguinal Mass: A Rare Case Of Cellular Angiofibroma

Case Report:

A 73 year old male patient was admitted in General surgery with known case of Diabetes Mellitus, Systemic hypertension, post PTCA and recently diagnosed COPD was presented with lump over mid inguinal region of 7 months duration.

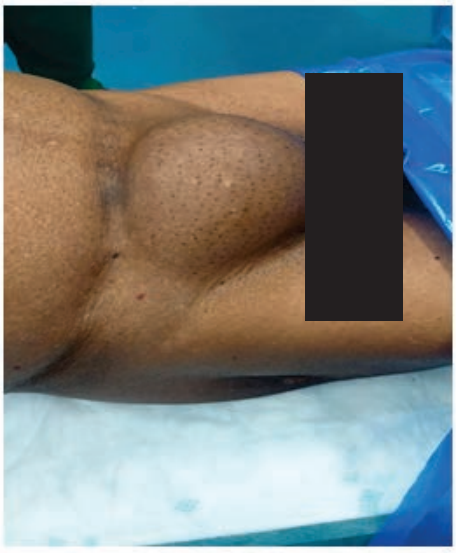
History of pain over the mid inguinal region on and off since 10 days, no bladder bowel disturbance, no history of loss of appetite and loss of weight.

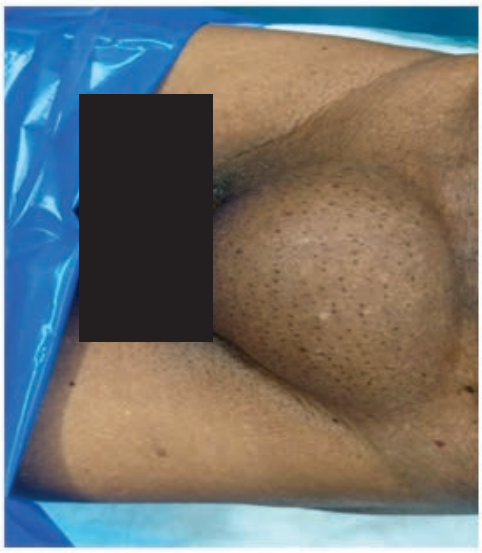
Clinical examination reveals lump in the left inguinal region of size 10×7cm, hard in consistency, freely mobile, no evidence of any cough impulse and tenderness over the swelling. On evaluation with US, abdomen showed solid appearing high echogenic mass lesion measuring about 6.7×11.0×9.7 cm. No vascularity within & no calcification.

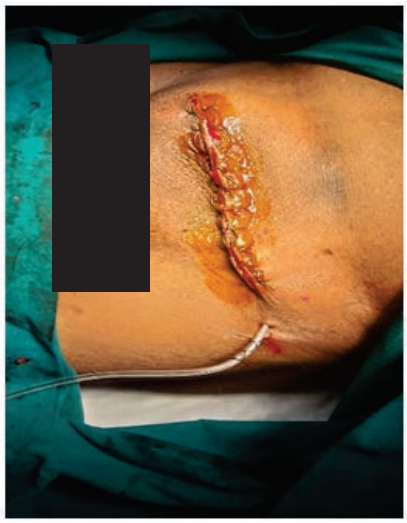
Both testes and epididymis are unremarkable & likely diagnosis of lipoma. Chest x-ray & all other investigations are found to be normal.

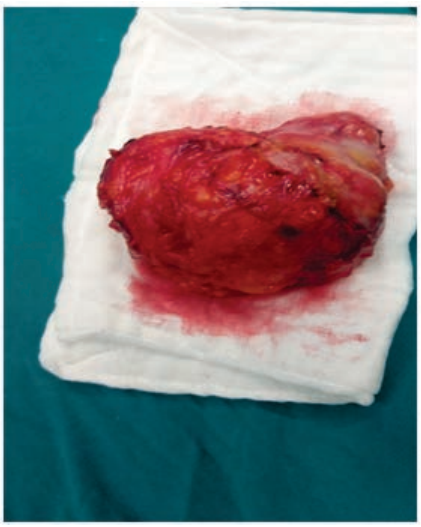
Patient underwent surgery after thorough investigations & intra operatively the tumor was solid, not adherent to any underlying structures & tumor was excised in toto. HPE reported as Cellular Angiofibroma with features of proliferation of spindle shaped cells with mildly pleomorphic nuclei.

No mitotic activity, definite lipoblasts are not evident, Immunohistochemistry done, focally positive for ER, negative for MDM-2 & desmin. IHC also stained for ALK-1, STAT-6, IGG & IG-4 also negative.









Discussion:

Cellular Angiofibroma is a rare Benign tumor of superficial soft tissues first described by M.R.Nucci et al. in 1997. These tumors occur predominantly in the distal parts of the female and male reproductive systems. i.e. vulvo vaginal and inguino scrotal areas. It can be easily misdiagnosed as Inguinal hernia in clinical practice.

Cellular Angiofibroma tumors composed of bland mesenchymal spindle shaped cells in an edematous to fiber laded connective tissue background. In 2020 WHO classified Cellular Angiofibroma tumors into a category of benign fibroblastic and myofibroblastic tumors. The current standard treatment for treating CAF tumors is total surgical resection (i.e. resection that does not leave any residual neoplastic tissue behind). This treatment appears adequate (i.e. curative) even in cases were CAF tumors contain atypical cells &/or sarcoma-like histopathology.

In many reported cases, CAF tumor rarely recur at the sites of their surgical removal whether treated by total or simple resection and have not been reported to metastasize. Consequently, the prognosis for CAF is excellent.

CAF tumors rarely recur after surgical removal and do not metastasize to distant tissues. Accordingly, surgical resection is the commonly performed and current standard for treating these tumors.

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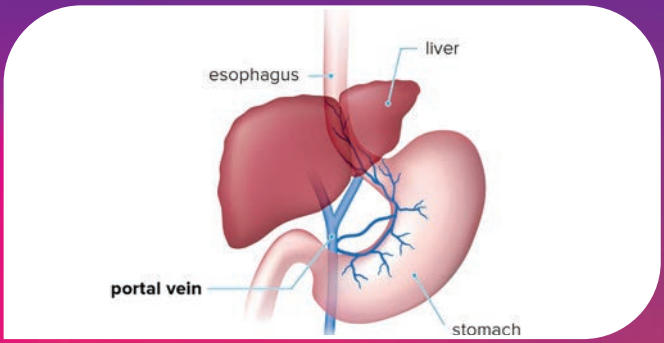
Consultant Surgeon



Shunt surgery for portal hypertension

An effective one time solution for esophageal and gastric variceal bleeding

Portal hypertension (PHT) is classified as presinusoidal, sinusoidal or postsinusoidal on the basis of the anatomic location of the resistance to portal flow. Prehepatic obstruction of the portal vein results from congenital atresia of portal vein, extrinsic compression or thrombosis, like in extrahepatic portal venous obstruction (EHPVO). Intrahepatic and post hepatic PHT are generally due to cirrhosis and Budd Chiari syndrome, respectively.

The most urgent indication for the surgical treatment of PHT is haemorrhage. The issue that we would like to highlight here is PHT due to presinusoidal causes where an effective one time surgical cure to prevent bleeding could be safely offered.

Extrahepatic portal venous obstruction (EHPVO) and noncirrhotic portal fibrosis (NCPF) together account for 20-30% of acute variceal hemorrhage presenting to the emergency services in our country. The etiology of these presinusoidal causes of PHT has remained obscure. In our country, EHPVO affects young people (age of onset <20 years) with the first bleeding episode occurring before puberty in most patients.

Patients with EHPVO have good liver function, which remains preserved over the long term and a moderately enlarged spleen. They tolerate variceal bleeding episodes well, in that they don't develop liver decompensation after bleeding.

What kills them usually is haemodynamic compromise during the bleeding itself. This is entirely preventable with surgical treatment. Children and young adults with EHPVO may have significant growth retardation (50%), symptomatic hypersplenism (15–20%), and may develop symptomatic portal biliopathy (obstructive jaundice) in the long run as a consequence of the periportal cavernoma compressing on the extrahepatic bile duct.

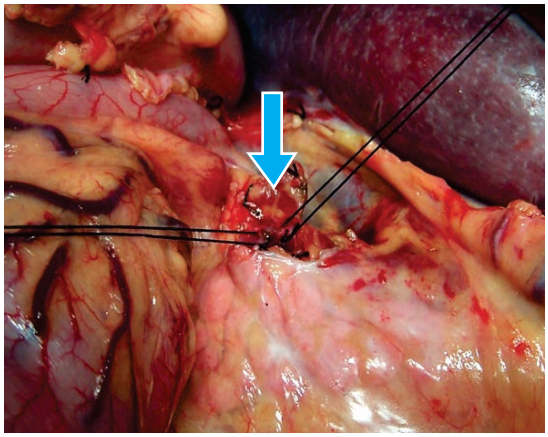
While the bleeding related to portal hypertension due to most causes could be effectively managed by endoscopic interventions, shunt surgery offers an effective one stop solution for causes like EHPVO.

PSRS (Proximal splenorenal shunt) is the most commonly performed shunt operation for EHPVO. It effectively controls bleeding related to portal hypertension (rebleed rate <5%), ameliorates symptoms related to hypersplenism and splenomegaly, reverses portal biliopathy in many, and improves growth in children.

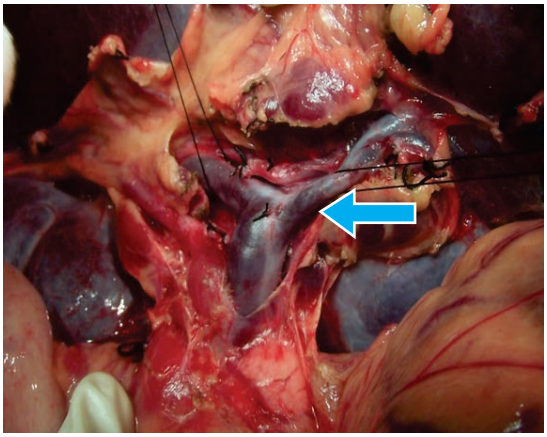
Like in endoscopic interventions, a lifelong periodic follow up and surveillance is not required after surgery. Complications related to surgery are rare (1-2%) in tertiary referral centers like ours.

As EHPVO is most prevalent in low socio-economic strata, it remains even more valid to offer them a onetime solution in the form of PSRS and put them back to their daily livelihood as early as possible, instead of endoscopic therapy which needs to be performed in several stages and over a long period of time. Our team has performed 15 successful shunt operations (PSRS) at Sri Ramakrishna Hospital in the last 5 years with good short term and long term outcomes in all. Our team carries a very rich experience in shunt surgery for prehepatic causes like EHPVO, devascularisation procedures for NCPF, and liver transplantation for end stage liver disease.

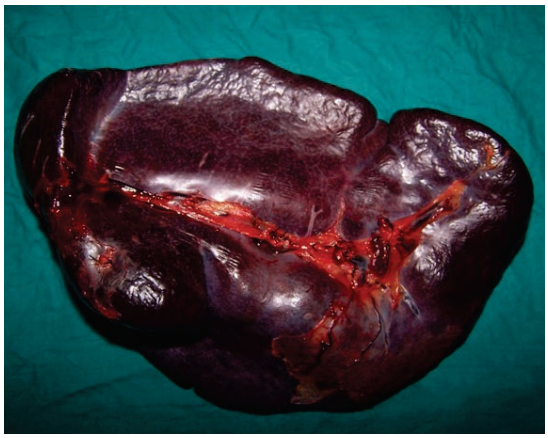
In the pictures, we show the steps of a meticulously done PSRS operation.



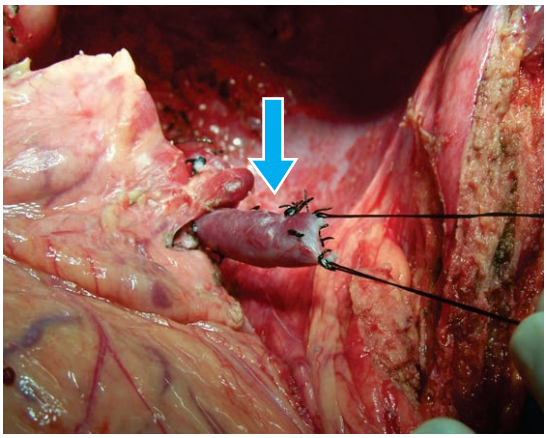
Splenic artery (Blue arrow) ligation



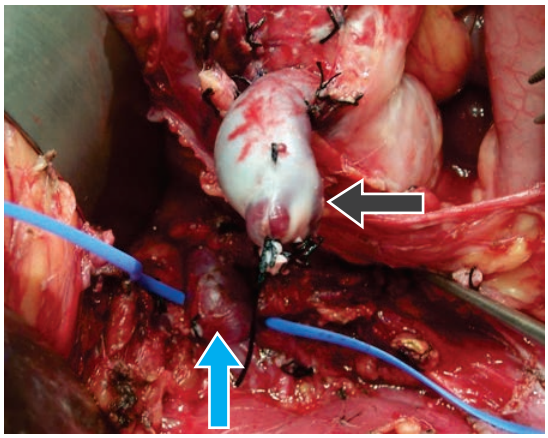
Splenic hilum dissection with polar splenic vein ligation (Blue arrow)



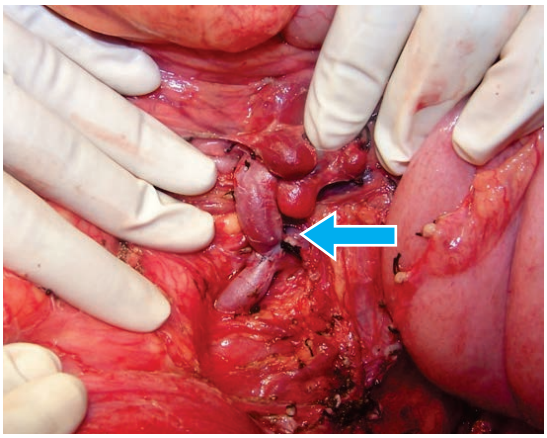
Splenectomy



Splenic vein mobilization (Blue arrow)



Left renal vein (Blue arrow) mobilized and ready for anastomosis with mobilized splenic vein (Black arrow)



Completed shunt anastomosis (Blue arrow)

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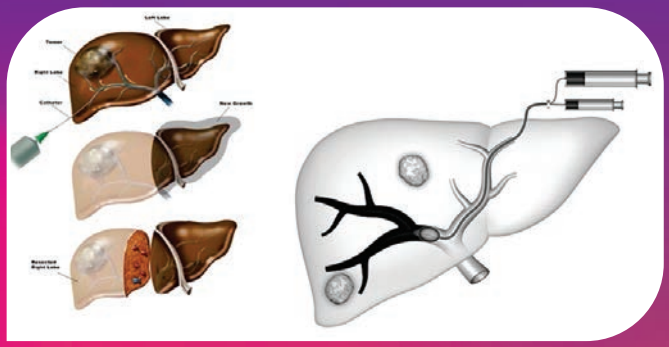


Extending the limits of liver resection for liver cancer

Introduction

Major Liver resections are often complex surgical procedures that warrant meticulous planning and multidisciplinary approach to ensure good outcomes. Post hepatectomy liver failure (PHLF) is a major complication that could lead to poor outcome. Ensuring an adequate and functional future liver remnant (FLR) after liver resection is vital to prevent PHLF.

When preoperative CT scan based liver volumetry predicts inadequate FLR, radiologic and surgical modifications could be used to augment this and increase the FLR. We describe two of our patients who underwent successful liver resection after parenchymal augmentation in our practice.

Patient 1

A 49 yr old gentleman presented to us with back pain for 3 months. His weight was 101 kg. Evaluation with ultrasound scan abdomen revealed a large heterogenous lesion in the right lobe of liver. There were no other symptoms or comorbidity. Serum alpha-fetoprotein, a tumour marker for hepatocellular carcinoma (HCC) was 3.83 ng/ml (40% of HCCs may not secrete this tumour marker).

Contrast enhanced CT scan (CECT) abdomen showed a large malignant mass lesion in right lobe of liver with early arterial phase enhancement and contrast washout and pseudocapsule in the delayed phase. Lesion 11.2 x 9.2 x 9.2 cm in size and was placed between right and middle hepatic veins (MHV) with no clear planes with either of them, involving segments 7,8 of liver.

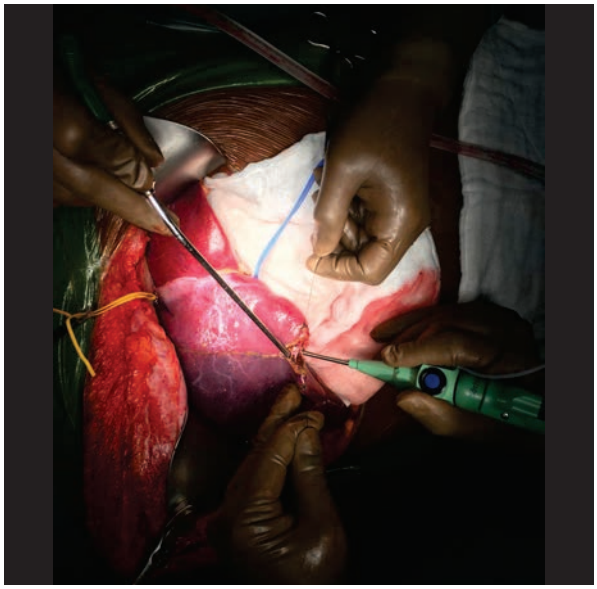
CT scan liver volumetry showed that left lobe liver remnant (without MHV) was 550 gms, V4b draining to MHV, V4a draining to LHV. Estimated FLR was 450 grams which was <0.5% of body weight.

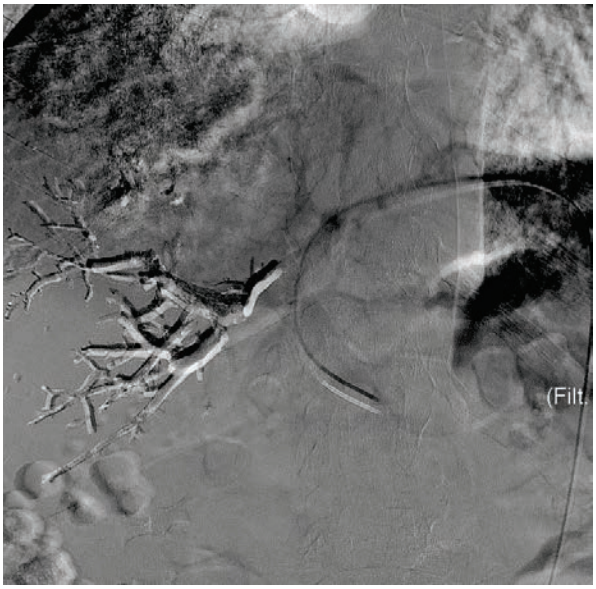
He was unsuitable for right hepatectomy to remove his liver cancer as risk of PHLF was 80%. In order to increase the FLR to safe limits, we decided to perform embolisation of right portal vein (R-PVE) which will allow relative atrophy of right lobe of liver and hypertrophy of left lobe of liver (the FLR).

But, R-PVE will result in increased hepatic artery flow to right hepatic artery which could result in hypertrophy of the cancer. To prevent this possibility, our interventional radiologist, Dr. Muthurajan first performed Transarterial chemoembolisation (TACE) of the cancer.

Once cancer was controlled, he underwent R-PVE 3 weeks later. Repeat CECT abdomen after 3 weeks - Volume of left lobe of liver excluding middle hepatic vein was 623 sq.cm(RL/BW ratio- 0.69%).

Patient underwent right hepatectomy with excision of middle hepatic vein to give a wide cancer clearance. He recovered uneventfully and remains tumour free for last 2 yrs.





Patient 2

A 34 yr old gentleman presented with jaundice with cholestatic features for 1 week. He was referred to us following diagnosis of hilar cholangiocarcinoma, a cancer affected a critical junction between liver and biliary system in another center. He had no other symptoms/ comorbidity. Liver function tests showed elevated bilirubin (2.8 mg/dl) with elevated liver and biliary enzymes. CECT abdomen done here showed ill defined enhancing soft tissue dense lesion of size 2.5x1.5x1.4 cms at the confluence of right and left hepatic ducts.

There was extension of the lesion to the confluence of right sectoral ducts. Removal of this lesion required extended right hepatectomy, caudate lobectomy, excision of extrahepatic biliary tree and cholangiojejunostomy to left hepatic duct. This is a substantial operation by itself in someone with jaundice. Additionally, CT scan liver volumetry showed inadequate FLR (RL/BW ratio <0.5%) which will put him at high risk of posthepatectomy liver failure. He underwent percutaneous biliary drainage (PTBD) to left lobe of liver followed by right portal vein and segment 4b portal vein embolisation. Repeat CECT abdomen after 4 weeks showed increase in future liver remnant (FLR) volume (segment 2, 3 4a) to 635 cc (Body weight- 73 kgs .RL/BW ratio-0.8%). He underwent modified right extended hepatectomy Segment IVA sparing, caudate lobectomy & Roux –en-y left cholangiojejunostomy after 5 weeks. Postoperative period was uneventful. Histopathology confirmed R0 resection of hilar Cholangiocarcinoma.

Conclusion

A highly skilled interventional radiology team, dedicated liver anaesthesia and intensive care team, a well-trained liver surgery team, empathetic nursing care, a great physiotherapy team and presence of a senior medical oncologist helped us to form our multidisciplinary liver cancer care team that contributes to outcomes comparable to any other hospital in the world, at the right cost.

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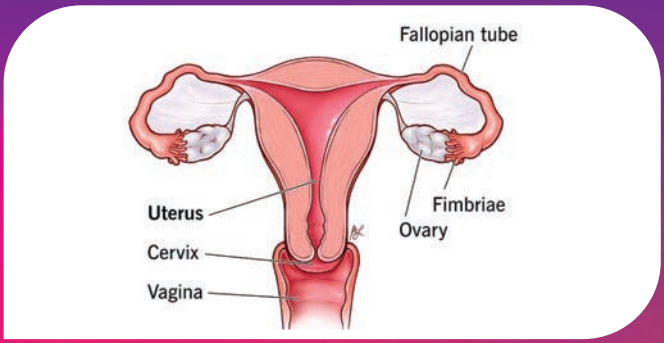


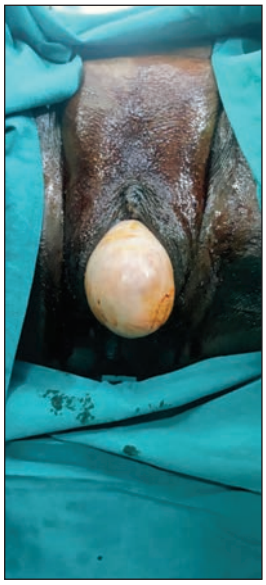
Boon to Fragile Elderly Female With Prolapse

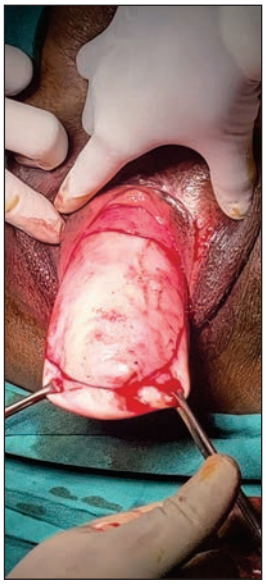
Case Report

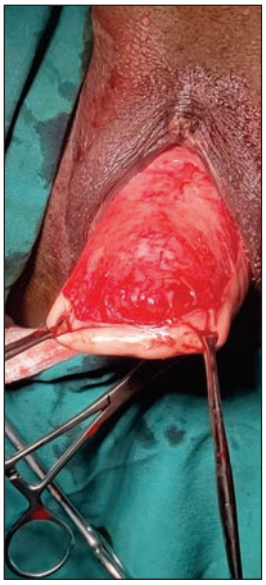
Vault Prolapse in Post hysterectomy women

Lefort colpocleisis is a safe and effective obliterative surgical option for elderly women with advanced pelvic organ prolapse who no longer desire coital activity. A major disadvantage is the limited ability to evaluate for post procedure gynecologic malignancies with intact uterus. For post hysterectomy vaginal vault prolapse, compared to pecxy procedures, colpocleisis will be the best option.

A previously healthy multiparous and menopausal 77 year old female admitted with worsening vault prolapse, with grade III cystocele and Rectocele. She had signifinant bladder symptoms like incomplete emptying of bladder and mass descending vagina with discomfort. She wasn't willing for pessary management. She is sexually inactive.

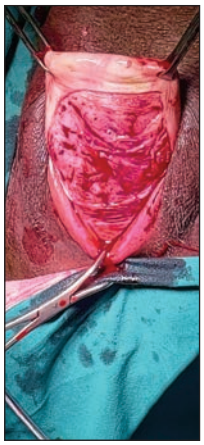


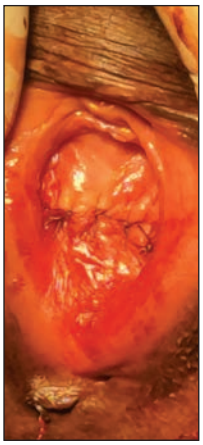


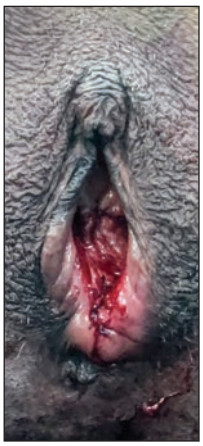


So, she was suggested for olliterative procedure. She is hypertensive and diabetic on medical management. She had undergone hysterectomy 30yrs back with bilateral salpingo oopherectomy for AUB. Urogynaecologic evaluation was done and she had all compartment defects. So, she was counselled for Lefort colpocleisis and perineorrhaphy. She had a quick recovery and doing well. Her postoperative period was uneventful.

Patient was ambulated in 24hrs, started on diet, catheter was removed and she had no urinary dysfunction or bowel disturbance so the patient was discharged on the third postoperative day.







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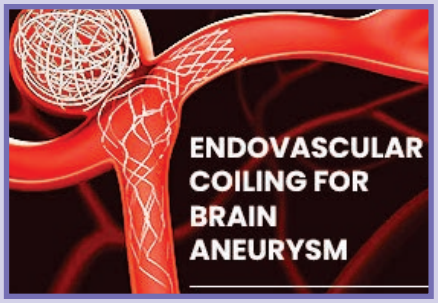
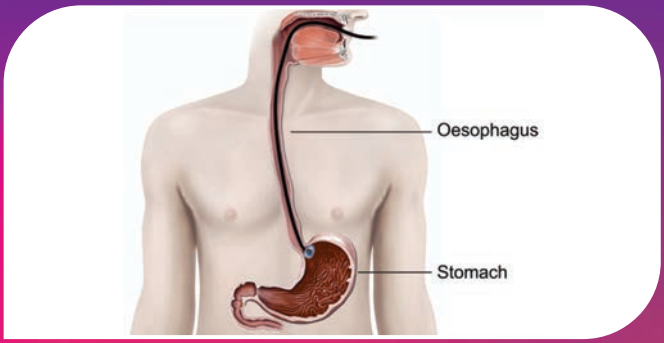
Epilepsy

Endovascular Coiling





Endoscopic Ultrasound Guided Gastrojejunostomy

Case Report

72 year old elderly female, presented with abdominal pain, vomiting, fever and jaundice. Patient was suffering from periampullary carcinoma, since 2 years and underwent ERCP plastic stenting 2 years back. On evaluation, patient was icteric and pale and mildly febrile. Investigations revealed elevated blood counts and deranged liver profile. Ultrasound revealed dilated intrahepatic biliary radicals, dilated CBD with stent in-situ.

After assessment patient was taken for ERCP which showed blockage in the previously deployed stent and ampullary growth causing duodenal obstruction. The previously deployed stent was retrieved and uncovered metallic stent was deployed. Patient improved symptomatically, abdominal pain and fever subsided and the biluribin levels reduced. The patient continued to have vomiting due to duodenal obstruction.

The options to relieve the duodenal obstruction were:

- Surgical gastro jejunostomy (open or laparoscopic),
- Duodenal stenting
- Endoscopic ultrasound guided gastro jejunostomy

Surgical gastro jejunostomy was not preferred due to it being an invasive procedure and post operative morbidity. Duodenal stenting was not opted due to risk of tumour in-growth and stent block. After explaining the pros and cons of all the procedures the patient's relatives opted for EUS guided GJ. The procedure went on successfully and the patient recovered and was able to tolerate diet. The patient was discharged after 48 hours.

Discussion

With malignant GOO, data available from the limited number of studies conducted, demonstrated the superiority of EUS-GJ when compared to standard enteral stenting in terms of decreasing recurrence of GOO and need for reintervention.

With benign GOO, EUS-GJ offers a solution to the long-term patency and recurrence issue encountered with enteral stenting and endoscopic balloon dilation. EUS-GJ offers a less invasive approach than surgery for the treatment of several etiologies, giving the patients the option to avoid adverse events associated with surgery.

Endoscopic ultrasound guided gastrojejunostomy or gastroenterostomy (EUS-GJ, EUS-GE) is a novel endoscopic procedure that has recently emerged as a new treatment for some benign and malignant etiologies. EUS-GJ has been employed in the treatment of benign and malignant gastric outlet obstruction (GOO) (1) for the most part. Additionally, EUS-GJ has been used in the treatment of afferent loop syndrome (2). EUS-GJ involves obtaining access to the jejunum endoscopically and sonographically from the stomach, using a biflanged lumen apposing metal stent (LAMS). This is achieved through a newly formed fistulous tract. Thus creating a gastrojejunal bypass fully endoscopically.

EUS-GJ has been validated in several animal studies and in some case series. Recently the multicenter studies that have been published mainly highlighting the use of EUS-GJ in treatment of GOO and afferent loop syndrome.

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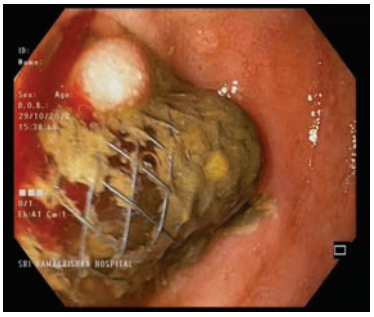

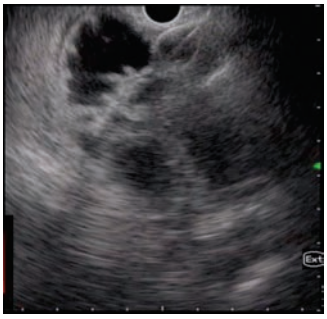

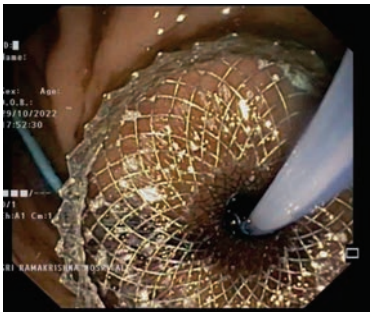

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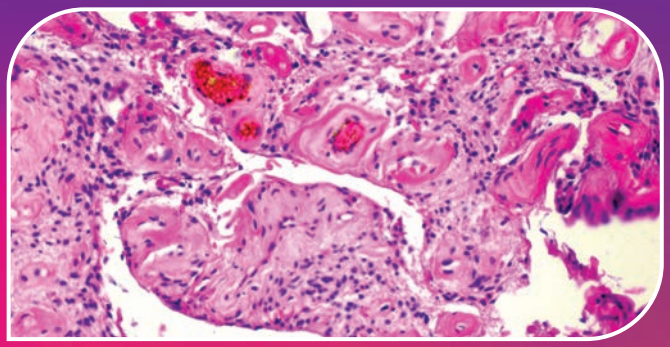

A Very Rare Association of PRES Syndrome in Acute Severe Necrotizing Pancreatitis

Case Report

A 10-year-old boy with a history of severe abdominal pain and vomiting for two days was evaluated in a primary care centre and was diagnosed to have acute pancreatitis. The child was started on intravenous (IV) fluids, antibiotics and supportive drugs. Later, on the same day the child developed few episodes of seizures and started on IV levetiracetam and was shifted to tertiary care centre (Sri Ramakrishna hospital)and was admitted in paediatric intensive care unit (PICU) for further management. On examination, the child was tachypneic, had tachycardia, peripheries were cold, severe tenderness noted in upper abdomen with sluggish bowel sounds. Nasal Oxygen was started, bladder catheterized and vitals were monitored closely. Ryle's tube with continuous drain placed and was advised Nil Per Oral. Fluid resuscitation with maintenance was started as per protocol. Paracetamol infusion was started for pain management and IV levetiracetam was continued.

Laboratory Investigations

Day / Investigations	D1	D7	D10	D12	D14	D19	D21	D26
WBC count (cells/mm^3)	22250	24750	41050	32990	27760	13690	12860	7070
Hb (g/dL)	15.8	9.9	8.5	8.4	8.4	9.5	10.4	11.1
Hematocrit	51 %	30.9	27	26	27.2	31.3	34.2	36.3
Platelet count (10^3/uL)	337	384	659	715	943	805	778	619
CRP (mg/L)	40.9	279.12	169.7	–	–	26.95	–	–
Urea	29	-	22	–	–	–	–	–
Creatinine	0.5	-	0.4	–	–	–	–	–
Sodium	136	-	137	–	–	–	–	–
Potassium	4.3	-	4.2	–	–	–	–	–
Amylase (U/L)	1755	275	-	–	–	157	–	–
Lipase (U/L)	12337	685	-	–	–	481	–	–
Triglycerides (mg/dL)	115	-	-	–	–	–	–	–
SGOT (U/L)	47	-	-	42	–	–	–	–
SGPT (U/L)	21	-	-	15	–	–	–	–
TSH (IU/mL)	0.749	-	-		–	–	–	–
Procalcitonin (ng/mL)	-	0.74	5.3	3.6	1.8	0.22	–	–
PT	15.2	-	-	-	–	–	–	–
INR	1.01	-	-	-	–	–	–	–
aPTT (Seconds)	33	-	-	-	–	–	–	–

Other Investigations:

Contrast-enhanced computed tomography (CECT) abdomen done on Day 2, showed features of acute necrotizing pancreatitis with acute necrotic collection, moderate ascites, bilateral mild pleural effusion with CT severity score >8.

MRI brain on Day 2 showed Cortical and subcortical T2 and FLAIR hyperintensity with petechial haemorrhages in bilateral frontoparieto occipital lobes. Acute haemorrhage inright frontallobe. Subarachnoidhemorrhage noted.No evidence of aneurysm, arterio venous malformation or thrombus is dural venous sinuses. Features suggestive of Posterior Reversible Encephalopathy syndrome (PRES).

Treatment Course and Outcome: The child was started with clear liquids through Ryle's tube from Day 4 and was well tolerated. He had high grade fever spikes with elevated WBC count and CRP since admission - Sepsis vs Systemic Inflammatory Response Syndrome (SIRS) was considered and started on IV Meropenem. Despite the initiation of antibiotic, the child continued to have high grade fever spikes and the repeat WBC counts, CRP and procalcitonin levels were highly elevated. On Day 7, a repeat CECT abdomen was done which showed acute necrotic collection replacing tail and uncinate process of pancreas extending into peripancreatic plane with multiple locules of necrotic collections in lesser sac, cranial to splenic flexure and left anterior pararenal space. Mild ascites, complete thrombosis of splenic vein with floating thrombus in portal vein, thickened walls of ascending colon and hepatic flexure -- probably due to mesenteric venous ischemia was noted. In comparison, to prior CT scan done on Day 2 the necrotic collections were well organised and ascites has decreased. Hence, Percutaneous Pigtail catheter was placed into acute

Aetiological Work-Up

Work-up	Results
Gall bladder stone/ sludge	Nil
Triglycerides	Normal
Abdominal Trauma	Nil
Calcium/ Parathormone level	Normal
COVID- 19 RT PCR	Negative
COVID antibodies	IgM – Negative, IgG – Positive
IgG4 level	Normal
Herpes simplex DNA PCR I & II	Negative
ANA (If method)	Negative
P ANCA and C ANCA	Negative
Family History	Third degree relative (Cousin) - Recurrent Acute Pancreatitis due to Pancreatic divisum
Genetic work up for Familial Pancreatitis	Not done
MRCP during follow-up	No pancreatic divisum or any other congenital abnormality
ANA	Negative
Direct Coomb's Test	Negative
Homocysteine level	Normal
Vitamin B12 level	Normal
Thrombophilia work up during follow up	Negative

Necrotic collection near tail of pancreas on the same day as a step-up approach. Antifungals (IV Fluconazole) and antibiotics(Ofloxacin, Teicoplanin) were also added. After analysing the risk vs benefit, Low Molecular Weight Heparin (LMWH - Enoxaparin) was stared in view of probable mesenteric venous ischemia. Bladder catheter was removed and Central venous line was placed into right internal jugular vein on Day 8. Ryle's tube was removed and oral liquid diet started from Day 9. Blood cultures at 3 difference sites (right cubital, left cubital and right femoral), urine culture and pigtail DT fluid culture didn't show any growth. DNA sepsis panel (PT PCR) was sent and showed pan-bacterial DNA detected (Medium level), pan-fungal (DNA) detected (low level), VIM/NDM-1 detected. However, Colistin was not started as there was a decreasing trend in total WBC counts, CRP, procalcitonin level with the already given antibiotics and antifungals. After a week of the antibiotics coverage, total WBC count, Procalcitonin, CRP level reduced significantly. Both tachycardia and tachypnea settled. Occasional drop of blood pressure was stabilised with fluid bolus and never required an inotropic/vasopressor support.Two units of PRBC transfused on Day 13 and day 15 to correct anaemia. Soft diet was started with pancreatic enzyme supplement from Day 14. Early ambulation and chest physiotherapy was started by physiotherapists appropriately. Meropenem, Fluconazole and Ofloxacin were stopped after 14 days. Repeat CECT abdomen on Day 24 showed - acute necrotising pancreatitis sequelae with intraparenchymal walled off collections in uncinate process and tail. Small collections with fat saponification in bilateral pararenal space(L>R), bilateral paraaortic gutter, perispleenic and perihepatic region. Mild ascites. Splenic vein thinning with gastric fundal varices. When compared to CT done on Day 7, the collections have reduced in size. Also, repeat CECT Brain on Day 24 showed - Resolving haematoma with surrounding oedema in right frontal lobe. On Day 25, LMWH was stopped and continuing with oral anticoagulants was not considered in view of frontal lobe hematoma, though ideally it need to be continued for 3-6 months. Folic acid and low dose aspirin were started. During the follow-up, repeat CECT abdomen showed collection and necrosis settled well and CT Brain showed resolved hematoma with complete resorption of petechial haemorrhages in bilateral frontoparieto occipital lobes. The child is continued on low fat diet, pancreatic enzyme supplementation and antiepileptic levetiracetam for an year now and the child is keeping well.

Discussion: Posterior reversible encephalopathy syndrome (PRES) is characterized by the clinical findings of headache, altered mental functioning, seizures, and loss of vision associated with symmetric and bilateral cerebral edema, most commonly in the occipito-parietal regions, on the neuroimaging studies. Hypertensive encephalopathy, eclampsia, immunosuppressive agents, and cytotoxic drugs can cause PRES. A patient with PRES may recover without sequela after removal of the causative factors. Notably, uncertainty in diagnosis and delay in treatment would have probably aggravated CNS injuries or death. However, the underlying mechanism of the disease remains unclear and controversial. For pancreatitis, most of the previously reported patients had a history of leukemia or heavy drinking, but only one case so far reported history of recurrent pancreatitis with no other etiology. In such scenario, the automatic regulation of cerebral vessels hypothesis does not account for the full spectrum of pathophysiology of this disorder, as with other patients with moderate hypertension. After recurrent pancreatitis, hyperactivation of trypsinogen and the release of various inflammatory mediators, cytokines, and chemokines likely cause subsequent endothelial dysfunction that can lead to resultant hypoperfusion and ischemia. Moreover, in our case the patient did not have a previous history of pancreatitis and this being the first episode. Thus, that pancreatitis itself may be an etiology of PRES. Acute pancreatitis is one of the common clinical disorders presenting as an acute abdomen, while pancreatitis itself can be life-threatening. This case reminds clinicians of unusual complication. In pancreatitis patients with classic neurologic symptoms, the possibility of PRES should be considered regardless of the timing of the onset of symptoms. So far, the association of PRES Syndrome in acute pancreatitis less than 10 cases are reported in the literature.

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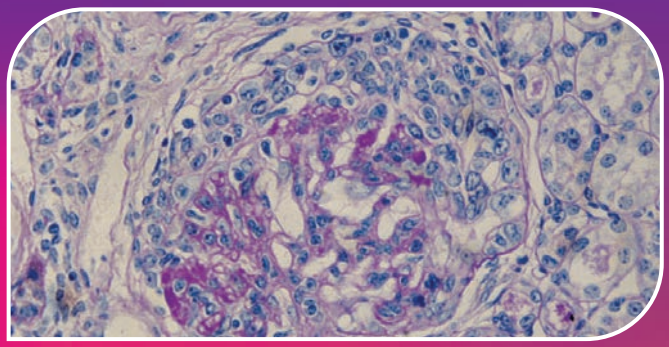

Changing clinical phenotype of Anti-glomerular basement membrane disease

Case Report:

35 years old male, with no known co-morbidities in the past, presented with a short history of fever, nausea, upper abdominal pain and 3 episodes of red coloured urine. The whole duration of illness lasted for 6 days. During this period, he was treated with analgesics, antibiotics and antipyretics. In view of abdominal pain, fever and persistance of gross hematuria he was evaluated and found to have of elevated renal parameters (Creatinine:2.4mg/dl/urea:66mg/dl) for which he was referred to us.

On examination patient was comfortable at rest, afebrile, B/L pedal edema upto the ankle, pallor+, HR:80/min, BP:130/80mmHg, Spo2:97% at RA. No rashes, P/A: palpation, B/L loin tenderness.

Laboratory investigations reveled worsening of renal parameters (Urea:105mg/dl, Creatinine:4.5mg/dl), potassium:4.5, TC:13000, HB:10.2gm/dl, platelet:2.5lakhs, Urine:3+ proteins, RBC:40-50/hpf, WBC:10-15.

USG abdomen bilateral bulky kidneys, RK:11.2cm, LK:11.2cm, CMD+, increased echoes.

Urine culture sterile.

CT KUB(Plain): bilateral bulky kidneys with perinephric fat standing.

Patient was treated with antibiotics and supportive drugs. He had progressive worsening of renal parameters (Serum creatinine:4.5→5.1→6.1→7.1) over 3 days. Hence RPRF panel of investigations were done and found to be anti-GBM antibody: positive. Patient initiated on HD via right IJV catheter and Inj. Methylprednisolone 1gm IV OD given for 3 consecutive days. Renal biopsy was done which showed antiGBM antibody mediated cresentric glomerulonephritis with background IgG nephropathy, IFTA 25-50%. He was started on therapeutic plasma exchange and alternate days hemodialysis in view of oliguria and persistently increased renal parameters.

After 5 sessions, TPE was stopped and patient continued on oral steroids (Prednisolone 60mg/day) and added Cyclophosphamide 100mg OD. After 1 month of immunosuppresants therapy and 14 sessions of hemodialysis patient's renal parameters improved and remained stable at 3.1 without need for RRT. Hence right IJV HD catheter removed and followed up as OPD Basis at 2 months of follow up creatinine stable at :2.2mg/dl, urine output more than 1.5liters/day. He is currently on oral steroids + oral Cyclophosphamide and on regular follow up.

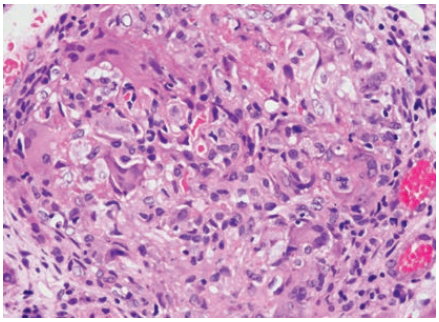

fig 1: Hematoxylin and Eosin stain showing glomerulus with cellular crescent with fibrinoid necrosis

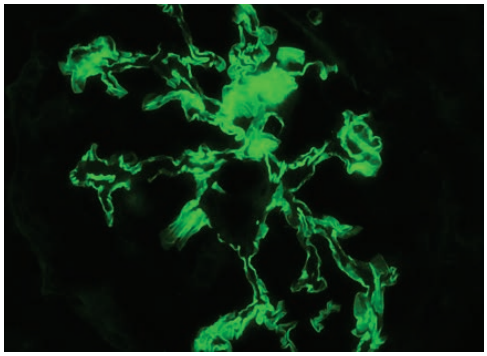

fig 2. Immunofluorescence microscopy showing global linear positivity for IgG along the glomerular capillary loops

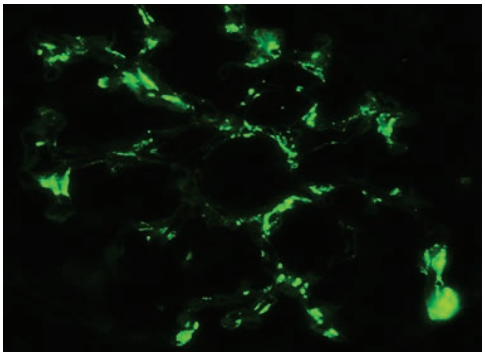

fig 3. Immunofluorescence microscopy showing global linear positivity for IgA along the mesangium

Discussion:

The syndrome of renal failure with lung hemorrhage was described by Stanton and Tange in a series of nine cases in 1958, which was earlier reported by Goodpasture in 1919 in a young male whose postmortem findings had similar involvement with the people who died of influenza. Hence coined as Goodpasture disease, Anti-GBM disease is a type of small vessel vasculitis characterized by antibodies directed against the carboxyl terminal, non-collagenous domain (NC1) of alpha-3 chain of type IV collagen chain (Goodpasture antigen). which is an essential constituent of all basement membranes. It is usually characterized by renal involvement in the form of rapidly progressive renal failure and lung involvement in the form of diffuse alveolar hemorrhage. Both environmental and genetic factors play role in predisposition of the disease. Strong Genetic association exists between HLA DR4 and HLA DRB1. Environmental exposure including hydrocarbon exposure, cigarette smoking, lung infection have proceeded lung hemorrhage in case reports. There is no identified infectious association. Renal trauma and inflammation has proceeded the renal disease in several cases including other systemic small vessel vasculitis affecting glomeruli, membranous nephropathy, ESWL for renal stones and urinary obstruction. 50% - 70% of patients present with acute symptoms of lung hemorrhage and advanced renal failure. Symptoms are usually confined from a few days upto few months. Patients might not have systemic symptoms apart from manifestations of anemia in case of lung involvement or may present with overt features of hemorrhage like cough, hemoptysis and dyspnoea. Patients with renal involvement present with hematuria and loin pain in the acute phase with rapid progression to oliguria and renal failure. Histopathology is characterized by crescentic glomerulonephritis. Outcomes depend upon the time of presentation, presence of lung hemorrhage, extent of renal failure and dialysis requirement at the time of presentation. Treatment modalities include pulse steroid, immunosuppresants and therapeutic plasma exchange. Patients presenting with dialysis requiring renal failure have guarded renal prognosis with practically 100% of the population ending up in end stage kidney disease needing maintenance dialysis. As per case studies and reposter. Here we have presented a case of anti-GBM disease, presenting with dialysis requiring renal failure. He was started on therapeutic plasma exchange and immunosuppresants. As a rare occurrence Patient's renal function improved after 14 sessions of hemodialysis and currently he is off renal replacement therapy for the last 2 months on regular follow up.

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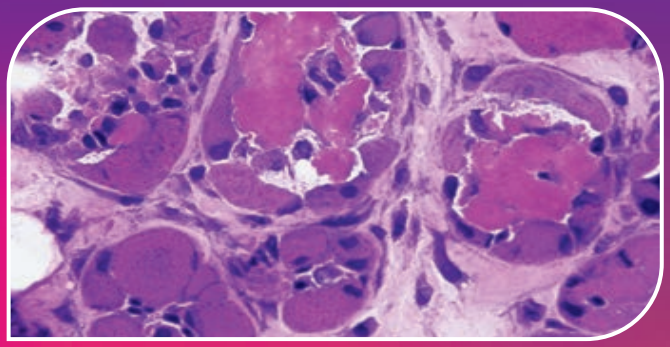


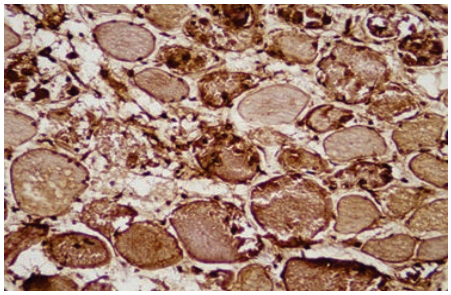
Hero with Shade of Grey

Covid vaccines have been playing the key role in our struggle to overcome the current pandemic. Though the vaccines are of help beyond doubt, vaccines have also been implicated in many adverse events, a few of which can be life threatening. Here, we describe a case which is associated with Covishield vaccine. Mr S, 32/M, presented to his GP 5 days ago for neck pain & was treated for Cervical spondylitis with NSAIDs. He was referred to Nephrology op with 2 days H/O reduced urine output, b/l feet swelling & generalized tiredness with pain along neck & upper back. With no known co-morbidities in the past, non-smoker, non-alcoholic, he had taken 2nd dose of Covishield vaccine 2 weeks ago.

In OP, he had B/L pitting pedal edema up to mid-calves, but otherwise normal vitals & systemic examination. Investigations revealed elevated ESR of 70, CRP of 6.9, Creatinine was 2.3 mg/dL, with urine showing trace protein, 2-3 RBCs/HPF, plenty WBCs/HPF with uACR of 110.8 mg/g creatinine. Suspecting Acute kidney injury, probably acute tubule-interstitial disease secondary to NSAIDs, he was admitted in view of severe fatigue, tiredness & for further evaluation. Further investigations showed elevation of liver enzymes, SGOT 750, SGPT 458 along with hypoalbuminemia & hypoproteinemia. USG & ECHO was normal. In the hospital, his edema worsened, became generalized, creatinine was creeping up, weakness worsened, power became 1/5 mainly involving proximal muscles & trunk with spared sensation. NCS showed B/L motor axonal neuropathy.

Serum CPK was very high at 49,851. Diagnosed as Rhabdomyolysis, further investigations were done to r/o autoimmune myopathy, Serum C3, C4 were normal, ANA was negative & myositis profile was negative. Nerve & muscle biopsy was done which are shown, biopsies were reported as Immune-mediated inflammatory myo-neuropathy. He was treated with IV steroid pulses followed by oral steroids & MMF.

- Light microscopic morphological, histochemical and immune histochemical features are consistent with IMMUNE MEDIATED NECROTIZING MYOPATHY



- Immunohisto Chemistry

MHC-Class I stain – Diffuse up regulation in the sarcolemma of non-necrotic muscle fibers

He improved well, power resumed to 5/5, creatinine dropped to 0.9 mg/dL. Steroids were tapered & stopped, MMF was continued for 9 months along with other necessary supportive management.

With passing follow-ups, his GC was good, power was 5/5, lab parameters & urine was WNL. He was diagnosed to have Immune mediated Inflammatory Myo-neuropathy with Rhabdomyolysis causing Acute kidney Injury probably secondary to Covishield vaccine.

Although definite causation is difficult to establish, definite temporal association, absence of autoimmune causes, response to treatment & literature reports of similar cases associated with covid vaccines makes Covishield vaccine as the likely culprit in these cases.

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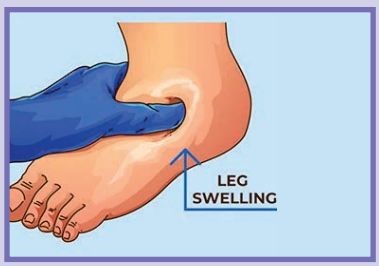
Haemodialysis

Kidney Biopsy Surgery

Chronic Kidney Disease

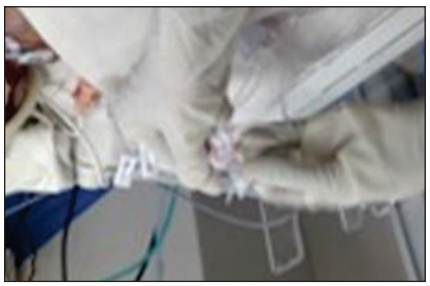
Leg Swelling



NICU

Preventing hospital acquired infection in Neonatal Intensive care Unit- an art to be learnt, practiced and embraced.

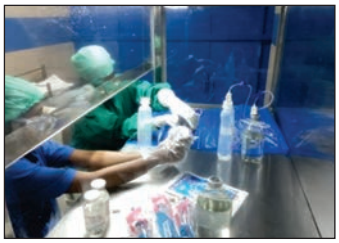
The art of neonatology has improved exponentially in all around the country. Neonatal care is getting standardised and though the availability of trained doctors and nurses are increasing in numbers, they still have to race to match the needs and expectations of our every growing society. We as a society have made huge leaps in reducing neonatal mortality rate. The fall in neonatal mortality rate is mainly contributed by better prevention and management of birth asphyxia and neonatal sepsis. Skilled neonatologists and pediatricians have made the survival of neonates with RDS, meconium aspiration syndrome, extreme prematurity a reality. Still, the outcomes vary between hospitals based on their infection control practices. In our hospital, we had zero CLABSI last year. There were no incidence of ventilator associated pneumonia and only one neonate had culture proven bloodstream infection. The above outcomes have helped us in improving our intact survival rates, reducing IV antibiotic usage and unnecessary hospital stay. The awareness regarding hand washing and hand hygiene has been improved strikingly. But apart from the routine and widely used aseptic practices, a little more consideration on other practices will make the journey of infection control successful.



1) Aseptic non touch technique: In literature, a lot of importance is given to Central line Associated Blood stream Infection (CLABSI). But even now, peripheral catheters are the most common intravenous route in most NICUs. This makes peripheral intravenous (PIVs) line as the most common source of infection in NICUs simply owing to the number of IV line placed per neonate and the cumulative duration of intravenous lines. We will all agree that there is a degree of leniency is found between handling PIVs and Central lines. From insertion when multiple pricks are sometimes made with the same catheter maintenance; the line is detached and reconnected frequently, and the existing PIV always serves as a gateway of catastrophe. Though strict draping and gowning is not required during management of PIVs, it is very important to note that the concepts of sterile-unsterile should be retained. In our unit we have improved maintenance of PIVs by adhering to few policies:

- No reusing of IV catheters once pricked
- Using a sterile IV line tray- a sterile surface for keeping disposables during iv line insertion
- Cleaning the hub of blood before connecting infusion lines
- Using needle less clave connectors
- Triple swab technique during every iv-line disconnection
- No touch technique: In which, the nurse wears a sterile glove for every injection and avoid touching the hub of the syringes while injecting

2) Aseptic fluid therapy: A laminar flow will help in preventing airborne and environmental contamination of parenteral fluids and infusion drugs when prepared. The fluid preparation is done daily by two trained nurses properly gowned and draped. (Figure 2) The same two person aseptic process can be beneficial even in the non-availability of laminar flow.



3) Avoiding unnecessary IV lines: Early enteral nutrition of neonates reduces the number of days on IV fluids. IV lines are carefully monitored for early signs of phlebitis.

4) Avoiding unnecessary antibiotics:

- Antibiotics are started only if there is definitive evidence of sepsis or risk factors.
- There is no "prophylactic antibiotic".
- The antibiotic prescription is reviewed everyday and deescalated or stopped once the cultures are reported.
- Sending blood cultures are sent before starting antibiotic for in a neonate

5) Parent education: Our nicu allows 24 hours access to both the father and the mother. However immense efforts are made to train and emphasize the parents about handwashing, wearing masks and using individual drapes while visiting their baby.
6) Restriction of Mobile Phone Usage inside NICU.

Cost management: The major argument against practising the strict infection control guidelines are the cost incurred by the disposables and time incurred by the procedures. Our unit has been able to limit both by,

1) Clubbed IV fluid preparation on a daily basis in the laminar flow. This reduces the number of gloves, ampoules of fluid, drugs, aminoacids and lipids required for neonates.
2) Early initiation of enteral feeds helps in reducing iv line and iv fluid requirement. This is made feasible by our Mother's milk bank.
3) Standardizing protocols and drug dosages has helped in improving care and outcomes: This reduces nursing time spent on drug preparation and confirmation thereby giving them adequate time for aseptic practices.

Nursing involvement in infection control: Empowering the nurses is a keystone in maintaining infection control. The baton has been handed over to the nurses for the race to maintain speed.

1) Trouble shoot hurdles which nurses face in adhering to infection control practices. Nursing numbers might be a limitation. But assigning IV therapy nurses, pooling IV fluid preparation together and avoiding unnecessary changes in fluids will help in easing out their workload.

2) Appreciate outcomes: put your nurses upfront when there is a month without infections. Appreciating the even minor acts like would help neatly administered drug or aseptic procedure.

3) Do not hurry nurses unnecessarily during an aseptic procedure

4) Respect nurses when they insist the same aseptic methods from you.

5) Safety first attitude- eg: when your glove touches an unsterile part, even if unnoticed by anybody- do not hesitate to change gloves. It is these small things of sincerity that impress your nurses and motivate them.

6) Remember that the younger doctors and nurses learn more by observing you than listening to you. Ensure that you yourself strictly adhere to hand hygiene and aseptic practices.

Infection control- the basis of ethical neonatal care:

"Primum non no core " or"First,Do no Harm" is the dictum in medical care. However, sick the neonate might be, however skilled the team might be, however advanced the treatment might be, it still doesn't give anyone an excuse to allow a lapse in infection prevention. Believing that infections cannot be prevented in newborn is state of therapeutic nihilism. The choice of a parent when offered " less cost, more risk of infection" and " more cost, less risk of infection " is obvious. Treat them as they treat yourselves. As it goes in all skilled work, perfection is the key.

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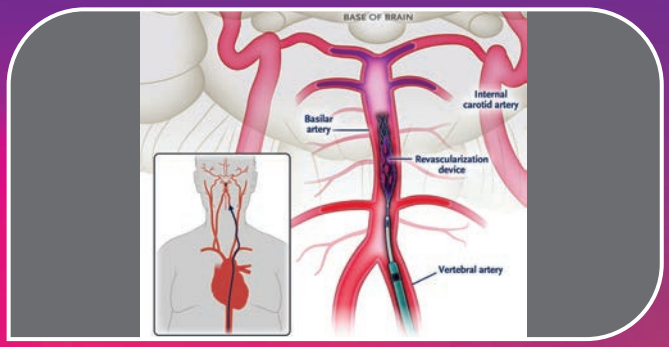
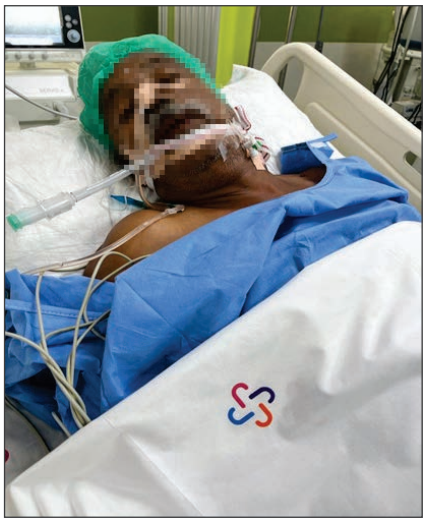


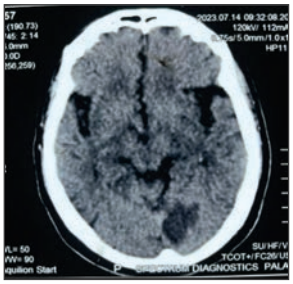
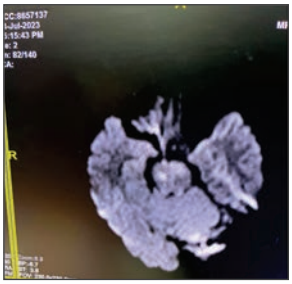
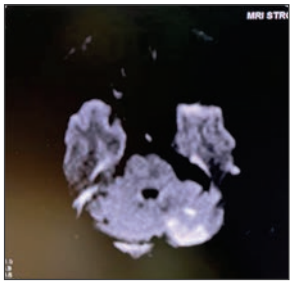
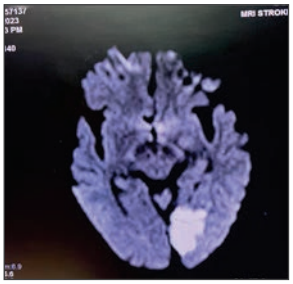
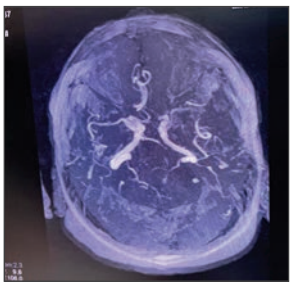
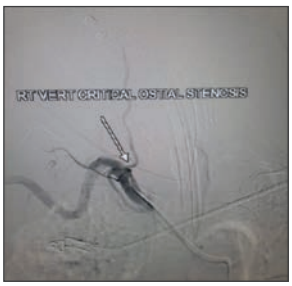
LVO

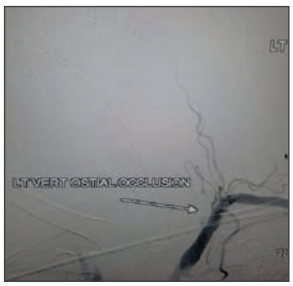


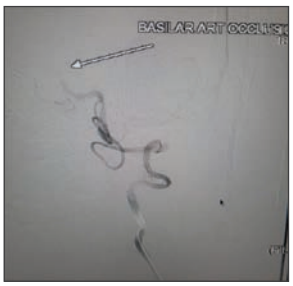
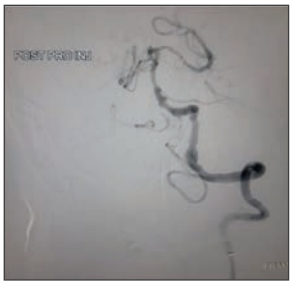
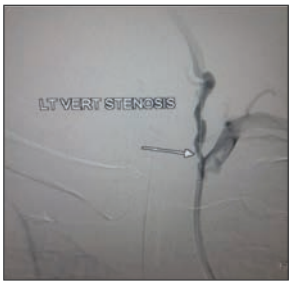
Patient at admission

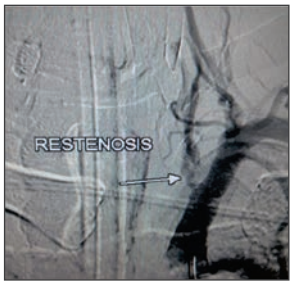
LVO – Basilar artery occlusion, Bilateral vertebral artery ostial stenosis. Associated MI, Ventricular tachycardia, Cardiac arrest revived

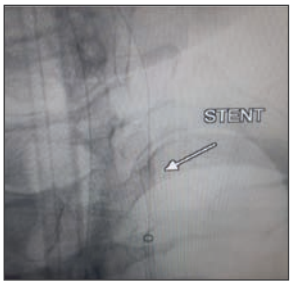
- Disease association (CVA + CAD) occurs in the same patient due to common pathology of atherosclerosis involving both cerebral and coronary vessels presenting with stroke and MI.
- We present one such case here
- 76 year old male sudden onset of Right Hemiparesis and slurred speech since 8 hours
- DM / SHT on treatment.
- Thrombolysed outside.
- Worsening of symptoms after reaching here
- CT Brain done outside – Lt. PCA infarct
- MRI done here – Hyperacute infarcts pons, cerebellum and Left occipital lobe
- MRA – Total occlusion of basilar artery
- Taken-up for MT. Cardiac status normal
- DSA showed hypoplastic Right VA with critical ostial stenosis and Left VA occlusion
- Clots retrieved from basilar artery. Left vertebral ostial stenosis persistent, plasty done
- Post plasty 5 minutes check angio showed near total occlusion of Left Vertebral ostial, Stenting done
- 4th POD, he developed sudden vent. Tachycardia and Asystoly in ICU due to MI. Cardioverted. ECHO severe LV dysfunction. EF 30-35%.
- Slowly recovering. Weaned off the ventilator 10 days later.
- We could make him sit up in chair in another 10 days and stand with support followingly.
- mRS : 4 at discharge

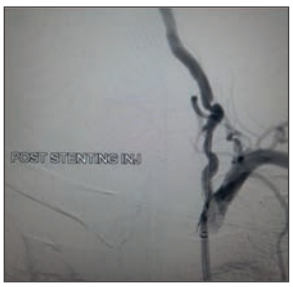

















10 days after thrombectomy

One month after thrombectomy

This case shows that disease association (CVA + CAD) may occur in the same patient which requires effective management of both the conditions Stroke and MI to save the patient

- Good outcome include
  - Stroke risk factors
  - Stroke Severity (NIHSS Score)
  - Age
  - Respiratory stability
  - Thrombus length
  - Atherosclerotic stenosis Vs Embolic occlusion
  - Collateral status
- All these factors are important and patient selection for EVT in BAO to minimize the incidence of futile recanalization
- Thank You

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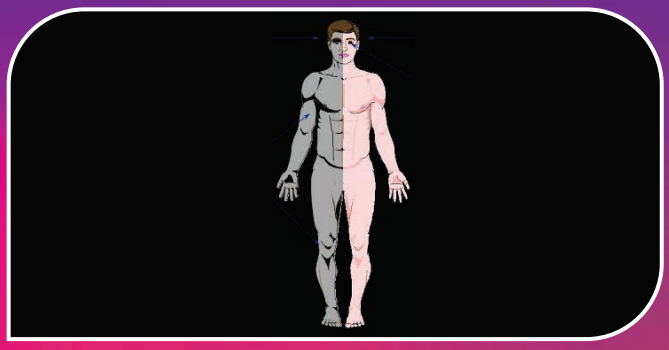


Uses of Antithyroid Antibodies in Non Vascular Hemisensory Impairment

AIM: To find out the uses and correlation of antithyroid antibodies in patients with hemisensory impairment.

BACKROUND: In day-to-day clinical practice ,we have difficulties in managing patients with hemisensory impairment ,where the diagnostic tests are not supporting clinical localization.

MATERIALS AND METHODS: All patients,aged 18years and above came to the neurology department between February2018 to August2019 with either right or left persistent hemisensory impairment with or without facial involvement were included. After the clinical assessment, appropriate investigations(Complete blood counts,urea,creatinine,elecrolytes,TSH,serum B12,ANA profile,pANCA,cANCA,neurolaboratory tests,carotid vertebral arterial doppler study, MRI brain with MR angiogram /MRI brain with contrast)was done to confirm the diagnosis or to treat accordingly. Patient with Acute stroke,demyelination,hemiplegic migraine and TIA were excluded. Rest of them advised to do serum antithyroid antibodies and psychiatric assessment. Patients with positive antithyroid antibodies were treated with prednisolone 1mg/kg/day for 6 weeks and reviewed.Psychiatric follow up was done in patients with negative antithyroid antibody reports. Uses and correlation of antithyroid antibodies were analyzed.

RESULTS: A total of 33 patients were studied.Among them 28(85%)were females,5(15%)males and the mean age of presentation was 41.6years.Out of 33 patients, 27(81%) have subjective feeling of sub-acute onset persistent tingling sensation or numbness or tightness or hypo/hyperasthesia or uneasiness on either side of the body with or without face involvement.Rest of 6 patients (19%),have numbness with feeling weak on one side with no demonstrable sensory motor deficit.Antithyroid antibodies(either ATG or ATPO antibodies) were positive in 21(57%)patients with hemisensory impairment.In this study,28(85%)were in euthyroid,9%(3patients)hypothyroid and 2(6%)were in hyperthyroid groups. Antithyroid antibodies were positive in 61%, 66% and 100% respectively in their thyroid groups. None of our study patients have psychiatric illness or brain lesions on MRI study.

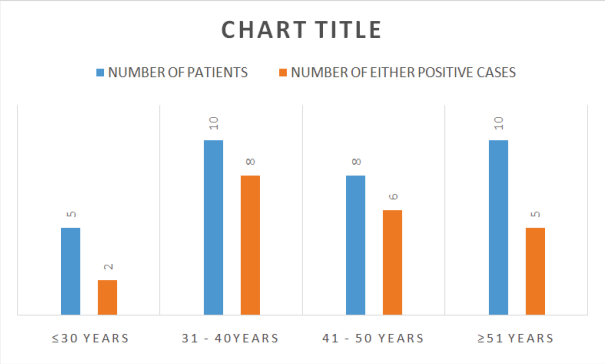
CONCLUSION: Autoimmune thyroiditis can present with new onset persistent hemisensory impairment in young adults which is more common in females. Both antithyroid antibodies are clinically useful in the diagnosis and management of non vascular hemisensory impairment.Hence,the strong clinical judgement not supported by the diagnostic tests might alert the physician to rule out autoimmune thyroiditis in neuroaxis.

KEYWORDS: Antithyroid antibodies(Antithyroglobulin and antithyroid peroxidase antibody),TSH(Thyroid Stimulating Hormone), ANA profile(Antinuclear antibodies profile), ANCA(Anti-neutrophil cytoplasmic antibodies), (TIA)Transient ischemic attacks, Neuroaxis

INTRODUCTION: The importance of the neurologic examination in the diagnosis of diseases of the nervous system cannot be over emphasized. Neurologic diagnosis is often considered difficult as most parts of the nervous system are inaccessible to direct examination, and its intricate organization and integrated functions are difficult to comprehend on superficial observation.[1] In day-to-day practice, we have difficulties in managing patients with hemisensory impairment, where the diagnostic tests are not supporting clinical localization. Hence, this study will help in such cases for early diagnosis and better management. The uniqueness of this study is, a rare presentation of autoimmune thyroiditis as hemisensory impairment and uses of antithyroid antibodies in such cases were discussed.

RESULTS: A total of 33 patients were studied.Among them 28(85%)were females,5(15%)males and the mean age presentation was 41.6years.Antithyroid antibodies(either ATG or ATPO antibodies) were positive in 21(57%)patients with hemisensory impairment. Age distribution and their

antithyroid antibody positive status were as below. Barchart 1. Age distibution of 33 patients.



Out of 33 patients,27(81%) have subjective feeling of sub-acute onset persistent tingling sensation or numbness or tightness or hypo/hyperasthesia or uneasiness on either side of the body with or without face involvement.Rest of 6 patients (19%) ,have numbness with feeling weak on one side with no demonstrable sensory motor deficit.None of our study patient have psychiatric illness or brain lesions on MRI(including DWI). In this study,28(85%)were in euthyroid, 9%(3patients)hypothyroid and 2(6%)were in hyperthyroid groups. Antithyroid antibodies were positive in 61%, 66% and 100% respectively in their thyroid groups(Table 2).

Thyroid Groups (Number of Patients)	Number of Antithyroid Antibody Positive Cases (%)
Euthyroid 85%(28patients)	17(61%)
Hypothyroid (3 patients)	2(66%)
Hyperthyroid (2patients)	2(100%)
TOTAL (33patients)	21(57%)

Irrespective of the TSH level,antithyroid antibodies were positive in all three thyroid groups .

DISCUSSION: Hashimoto's thyroiditis is the most common autoimmune thyroid disease. More than adequate or excessive iodine intake may lead to autoimmune thyroiditis[2,3,4] by generating reactive oxygen intermediates, by increase in immunogenicity and by increasing the lymphocytic infiltration of the thyroid.[5]Neurological manifestations of the thyroid.[5]Neurological manifestations of Hashimoto's thyroiditis includegeneralized/focal seizures, status epilepticus, myoclonus, stroke, hyperreflexia, tremors, encephalopathy and psychiatric manifestations such as psychosis, visual hallucination, paranoid delusion, mania, depression, dementia, and catatonia [6,7]. In our study ,33 patients with hemisensory impairment, majority 28(85%) were females and mean age of presentation is 41.6 years. Out of 33 patients, 27(81%) have subjective feeling of sub-acute onset persistent tingling sensation or numbness or tightness or hypo/hyperasthesia or uneasiness on either side of the body with or without face involvement.Rest of 6 patients (19%) ,have numbness with feeling weak on one side with no demonstrable sensory motor deficits.Basic neurology teaching is, deficits in a hemi-distribution suggests either the cortex, subcortex or thalamic lesion:Crossed deficits, affecting the face on one side and the body on the opposite side - suggests brainstem disease. But none Of 33 patient had brain lesions in MRI including diffusion weighted images(DWI). Irrespective to their thyroid status, 21(57%)patients with positive antithyroid antibodies had dramatic response to oral steroids. Mechanism of antithyroid antibodies causing sensory deficits is not known. As per Chong Jy et al, the formation of auto antibodies against the thyroid gland, cross-reacts with the N-terminal of endothelial α-enolase (NAE) may cause autoimmune vasculitic infarct, is the possible mechanism causing the vasculitic type of hashimoto's encephalopathy[6],but none of our study patient had encephalopathy.This is a new observation in association of antithyroid antibodies with non vascular hemisensory impairment.In future,we have a plan of doing PET scan to know the metabolic abnormalities in patients with hemisensory impairment. As per C Tol et al ,a study on 34 patients with hemisensory syndrome, six patients (17.5%)had psychiatric illness[8].However,no psychiatric illness were identified among 33 patients.Hence, autoimmune thyroiditis can present with persistant hemisensory impairment in neuroaxis,the strong clinical judgement not supported by the diagnostic tests might alert the physician to rule out autoimmune thyroiditis in neurology.In future,large samples including control groups will address the significance of this observational study.

CONCLUSION: Autoimmune thyroiditis can present with new onset persistant hemisensory impairment in young adults which is more common in females.Both antithyroid antibodies are clinically useful in the diagnosis and management of non vascularhemisensory impairment.Hence,the strong clinical judgement not supported by the diagnostic tests might alert the physician to rule out autoimmune thyroiditis in the neuroaxis.In India, Iodine supplementation should be targeted at iodine-deficient areas in order to reduce the prevelance of thyroid autoimmunity.

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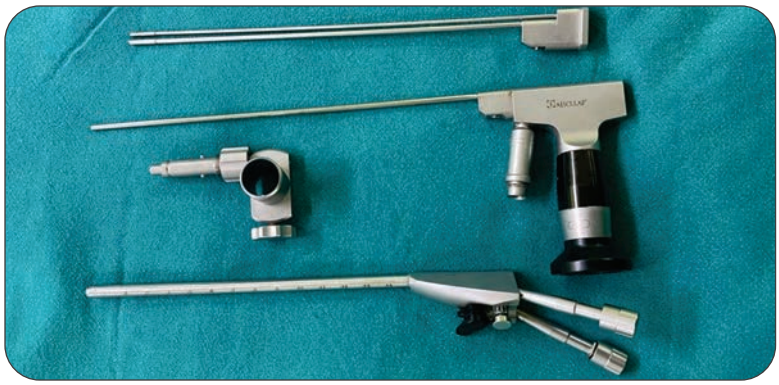
Neuro-Endoscopy – A "New Look" into the Brain

Neurosurgery has advanced in leaps and bounds in recent years and diseases that were considered untreatable a few decades ago are treated routinely with good outcome. In this ongoing evolution, a new modality of treatment of neurosurgical problems is the introduction or more accurately, re-introduction of the endoscope to treat neurosurgical problems.

What is it?

Neuroendoscopy is an exciting and rapidly evolving branch of neurosurgery that is opening up new vistas in the treatment of brain disorders. It involves insertion of an endoscope into the brain through a small opening (about 1.5 cm) made in the skull (burr hole) and performing brain surgery through this opening (minimally-invasive approach).

Evolution:



A modern Neuro-endoscope

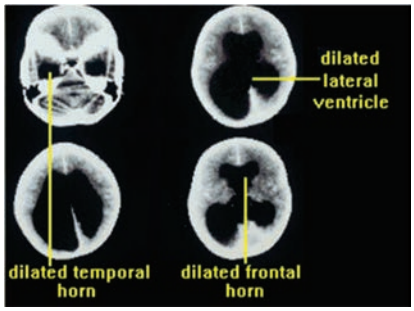
The first neuroendoscopy was done in 1910 for hydrocephalus. It had very sparing use due to technological limitations. Over the years and especially in the last 2 decades, technology has improved tremendously enabling a variety of brain disorders to be treated endoscopically. The modern endoscope is a rigid rod about 6 mm in diameter and length of about 10 inches with a series of lenses that gives an excellent image. The light is provided by a Xenon or halogen light source. The Neuroendoscope shown in the picture is a state of the art instrument which has 4 portals for suction, irrigation, light and operating instruments.

Where is Neuroendoscopy useful?

Neuroendoscopy is useful in the treatment of the following conditions:

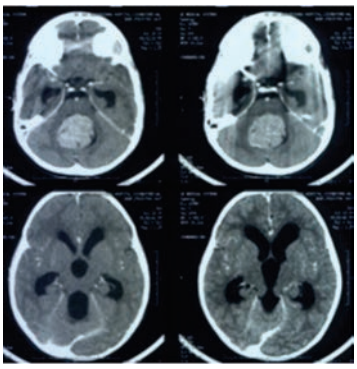
I. Hydrocephalus:

1. Congenital hydrocephalus (aqueduct- stenosis). This is the most common and widely-used indication for the endoscope. Normally . the brain secretes a water-like fluid called Cerebrospinal fluid (CSF)which circulates in and around the brain and is then drained out through the blood. Hydrocephalus is a condition of the brain where , due to blockage of the normal pathway, CSF accumulates in the spaces called Ventricles. Previously the standard treatment for hydrocephalus was to insert a silicone tube (Ventriculo-peritoneal or VP shunt) from the brain to the abdomen to drain the excess fluid in the brain. With the use of the endocope, the block is bypassed by opening up an alternate pathway for the fluid to drain into a different area of the brain itself.. It eliminates the use of a shunt thereby removing all the problems of a shunt i.e. blockage and infection which is a patient's (and surgeon's) nightmare. It can be done safely in children above the age of 9 months.



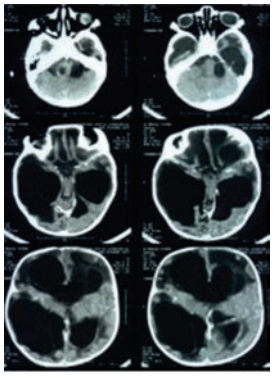
CT scan showing hydrocephalus (enlarged ventricles).

2. Obstructive hydrocephalus: due to a tumour.



CTscan showing a tumour producing hydrocephalus.

3. Loculated hydrocephalus



4.Other diseases of the brain that can be treated endoscopically are:

- Hematomas or blood clots
- Cysts or fluid collections in the brain.
- Tumors like Colloid Cysts, Pineal region tumours and Pituitary Adenomas.
- Abscess or pus collections.

Assisted procedures:
Neuroendoscopy is very useful as an adjunct in Microneursosurgical procedures especially in Cerebral aneurysm surgery to see if the clip is properly applied and avoid clipping small but important blood vessels (perforators) or other vessels situated behind the aneurysm on the far side of the surgeon.

Third Ventriculosttomy: How is it done?
Under General anesthesia, a frontal burr hole is done and the dura is opened. The endoscope is inserted into the enlarged ventricle and then depending on the nature of the lesion the particular specific procedure is done.

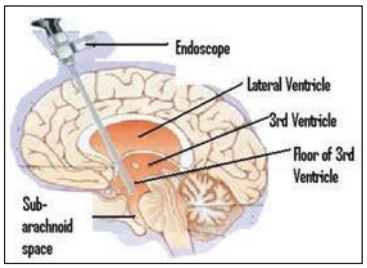


FIG 1. Drawing shows the endoscope in position for third ventriculostomy

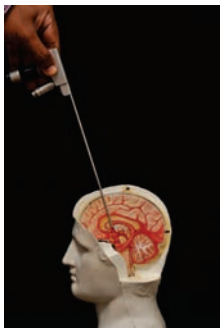


FIG 2. Shows the path of the endoscope in a head model

The most common procedure done is that of IIIrd Ventriculostomy for Obstructive hydrocephalus where the block is by-passed to drain the ventricles.

Similarly, for posterior fossa ischemic strokes, bleeds or tumours, the need for shunting is also avoided. The introduction of this procedure adds a new dimension to the treatment of Neurosurgical problems and would greatly benefit patients in terms of cost, convenience and reduction of hospital stay.

In carefully chosen patients results are excellent.

Problems:
1.Bleeding has been a problem and therefore vascular tumours have been difficult to do.

2.Recurrence of hydrocephalus occurs in a small minority and then re-surgery or a VP shunt needs to be done.

This new field is rapidly evolving and newer indications are being found. As technology also improves with better instrumentation the endoscope will, no doubt, play a bigger role in the future.

To conclude "Endoscopic surgery" is the treatment of choice for hydrocephalus in selected patients.

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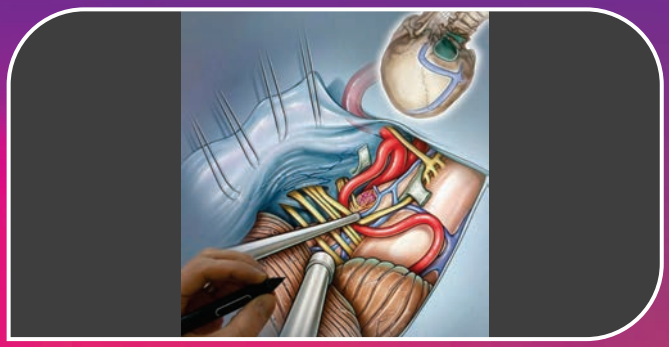


Surgery on Brainstem Lesions With Intraoperative Neuromonitoring

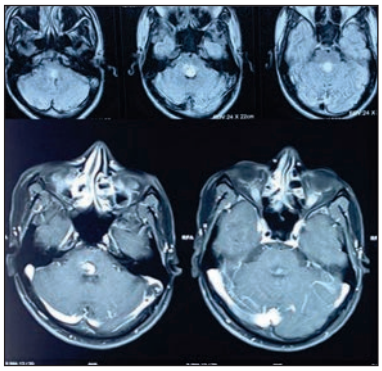
Being the complex structure In the brain connecting cortical information's to the spinal cord, location for majority of cranial nerves nucleus and its origin, autonomic control of cardiac, blood pressure, reticular activating system, tone and basically the main control centre of existence, tumours or lesion of the brainstem poses a great challenge to the surgeons for recovering the patients without any new deficiencies and surviving them with better quality of life. Surgery for brainstem lesions are not common being a vital and very sensitive location of the brain, specific indications and location of the lesion do permit surgical intervention into the brainstem lesion with appropriate technology with gratifying outcomes.

Intra operative Neuro Monitoring, fluoresceine operating microscopy, appropriate positioning, dynamic retraction principles, neuro endoscopy and modern microsurgical instruments including appropriate bipolar helps in achieving this precisely.

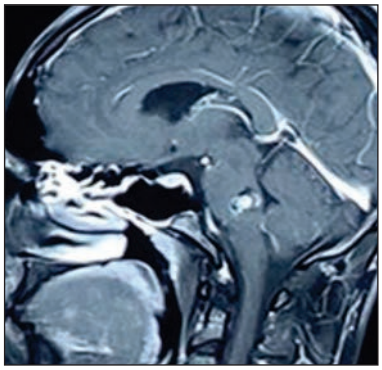
About six such lesions, three exophytic and three intrinsic brainstem lesions has been operated upon over here with all recovering to normalcy and leading normal life. The exophytic lesions happened to be pilocytic astrocytoma two fromtectal plate, one from the posterior aspect of medulla oblongata. Of the three intrinsic lesions two where cavernomas of the brainstem and the other nonspecific lymphoid tissue which responded with steroid therapy following the excision in a child.

Case 1: A 20 years old adult came with vomiting, weakness of all 4 limbs, double vision. clinical examination revealed inter nuclear opthalmoplegia, and quadriparesis. MRI features were suggestive of cavernoma with bleed presenting towards the 4th ventricular pial surface.

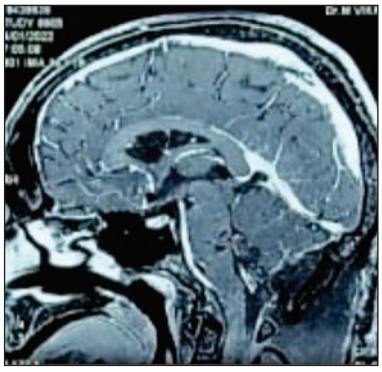
For the potential risk of rebleed causing catastrophic life risk, patient explained regarding the surgical need and underwent IONM assisted telovelar approach and total excision of the lesion. Patient recovered completely and is under periodic followup.

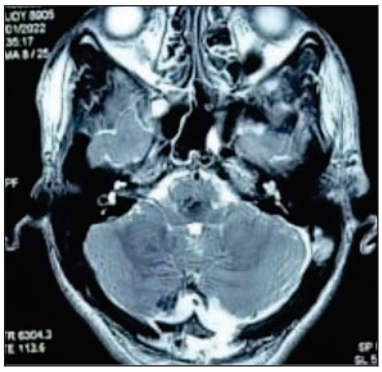


Pre OP

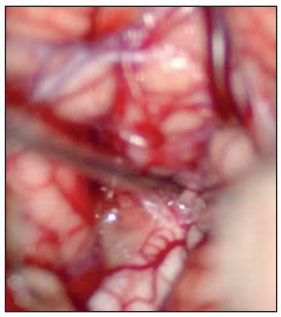


Post OP

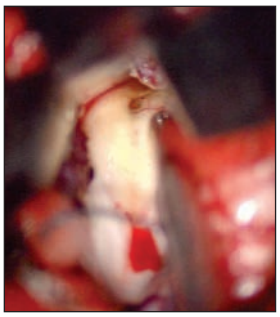




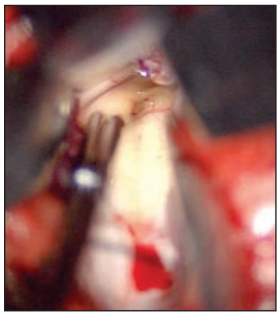
Intra op images:



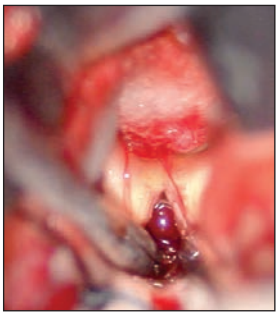
Opening of the foramen of magendie to reach lesion in brainstem



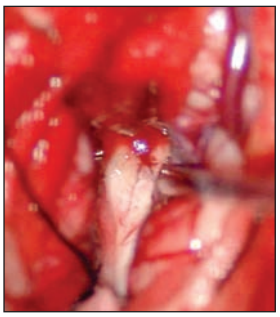
Locating the subpial cavernoma in the floor of the fourth ventricle



IONM monitoring for the lower cranial nerve nucleus location in the floor of the 4th ventricle around the lesion



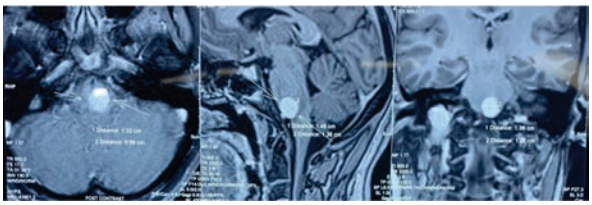
Excision of the cavernoma of the brainstem



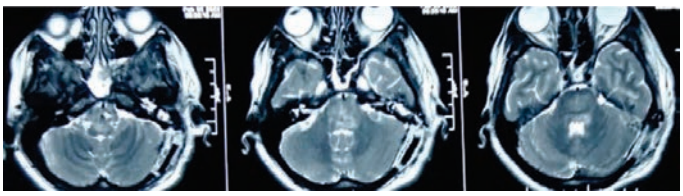
Post excision spontaneous closure of the midline pial incision between the lower cranial nerve nucleus.

Case2: A 30 year old lady came with facial weakness, numbness and progressive left sided weakness of limbs following an acute head ache MRI revealed a cavernoma in the medulla anterolaterally, lesion was approached by lateral medullary approach thro inferior cerebellar peduncle pial approach and excised totally with adequate precautions and IONM, patient recovered completely over few months and is on regular follow up and post op MRI revealed complete excision of the cavernoma.

Pre op MRI

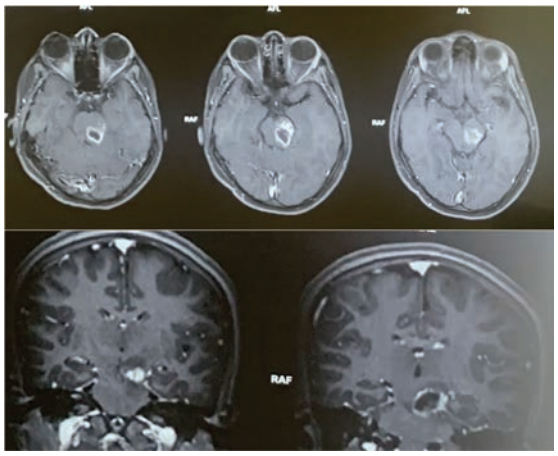


Post op MRI

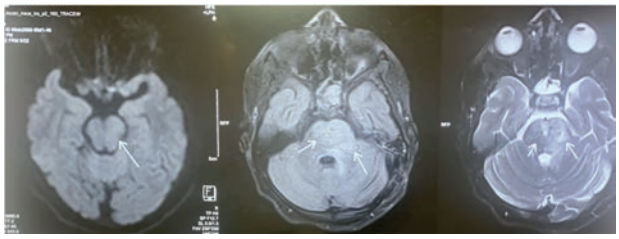


Case 3: A 12 year old school going child referred with progressive weakness of the right sided limbs gait disturbances and MRI revealed an intrinsic brainstem tecto peduncular lesion but couldn't have a clear provisional diagnosis based on MRI features. Child underwent retro mastoid craniotomy and trans superior cerebellar peduncle approach and excision of the lesion. The lesion was reported as lymphohistiocytic lesion with tissues being small quantity from the location the origin couldn't be confirmed. However, child improved with steroid therapy post op and had recovered to normalcy with follow up MRI revealing normal brainstem with minimal gliotic changes.

Pre MRI



Post MRI



Conclusion: Though being a vital neural structure, appropriate approach with appropriate technology and IONM for appropriate lesion brainstem lesion even can be excised safely and have good outcome.

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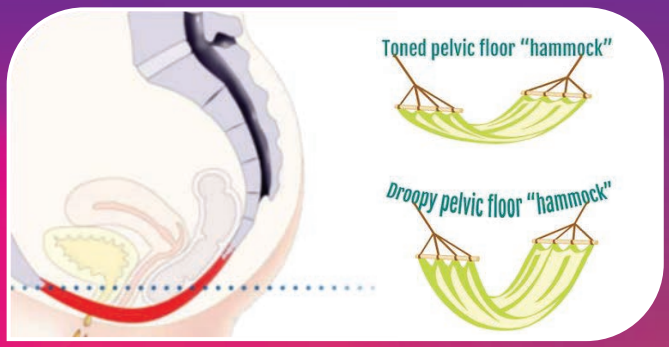


What next when Natural hammock droops? Laparoscopic Pectopexy –Novel rescue

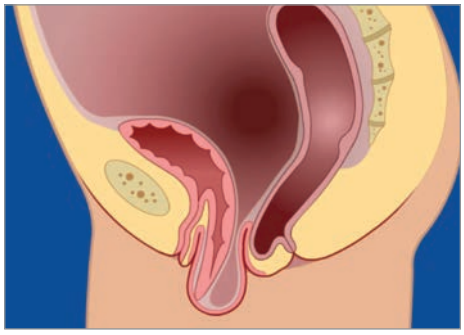
Pelvic organ prolapse is the most common disorder in females seen from reproductive to post menopausal age. The various risk factors lead to the weakness of the Hammock- Levator ani muscle, Endopelvic fascia, Perineal body and supporting ligaments. Advancing age, prior pelvic surgery, repeated vaginal births, obesity, constipation etc..are the risk factors.

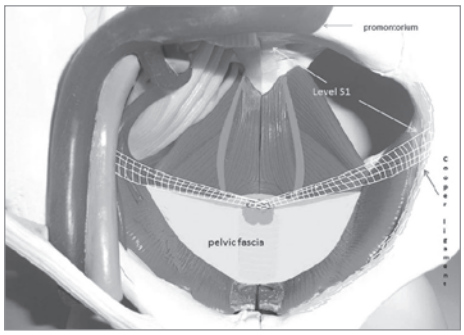
Inherent weakness of the connective tissue may be associated in case of recurrent prolapse. Vaginal vault prolapse in post hysterectomised patients is a complex disorder that poses challenge to the treating clinician.

Here we present a case of huge vaginal vault prolapse managed successfully by a novel method laparoscopically. 48 year old Mrs.M admitted with complaints of mass descending per vaginum for 4 years duration with minimum urinary symptoms. She had vaginal delivery 30 years ago with no other comorbidities. She had undergone vaginal hysterectomy for similar issue 11 years ago.

The recurrence of symptoms started 7 years after surgery. On evaluation, she was obese with a BMI of 31, normotensive with good cardiac status. Local examination revealed a huge vault prolapse 8X9cm, reducible without any decubitus ulcer, cystocoele or rectocoele. In view of the apical compartment defect, surgical correction was planned. Necessary preoperative steps taken and laparoscopic pectopexy planned.

Preoperatively, dense adhesions of omentum to vault seen and same released all around. Vault lifted up trans vaginally to fecilitate mesh anchorage Uterovesical fold of peritoneum opened to

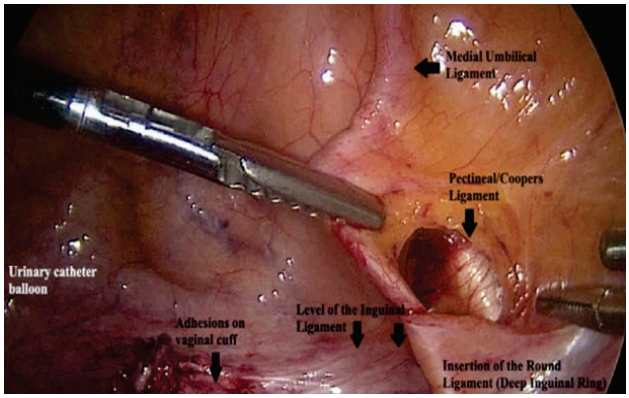


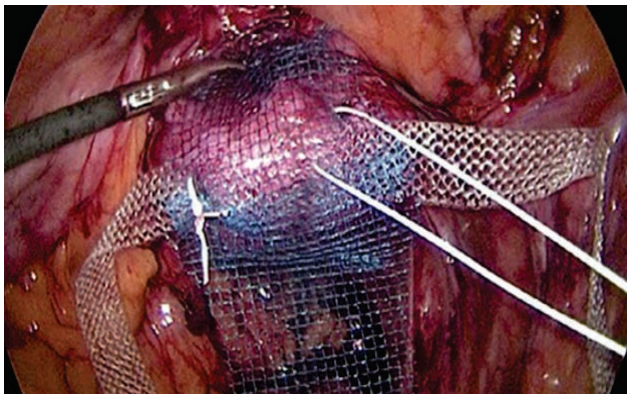


mobilize bladder down. Plication of vaginal wall done anterior, posterior and lateral sides. Pelvic side wall dissection carried out to expose the Pectineal ligament [Cooper's Ligament].

The adjacent landmarks are external iliac vessels and Obturator nerve. The mid point of the ligament to vessels s 1-1.5 cm and obturator canal is 3-3.5 cm. Pubic vein may be encountered which can be cauterized if it impedes with mesh fixation.

Y shaped Prolene mesh fixed to the all sides of vaginal vault and laterally anchored to pectineal ligament both sides. Peritoneal closure done. Ovaries were found normal, hence conserved. Bilateral salpingectomy done. After port closure Pelvic floor repair was done vaginally. Postoperative period





uneventful and patient discharged on 2nd POD. On follow up patient has adequate length of vagina, normal bowel and bladder habits.

The reconstitution of physiological axis of vagina regarding size, depth and slant is the principle in the management of vaginal vault prolapse. Laparoscopy has taken over the transvaginal surgical correction for better results. Use of mesh in vaginal approach has been withdrawn owing to complications.

Laparoscopic sacro colpopexy is the ' gold standard 'management for many decades. Long term outcomes like defecation disorder, SUI, sexual dysfunction, chronic pelvic pain, GERD, Spondylodiscitis, Vertebral osteomyelitis have been underestimated in the past. In addition, the long learning curve, need for deep Trendelenburg position, longer operating time made it cumbersome.

There came the invention of novel method PECTOPEXY to address the same principles. Initially the procedure was carried in obese patients since 2011 and slowly adapted to all. The pectineal ligament is stronger and more durable than sacrospinous ligament, and Arcus tendinus fascia of Pelvis and Anterior longitudinal ligament. Mesh can be fixed between pubic tubercle and external iliac vessels.

The surgical field is limited to anterior pelvic space and less influenced by obesity. Pectopexy with concomitant vaginal procedure to address the distal posterior compartment defects is optimum.

Shorter operating time and learning curve, lower average blood loss and risk of hemorrhage [1.7% pectopexy vs 0.3-7.1% in sacrocolpopexy] made it more popular. Long term outcomes are encouraging with less complications, improvement in sexual function and satisfaction.

In the management of Vault prolapse Pectopexy stands as an alternate to Sacrocol popexy in terms of efficacy.

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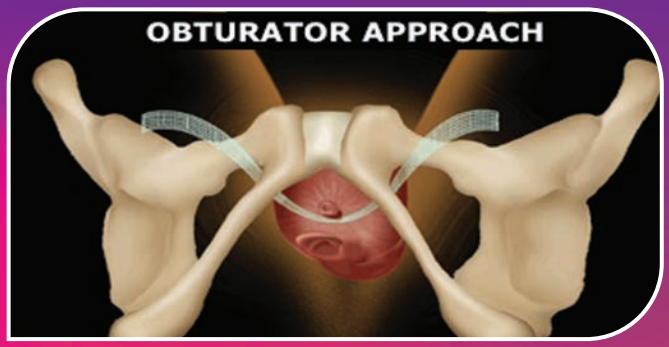


Transobturator Tape for Stress Urinary Incontinence

Case Report

Stress urinary incontinence(SUI) is the sudden, involuntary loss of urine secondary to increased abdominal pressure that is affecting the patients quality of life. One out of every 3 women will experience SUI at some point in their life time. It could be due to uretheral hypermobility or intrinsic sphincter deficiency.Risk factors are multiparity,obesity, old age, chronic cough or constipation. Patients are examined to rule out any abdominal mass, ascites or vaginal prolapse and to confirm SUI clinically. Invesigations to rule out urinary infection, uncontrolled diabetes, urinary retention and urodynamics, in selected patients, to rule out mixed urinary incontinence are being done.

According to Mc Guire classification, it is graded as Grade 1-Mild SUI with incontinence only on severe stress like coughing, sneezing, jogging, Grade 2 as Moderate SUI with incontinence with moderate stress like fast walking , climbing the stairs, Grade 3 asSevere SUI with incontinence being even with slight stress like standing or even on rest.

Treatment

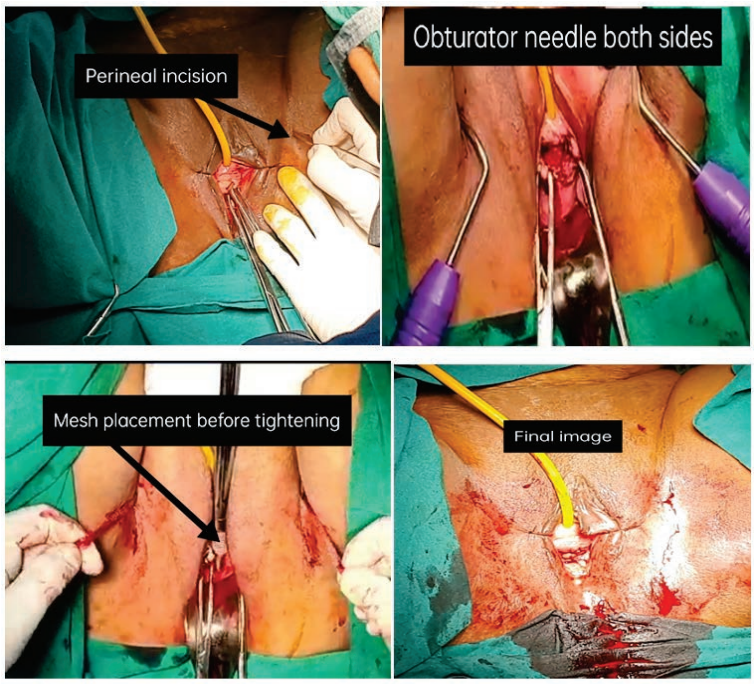
Life style changes such as weight reduction, avoiding smoking and alcohol intake, treatment of chronic cough may help. Conservative management included pelvic floor exercises – kegel's, biofeedback therapy, bladder training, along with drugs like SSRIs like duloxetine, alpha adrenergic agonist like midodrine, tricyclic antidepressants like imipramine. Surgical management remains the gold standard for SUI after failure of medical management for 3 months and in Severe SUI.Options would be Midurethеral slings like tension free vaginal tape (TVT), Transobturator Tape (TOT), Retropubic sling, and Tension-free slings uses polypropylene mesh to support the midurethra without tension, the original technique uses a retropubic approach, but the transobturator approach becoming the most common tension-free sling technique performed worldwide for primary SUI. Here we report 5 cases of SUI underwent Trans Obturator sling procedure and its outcome.

Transobturator Tape-procedure

Patient in dorsal lithotomy position , bladder catheterized. 2 cm vertical incision is made on the anterior vaginal wall 1cm below the urethra and the fascia is dissected laterally upto ischiopubic ramus. A1 cm perineal incision made at the level of insertion of adductor longus at the level of clitoris. By 'Out to In' technique the needle is passed in to incision and medially through the obturator membrane. With the guidance of opposite hand index finger in the vaginal incision the tip of needle has to be palpated and passing with a 45 degree angle rotation and comes out below the urethra. Procedure repeated on opposite side. Mesh is feeded through eye of needle and the same pulled on both sides and ends are cut after ensuring the adequacy of the tension of tape under the urethra to avoid retention post operatively.

Case:1 - Mrs G 55 yrs, P2L2/ NVD/ postmenopausal presented with chief complaint of passage of urine on coughing, straining, laughing since1year. Embarrassedto attendsocial functions, uses diaper daily. She underwent Transobturator tape sling procedure. Her postoperative period was uneventful. Post operative follow up now at 2 yrs reported no leak.

Case:2 - Mrs.S,44yrs P2L2/NVD/LCB15 YRS/post hysterectomy 6 years back, teacher, uses diaper daily presented with



SUI grade 2 since 5 years, She underwent TOT sling. Her postoperative period was uneventful. Now at 3 years, the patient is found symptom free.

Case:3 - Mrs.M,45 yrs P3L2/1AVD,1LSCS, Presented with Post Lap.hysterectomy10 years back with Vault prolapse with cystorectocele and SUI grade 2. She underwent vaginal right sacrosphinous ligament fixation(SSLF), pelvic floor repair and Trans obturator tape insertion. She had voiding dysfunction postoperatively and was treated for the same with bladder training and medications. She recovered completely after 1 month and now at 2.5yrs reported no leak.

Case:4 - Mrs. V,67yrs, post menopausal, P2L2A1/ Both forceps delivery has been admitted with SUI grade 3. She underwent Transobturator tape. Her postoperative period was uneventful. Now at 1 year, she is found symptom free.

Case:5 - Mrs. N,43 years P3L3 /NVD with c/o SUI grade 2 and lax vagina, uses diaper throughtout the day.She underwent Transobturator tape sling with pelvic floor repair.Her postoperative period was uneventful. Now at 2 months, reported no leak.

Discussion

The mid urethral sling acts like a hammock under the bladder neck to both elevate the urethrovesical junction on stress and to provide partial compression of the urethra thereby preventing the leak. The TVT mid urethral sling is associated with serious though rare complications including intestinal perforation, vascular injury, obturator nerve injury. The transobturator sling(TOT) procedure spares the retropubic space and thus eliminates these risks. On comparing the midurethral sling procedures.,also it mimics normal anatomy. One of the important and not well-recognized advantages of the TOT as compared to other mid urethral sling procedures is the lower rate of de novo urge incontinence and urethral obstruction.Sucess rate of TOT is reported upto 90%.**Retropubic Burch Colposuspension - has good success rate** but with higher chances of voiding dysfunction, denovo detrusor instability can occur. Need repeat surgery in cases of urinary retention due to tight suturing whereas in midurethral slings, mesh can be cut to release the tension under local anesthesia.

Conclusion

TOT sling provides a safer means to place a tension-free mesh tape with seemingly equivalent cure rates and lower rates of voiding dysfunction. It's time to talk and takecare of SUI and not let the women wet and use diaper always.

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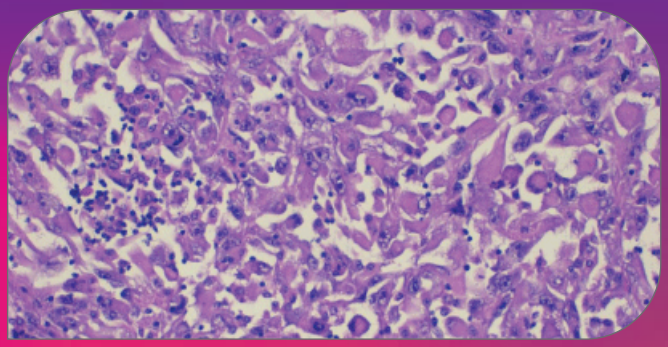

Ovarian Rhabdomyosarcoma arising from Teratoma post treatment

Abstract

We present the case of a 17 year old girl diagnosed as dysgerminoma from biopsy of staging laparotomy. Despite surgery and adjuvant chemotherapy, the patient developed Rhabdomyosarcoma recurrence from the germ cell tumour. We report a rare case of malignant germ cell tumor (GCT) transforming into a **malignant non-germ cell histology,** commonly referred to as somatic-type malignancy.

Case study

A 17 yr old, moderately built, unmarried female with 11 months of amenorrhea, with menarche at 16 yrs presented with complaints of abdominal distension. She was initially evaluated with Ultrasound abdomen (18.5.2020) showed mass in right adnexa with a complex cyst in left ovary. Following which MRI pelvis done on (18.5.2020) showed 13.5 x11.5 x10.5 cm mass in the pelvis with no infiltration but with mass effect and 3.8 x2.7 x 2.3 cm cyst in left ovary. Pre operative tumour markers were within normal range. Patient underwent staging Laparotomy (right salphingoophorectomy with bilateral PLND with RPLD) on 19.11.2020 at Outside hospital. Post operative HPE showed Dysgerminoma (malignant Germ cell tumor) of right ovary T1aN0MO. Post op tumour markers AFP, Beta HCG, LDH (12.02.2021) were done. Since AFP was 138 (elevated), she was diagnosed asa mixed germ cell tumor of right ovary and palliative chemotherapy 3 cycles - BEP regimen (Cisplatin - etoposide - Bleomycin) were completed in April 2021 at outside hospital. Post chemotherapy AFP showed normal value. Hence patient was reassured and was on regular follow up. In April 2022, patient developed abdominal distension. Evaluated at outside with MRI pelvis and abdomen (15.4.2022) - large abdominoplevic mass lesion showing moderate to intense enhancement with central non enhancing necrotic areas-consistent with ovarian neoplasm. Large amount of free peritoneal fluid-exudative. Moderate left HUN. Patient came to SRH. AFP [19.4.22) - 1.74 ng/ml, Beta HCG (19.4.22) 2.39 mlu/ml. Patient underwent USG guided trucut biopsy of plevic mass [22.4,22] which showed malignancy neoplasm of ovary, Suggested IHC for categorization.

Immunohistochemistry

S.No	Markers	Intensity	Interpretation
1.	Pancytokeratin	Strong	Focally Positive intumour cells
2.	Desmin	Moderate & diffuse	Positive intumour cells
3.	Myogenin	Moderate & patchy	Positive intumour cells
4.	PLAP	Moderate	Focally Positive intumour cells
5.	Glypican 3	–	Negative intumour cells
6.	SALL4	–	Negative intumour cells
7.	CD30	–	Negative intumour cells
8.	CD1174	–	Negative intumour cells
9.	D2-40	Moderate	Focally Positive intumour cells
10.	S100	–	Negative intumour cells

IHC [26.4.2022] showed features are consistent with spindle cell Rhabdomyosarcoma, possibly somatic malignancy arising in case of Germ cell tumour (Post treatment). PET CT (20.4.2022) showed Hypermetabolic abdomino-pelvic mass lesion with associated mass effects as described above suggestive of local recurrence, needs HPE correlation.Hypermetabolic metastatic paraaortic lymphnodes. Hypermetabolic peritoneal and omental metastatic deposits. Severe ascites. No evidence of metabolically active disease elsewhere in the present scan. Peripheral smear done on 2.5.2022 showed diamorphic anemia

(normocytic and microcytic) with neutrophilic leukocytosis and thrombocytosis (possibly reactive) - Cellular marrow with trilineage hematopoiesis. Therapeutic ascitic tapping done. Patient was advised chemotherapy and Underwent 6 cycles of chemotherapy VAC (Vincristine,Adriamycin and cyclophosphamide)regimen. Patient reviewed with PET CT scan on 21. 09.2022 after 6 cycles of chemotherapy showed Hypermetabolic mass lesion in left ovary.No evidence of metabolically active disease elsewhere in the present scan. Compared to the previous PET CT dated 20.04.2022 the present Scan shows partial metabolic response.Patient is currently on chemotherapy.

Discussion

Mature teratoma is the most common ovarian germ tumor in patients between the ages of 20 and 30 years, representing 20% of ovarian neoplasms. They are usually benign and very prevalent, so surgery is often delayed, especially in young women with small tumors.

Malignant transformation occurs in 1%-2% of mature cystic teratomas with a poor prognosis even with aggressive treatment. The mechanism seems to be related to the long-term presence of non-resected tissue of mature cystic teratoma .In this case, the most possible explanation is that there were malignant transformations of mature cystic teratoma in the primary tumor, according to histopathological findings. Most cases that undergo malignant transformation are squamous-cell carcinomas (75-80%), though many other histological types have been described (adenocarcinoma, adenosarcoma, carcinoid). Tumor type other than squamous-cell carcinomas is considered an indicator of worse prognosis. Early diagnosis of malignant transformation is very difficult even intraoperatively. Adjuvant therapy has not yet been standardized.

Prognosis of malignant teratoma is poor when it is spread beyond the ovary, and most cases are diagnosed in stages III or IV .Diagnosis of malignant transformation is very difficult even intraoperatively. Risk factors for malignancy are increased patient age, tumor size, rapid growth, certain imaging characteristics, and tumor markers. According to Mori et al, malignant transformation occurs an average of 10 years after the development of mature cystic teratoma. Patients over 40 years of age are at a high risk of malignant transformation. Tumor size over 10 cm is a risk factor for malignancy. In relation to the imaging examinations, the presence of solid component, obtuse angle between soft component and the inner wall, enhancement of the wall, irregular inner border, ascites, and extension through the teratoma wall as seen in MRI can be useful in the preoperative diagnosis of malignant transformation. Neovascularization and low-resistance blood flow on solid component in color Doppler ultrasound may also be cause for suspicion. Malignant tumors are often associated with hemorrhage and necrosis. The use of tumor markers is controversial and depends on histological findings. SCC seems to be the most useful marker for squamous cell components .Ca 19.9, Ca 125, AFP, and CEA have also been studied with variable results.

As malignant transformation of mature cystic teratoma is infrequent, there are no treatment guidelines. Complete tumor excision and adequate staging can improve survival and must be performed the first surgery or as soon as possible after diagnosis. As complete laparoscopic surgery is difficult without shedding, a laparotomy is usually recommended if malignancy is confirmed or strongly suspected . Tumors must be treated according to histological differentiation by employing a combination of surgery and chemotherapy. Even with optimal cytoreduction and adjuvant therapy, prognosis is usually poor .The most important prognostic factors are the stage of the disease, presence of capsular rupture, tumor grade, vascular invasion, growth pattern, and histological type different from squamous carcinoma.

Radiotherapy is often used in cases of incomplete surgical resection.Whether or not radiotherapy can improve survival is controversial, except in case of initial embryonal rhabdomyosarcoma, in which it is undisputed that there is no therapeutic advantage.

Ovarian rhabdomyosarcoma is a rare tumor both primary and from malignant transformation of a mature cystic teratoma. Prognosis is similar and much worse than genital rhabdomyosarcomas outside the ovary. A few cases of rhabdomyosarcoma arising in a mature cystic teratoma have been reported previously, some of which were diagnosed at the moment of recurrence and all having very poor prognosis.

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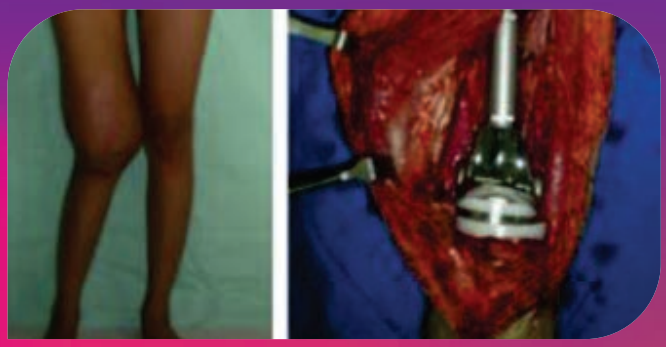


How We Avoided Limb Amputation in a patient with Parosteal Osteosarcoma Of Distal Femur with Vascular Encasement

Introduction

Surface osteosarcomas are rare primary bone tumor and account for < 5% of all osteosaromas. Parosteal, Periosteal & high grade Surface osteosarcomas are the three major groups of surface osteosarcomas of this parosteal osteosarcomas are generally low grade and have a better prognosis.

Even through neoadiuvant chemotherapy in the standard of care for most osteosarcomas, parosteal osteosarcomas generally respond less to neoadjuvant chemotherapy and hence upfront surgery is the standard of care in most cases. Generally they have a better prognosis compared to conventional osteosarcomas

Case report:

Our patient is a 51 years old gentleman who presented with history of swelling over the right distal thigh & pain over the swelling for one month duration. On further evaluation patient was diagnosed to have parosteal osteosarcoma involving right distal femur.

Imaging done revealed that there was 270° encasement of distal part of superficial femoral artery & vein by the tumor. However sciatic nerve was free of tumor. The case was discussed in tumor board meeting and it was decided try neoadjuvant chemotherapy in order to avoid limb amputation. Patient was started on neoadjuvant chemotherapy (Ifosfamide, Adriamycin, cisplatin, IAP Regimer).

Patient became symptomatically better. Repeat imaging done at the end of 3 cycles of neoadjuvant chemotherapy showed no significant change in the size of the mass.

- Patient was discussed in tumor board meeting again & it was decided to proceed with surtery.
- Pre operative CT angiogram was done & vascular sur8eon opinion sought
- Patient was taken uP for surgery.
- Intra operatively tumor was found to encase distal superficial femoral vessels. Hence tumor excised enbloc with involved segment of femoral vessels & distal femur was reconstructed using modular prosthesis. Femoral artery was reconstructed using reverse saphenous vein graft harvested from contralateral thigh. Femoral vein was ligated divided & not reconstructed. Wound closed in layers. Post operatively vascularity of the limb was monitered using Doppler. The post operative period was uneventful & patient was mobilized as per protocol. Post OP HPE was S/o residual parosteal osteosarcoma with all the resected margins free of tumor' Patient was started on adiuvant chemotherapy & is doing welltill date.

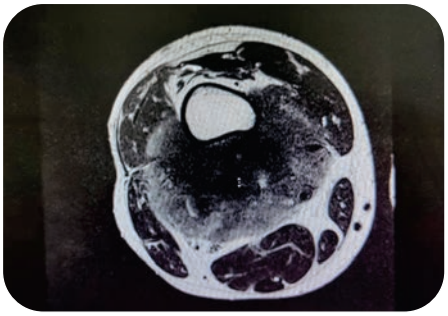
Uniqueness of this case:

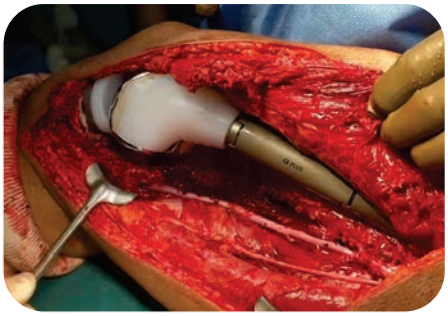
- Parosteal osteosarcomas are generally encountered among females in the age group of 20-30 yrs. But ours is a 51yrs old male patient.
- Distal superficial femoral artery was resected enbloc with tumor & was reconstructed thus sparing the limb for the patient. Superficial femoral vein was not reconstructed. (since prosthesis was used for bone reconstruction, we were not able to use synthetic grafts for vessel reconstruction)

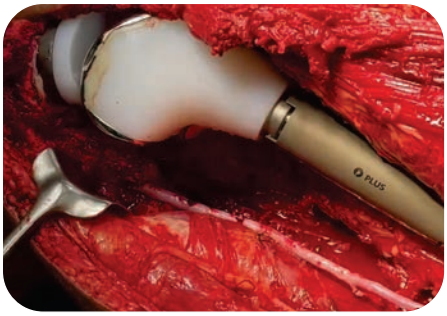
Take home message:

With advances in surgical techniques, reconstructive options & systemic therapy involvement of major neurovascular bundle by the tumor should no longer be considered a contra - indication for limb salvage surgery & amputation of the limb should be the last option is the armamentarium of treatment modalities in patient with extremity sarcomas.

Comprehensive cancer care team with expertise in managing complex cases is the way in managing such cases. We at Sri Ramakrishna Hospital have dedicated, experienced, multidisciplinary team to handle such cases & commonly manage these complicated cases.







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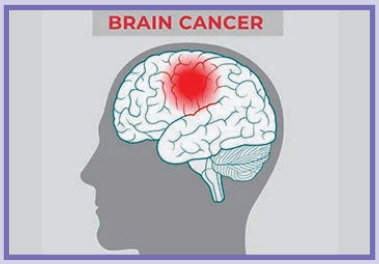
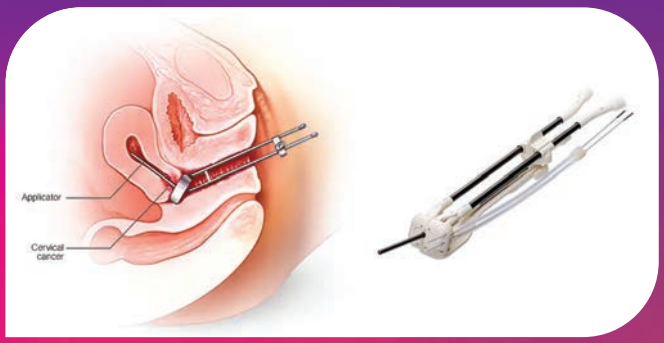
Breast Cancer

Brain Cancer





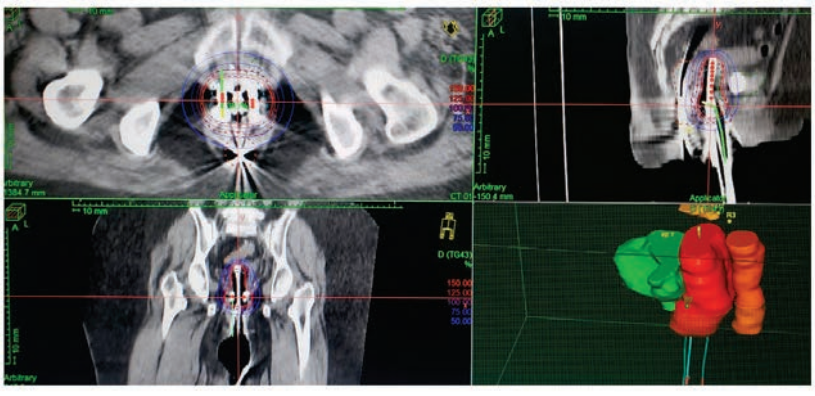
Intracavitary Brachytherapy

Brachytherapy is used widely with or without External beam radiation therapy for cancers of uterus, cervix, esophagus, bronchus, breast, sarcomas, etc. According to the site of cancer, the type of brachytherapy may be intracavitary, intraluminal, or interstitial. Brachytherapy is known to spare surrounding healthy tissue from unnecessary exposure to radiation, with the potential for fewer adverse effects. Most commonly practiced brachytherapy is intracavitary approach for carcinoma cervix which was done under x-ray guidance (2 Dimensional brachytherapy). In recent years, the image guidance evolved from X – ray (2- D) to CT/MRI (3- D) , thereby enabling the clinician to spare the normal structures better than a 2-D.

The majority of brachytherapy patients receive a multimodality treatment such as surgery, external beam radiotherapy and chemotherapy. For locally advanced cancer cervix, external beam radiotherapy with concurrent weekly chemotherapy followed by brachytherapy is regularly practised.

Procedure – Intracavitary brachytherapy for carcinoma cervix.

The BT (Brachytherapy) applicator has an intrauterine tandem and two ovoids to be placed inside the uterus and in the vaginal fornices respectively. After EBRT and chemotherapy the residual disease is, in and around the os. The applicators are placed in position with patient in lithotomy position under spinal anaesthesia. Vaginal cavity is packed with gauze to manually separate bladder and rectum from high dose region.



CT scan is done and target volumes and normal tissues are delineated in each slice of CT image. Planning is done on treatment planning system and doses are optimized in such a way that the residual disease gets maximum dose while the bladder, rectum and bowel get tolerable doses.

Geneva applicator

Geneva applicator is completely MR-safe, offering distortion-free image guidance using all 2D and 3D imaging options. In addition, interstitial capability with every configuration supports image-guided adaptive brachytherapy (IGABT).

Geneva ensures that the option for guided interstitial brachytherapy is always available—even with the smallest ovoid —for optimal target coverage.

In our hospital , we are using Geneva applicator to treat patients with Carcinoma cervix for brachytherapy. Below is one of our patient with carcinoma cervix , where image guided brachytherapy evidently reduced dose to normal tissues, and uncompromised doses to the residual disease.

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Radiation Oncologist

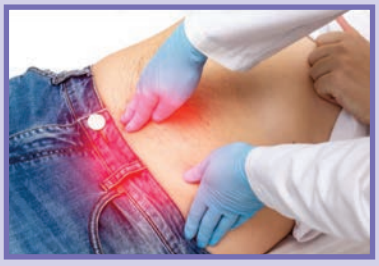
Piles

Fistula

Fissure

Diabetic Foot Ulcer

Hernia



Stem Cell Therapy- Case scenario CD+ BMAC for B/L AVN Hips

Human bone marrow (BM) is a kind of source of mesenchymal stem cells (MSCs) as well as growth factors and cytokines that may aid anti-inflammation and regeneration for various tissues, including cartilage and bone.

However, since MSCs in BM usually occupy only a small fraction (0.001%) of nucleated cells, bone marrow aspirate concentrate (BMAC) for cartilage pathologies, such as cartilage degeneration, defect, and osteoarthritis, have gained considerable recognition in the last few years due to its potential benefits including disease modifying and regenerative capacity.bone marrow aspirate concentrate (BMAC) has emerged as a possible alternative for regenerative medicine.

It has been spotlighted as a promising biologic tool because of a rich source of pluripotent mesenchymal stem cells (MSCs) and growth factors, and currently approved by the United States Food and Drug Administration (FDA). Accordingly, considering both the anti-inflammatory and regenerative effect, BMAC may be an attractive tool for cartilage and bone regeneration in OA.

Clinical picture

A 35 year old male, presented with the complaints of bilateral hip pain (Right> left), increased on walking, lying on right side, sitting in 2 wheeler, while wearing pants. Pain decreased with rest. There was no history of trauma, fever or MJP. Patient had difficulty in walking forone and a half years.

Initial investigations

Initial X ray pelvis showed relatively sclerotic changes in the bilateral femoral head. MRI showed bilateral femoral head avascular necrosis with bone marrow edema in the femoral head, neck and hip joint effusion. Patient opted for native treatment for 1 year and presented to us with persistent pain and difficulty in walking.

Followup investigation

Follow up Xray and MRIin the next year showed progressive bilateral femoral head avascular necrosis.

ProgressiveB/L AVN hips

Right hip: Avascular necrosis fo femoral head- Stage 3; minimal hip joint effusion. Grade 2 cartilage erosions in the hip joint articular surfaces.

Left hip: Avascular necrosis fo femoral head- Stage 2; moderate hip joint effusion. Grade 3 cartilage erosions in the hip joint articular surfaces.

B/L CD + BMAC therapy and Physio rehabilitation were planned.

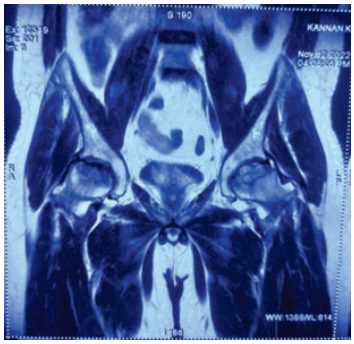
Surgery: B/L CD + BMAC Therapy

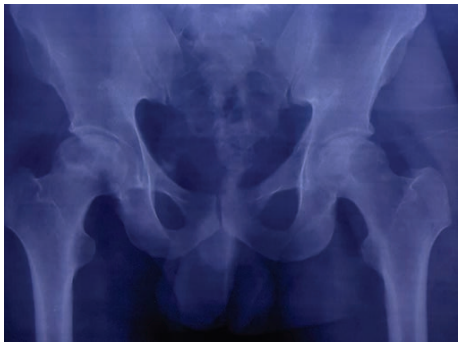
Bone marrow aspirationwas done from the iliac crest; 50 ml marrowwascollected in a sterile manner; final bone marrow concentreate developed after processing in the centrifuge at the operation theatre.

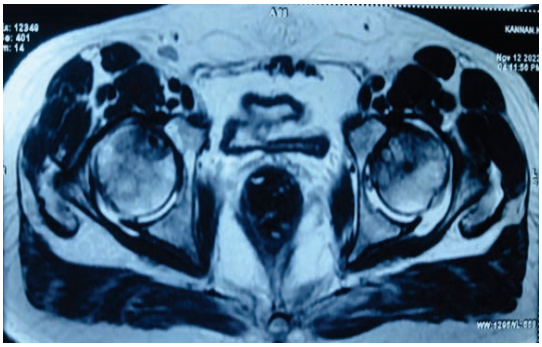
Instillation of bone marrow concentrate into the core tract after core decompression in femoral head avascular necrosis.

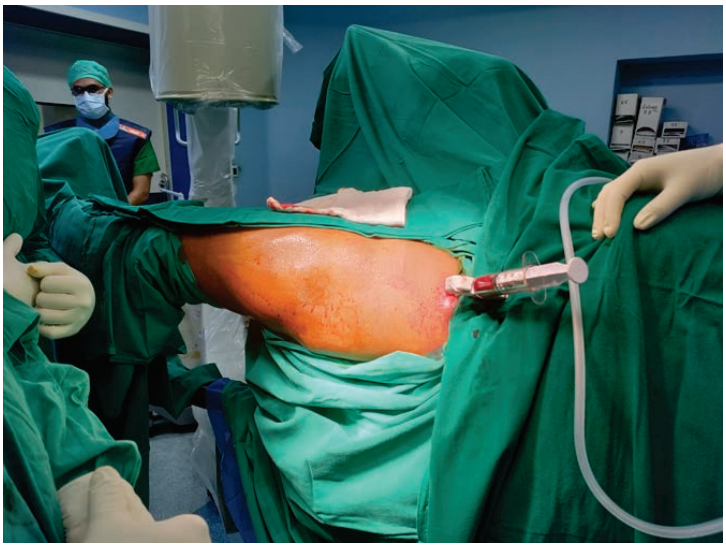
Outcome

Patient symptomatically improved and started walking initially with support and independentally without aid after 3 months. Patient was given Physio rehab for 9 months.

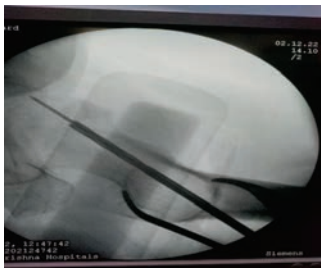


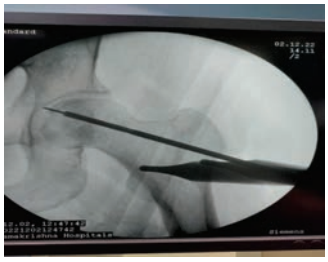




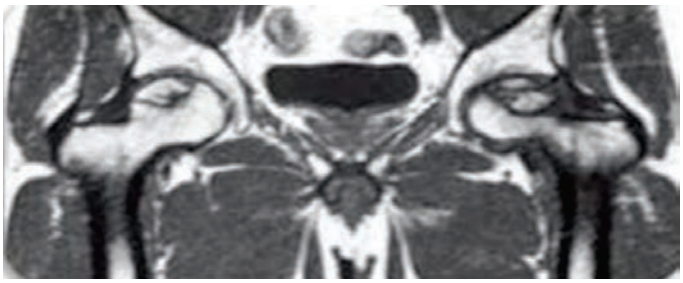


Transplant BMC after a core decompression was mixed with a suitable bone substitute and implanted; sealed with bone wax

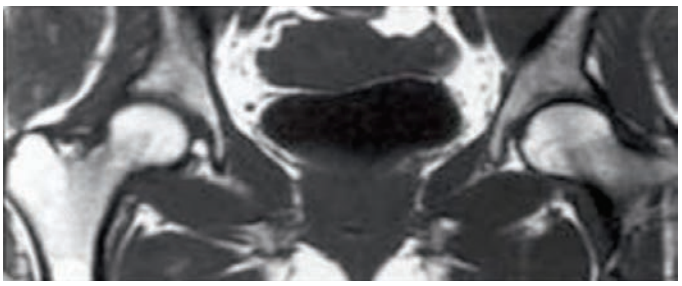




The direction of the trepine was adjusted in all planes under fluoroscopic control, so that it is pointing towards necrotic zone, followed by BMC injection



Preoperative MRI of both hips showing bilateral hips showing bilateral AVN



Signal appearing normal in hips after one and half year of follow up showing good vascularisation

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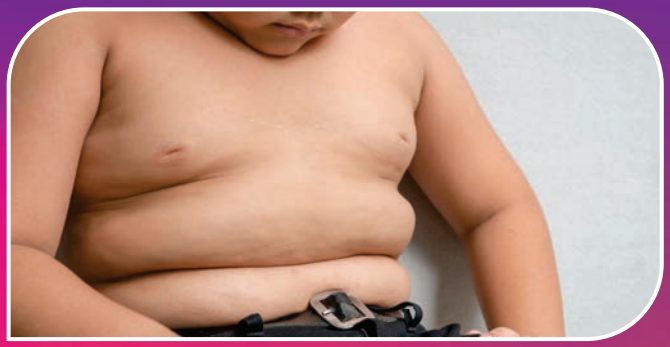

Pediatric Type 2 Diabetes - A Cause for Concern!

Type 2 Diabetes Mellitus (T2DM), once rare in children, is now being increasingly detected due to rise in childhood obesity. The prevalence of pre-diabetes/diabetes among adolescent boys and girls in India are 12.3% and 8.4% respectively.

Case Report

A 13 year and 9 months old male child, planned for excision of radicular cyst of right mandible, was referred from dentistry in view of incidentally detected high blood glucose levels, done as a part of routine preoperative work up. He was asymptomatic. He had mild to moderate intellectual disability and was attending special school. His anthropometry was suggestive of: Weight: 77.5 kg(97th centile); Height: 158 cm(50th centile); BMI: 31(obesity). On examination he had acanthosis nigricans and truncal obesity.

His investigations were as follows: Random Blood Glucose: 307 mg/dL; Urine routine: Glucose 3+, ketones nil; HbA1c 11.1%; Fasting blood glucose: 261 mg/dL. His thyroid function tests were normal. His fasting insulin level was 81.4 mcIU/mL (2-25) and C peptide level was 6.93 ng/mL (0.81-3.85). His renal function tests and lipid profile was normal. He was started on insulin therapy (basal bolus regimen) and Metformin as per ISPAD guidelines. Daily home monitoring of blood glucose levels was done and insulin doses adjusted appropriately. Changes in lifestyle including healthy diet, avoidance of junk foods, daily outdoor physical activity and avoidance of screen time was included as a part of therapy. Over a period of 6 months, he was found to have reducing insulin requirements which was finally tapered and stopped. He is currently on Metformin. His last HbA1c is 6.4%.

Discussion

Type 1 diabetes(T1DM) accounts for >90% of all cases of diabetes in children. However, with increasing number of children with childhood obesity, there has been a steady increase in the number of children with type 2 diabetes mellitus(T2DM).

T2DM is characterized by hyperglycemia with insulin resistance and impaired insulin secretion. When compared to adults, children with T2DM have limited treatment options, even though the disease tends to have a rapid progression in childhood.

The American Diabetes Association recommends screening for T2DM beginning at 10 years of age or the onset of puberty in children who are overweight or obese and have two additional risk factors(Family history of T2DM, Asian ethnicity, Gestational diabetes in mother or signs of insulin resistance).

The diagnostic criteria include;

- Fasting blood glucose level of ≥126 mg/dL OR
- Two-hour plasma glucose level of ≥200 mg/dL during an oral glucose tolerance test OR
- HbA1c level of ≥ 6.5% OR
- Random plasma glucose level of ≥ 200 mg/dL plus symptoms of polyuria, polydipsia, or unintentional weight loss.

In most children, the presence of risk factors, mode of presentation and early course of the disease indicate whether the child has type 1 or type 2 diabetes. Differentiating T1DM and T2DM however, could be challenging in some children. With increasing obesity in childhood, almost 30% newly diagnosed T1DM patients may be obese. Positive family history for diabetes is not specific. Pediatric T2DM can present with ketonuria /ketoacidosis at diagnosis. Overlap in insulin or C peptide levels between TID and T2D at diagnosis is well documented. Insulin resistance is present in both TID and T2D. Autoantibodies could be present in around 10% cases of T2DM as well. In these cases, the preferred approach is to start therapy and to adjust based on the response. The diagnosis becomes evident over a period of time.

Management in T2DM should be multi disciplinary, individualized and family-centered.Counseling related to diet and physical activity should be started at the time of diagnosis and continued as a part of ongoing management. Metformin is the first-line therapy along with lifestyle changes. Insulin therapy should be started if there are signs of ketoacidosis or significant hyperglycemia (HbA1c ≥9% or a random plasma glucose level of ≥ 250 mg/dL). Screening for other comorbidities(hypertension, Dyslipidemia, retinopathy, nephropathy, Non alcoholic fatty liver disease) should be done at the time of diagnosis and routinely thereafter.

Key Message

- Anticipatory guidance regarding healthy eating, physical activity, limiting screen time and age-appropriate sleep duration/quality is recommended to prevent T2DM in children and adolescents.
- Children at risk should be actively screened for T2DM.
- Early screening, intervention and optimization of glycemic control is important, since pediatric T2DM is associated with severe and early onset of micro vascular and cardiovascular complications.

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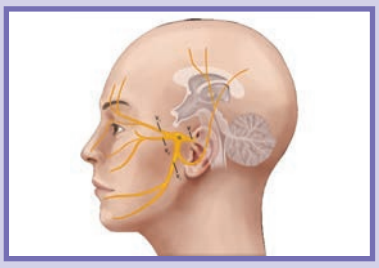
Consultant Pediatrician and Pediatric Endocrinologist

Trigeminal Neuralgia



Migraine Headache

"The eyes cannot see what the mind does not know"

Case Report

A 2 year and 8 month old male child brought with having the complaints of cough, cold, fever & vomiting for 3 days followed by hematuria and yellowish discoloration of eyes and skin one day prior to admission. H/o consumption of some native medicine for the above illness.

On examination he was pale ,icteric and found without organomegaly or abdominal distension. He was tachypneic with spo2 of 84% in room air however chest examination was normal. Suspecting methaemoglobinemia ABG was done which confirmed the suspicion with methb being above 10.2% Chest Xray was unremarkable.

He was started on HHFNC with 100% Fio2 with which his saturation improved until 90%, repeat methhb level was 14.2%. Spo2 and methhb levels gradually improved within the next 36 hrs of treatment. He did not require Methylene blue.

Investigations showed severe anemia(4.9 g/dl), indirect hyperbillirubinemia (13mg/dl,T.B-14.2),LDH - 1386U/L haemoglobinuria. Viral markers were non reactive, septic screen was negative, Peripheral smear did not show any schistocytes or blast cells, Retic count was elevated, DCT done to rule out autoimmune hemolytic anemia in view of associated thrombocytopenia was negative. Child was transfused with 3 units of PRBC in view of severe anemia, and maintained on hyperhydration for hematuria. Hematuria resolved over the next 72hrs of hospitalisation, with no further drop in haemoglobin, with no development in AKI.

Acute hemolytic anemia with methhaemoglobinemia in a male child, the first clinical diagnosis was G6PD deficiency, however G6PD levels were within Normal limits sent after the resolution of hematuria, suspecting sickle cell variant Hb electrophoresis was done which showed unknown unidentified peak.

Due to strong suspicion repeat G6PD levels were planned after the resolution of illness, clinical exome for haemoglobinopathies was sent, showed X-linked dominant mutation in G6PD gene and also Autosomal dominant mutation in SPTB gene for Eliptocytosis.

Discussion

Glucose 6 phosphate dehydrogenase (G6PD) deficiency is an inherited disorder caused by genetic defect in red blood cell enzyme G6PD, affecting around 400 million people worldwide. This enzyme generates nicotinamide adenine dinucleotide phosphate (NADP+) in the reduced form (NADPH) and protects red blood cells from oxidative injury.G6PD deficiency is most commonly reported in the tropical, and subtropical zones. In steady state individuals remain asymptomatic with no hemolysis. However, episodes of hemolysis, may be triggered by medications, certain food products and acute illnesses. During acute hemolysis levels of G6PD can be falsely normal because reticulocytes have higher G6PD activity than mature red

blood cells. Oxygen saturation gap should always be monitored when ever a child presents with tachypnea ,hypoxia and normal chest examination to rule out methemoglobinemia , carbon monoxide poisoning.

Food for throught

With evolving advances in medicine and multiple developed hemodynamic variables available to measure fluid responsiveness in children with shock , we have moved away from giving aggresive fluid resuscitation. Are we justified in using 0.9% saline for initial resuscitation with increasing debates on hypechloremic metabolic acidosis and glycocalyx injury.

Glycocalyx is a protective layer lining the lumenal surface of the endothelium. It regulates the essential aspects of microvascular homeostasis. Glycocalyx loss exposes the endothelium and leads to increased fluid shift, edema, loss of vascular responsiveness, leucocyte/platelet endothelial interaction with increased inflammation and hypercoagulability. Syndecan-1, a blood marker of glycocalyx degradation is also studied. Elevated levels have been associated with severity of illness in both children and adults.

Fernandez-sarmento et al studied about the glycocalyx disruption associated with balanced and unbalanced fluid boluses in children with Sepsis. They measured perfused boundary region (PBR) on sublingual microscopy to assess endothelial glycocalyx thickness and blood levels of Syndecan-1.

They found that glycocalyx thickness decreased significantly after 6 hours of fluid bolus in children receiving unbalanced fluids and unchanged in children receiving balanced fluids. They also measured Syndecan-1 levels and were high in most children but there was no significant change in syndecan-1 levels between children receiving balanced or unbalanced fluids within the initial 6 hours. However metaanalysis of such small trials have shown less acidity, improved bicarbonate levels and possibly reduced length of PICU stay. Further more robust RCTs are needed to extrapolate this data into clinical practice.

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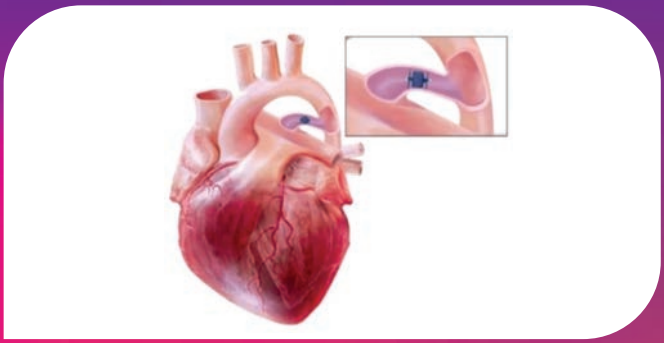
Pyrexia

Hypertension



Minimally Invasive KEY HOLE -PDA DEVICE Closure with PICCOLO device in PRETERM BABIES : CASE REPORT -Advancements and Outcomes

CASE 1: A premature female baby was born to a 22 years primigravida mother by LSCS at 31 weeks conceived through in vitro fertilization with GESTATIONAL DIABETES AND PREEGNANCY INDUCED HYPERTENSION with a birth weight of 1700 g in an outside hospital . Baby was under B-CPAP support for three weeks and was on caffeine maintanence in view of apnea of prematurity. Post natal ECHO was done in view of continuous murmur and persistent symptons of CCF showed large PDA and was started on medical management (Paracetamol). Despite three course of Paracetamol (Each course for 5 days), PDA failed to close and was referred to SRH

Baby was in room air at admission with mild respiratory distress. ECHO done here revealed large 3.5 X 4 mm diameter and 7mm length haemodynamically significant PDA, LA LV dilated with moderate PAH and good biventricular function.

PRETERM PDA DEVICE CLOSURE was done on 17.11.2022

Post procedure, baby had features of BPD changes , was treated with short course dexamethasone and nebulised bronchodilators. Baby's respiratory effort and neurological status improved and baby was extubated on POD 4 Repeat 2D echo showed closure of PDA with device in position, good cardiac function with good flows in pulmonary artery, aorta and no tricuspid regurgitation. Discharge weight was 2.9kg.

CASE 2: A Premature female baby was born to a primigravida mother at 27 weeks with a birth weight of 1100 g in an outside hospital. Baby had respiratory distress with hyaline membrane disease for which baby was given 1 dose of surfactant, required continuous positive airway support and received caffeine in view of apnea of prematurity. Baby was under intensive care support for 23 days. She was referred to us at 3 months of age in view of congestive heart failure . CT pulmonary angiogram done showed Large Patent Ductus Arteriosus (PDA) 1cm in length and 4.5mm in diameter.

On admission she was in congestive cardiac failure weight with the 3kg ,was started on oxygen and anti failure medications. PRETERM PDA DEVICE CLOSURE was done on 05.09.2023.

Feeding resumed after 6 hours and was well tolerated. The baby began gaining weight and received routine preterm care as per unit policy. Neurological examination indicated age-appropriate development. She was discharged after 2 days, with a closure of PDA confirmed by a follow-up 2D echo, good cardiac function, and a discharge weight of 3.1 kilograms.

PROCEDURE: Intervention was done under general anesthesia and mechanical ventilation support. The procedure involved cannulating the right femoral vein under ultrasound guidance and inserting a 4F radial sheath. The PDA was crossed using a Runthrough PTCA wire and 4F RCA catheter from the venous end. A 4F AMPLATZER Torqvue LP catheter was threaded through the right femoral vein, inferior vena cava, right atrium, right ventricle, pulmonary artery, and into the descending aorta. The 5 X 4 mm AMPLATZER Piccolo occluder IN CASE 1 AND The 5 X 2 mm AMPLATZER Piccolo occlude IN CASE 2 was implanted under echocardiographic and fluoroscopic guidance, ensuring no obstruction to the pulmonary artery or descending thoracic aorta

DISCUSSION: The Piccolo Occluder is the first commercially available device for use in premature infants ≥700 g in India. Significant procedural complications can occur, especially with smaller babies despite the excellent outcomes in various studies. Potential adverse events that may occur during or after placing this device

include air embolism, apnea, arrhythmia, hypertension, allergic dye reaction, valvular regurgitation, vascular access site device embolization, hematoma, partial obstruction of aorta, partial obstruction of pulmonary artery, pericardial effusion, name some.

While most pediatric interventional cardiologists are familiar with the technique of percutaneous transcatheter PDA closure, in case of babies weighing ≤1 kg, several procedural modifications may be required to achieve success and reduce complication rates. In extremely low birth weight babies attention must be paid for necessary accommodations during transportation from and to neonatal intensive care unit (NICU), ventilator support during the procedure, pain management during the procedure, maintenance of euthermia and backup for blood products. Currently the contraindications for the usage of this occluder device are weight <700 gm at time of the procedure, age <3 days at time of procedure, coarctation of the aorta, left pulmonary artery stenosis, cardiac output that is dependent on right to left shunt through the PDA due to pulmonary hypertension, intra-cardiac thrombus that may interfere with the implant procedure, active infection requiring treatment at the time of implant, PDA length smaller than 3 mm, PDA diameter that is greater than 4 mm at the narrowest portion. At present, there is no consensus on the ideal timing for PDA closure in premature infants. Transcatheter PDA closure for ELBW and premature infants is a new therapy that could shift the treatment paradigm. Further studies are necessary to continue to answer important questions of which PDAs require closure and when to close the hsPDA in premature infants.

CONCLUSION: Percutaneous device closure of haemodynamically significant PDA in extremely low birth weight babies is challenging. Many administrative and procedural alterations may be required during the procedure. Piccolo device is the first FDA approved device for such small babies.

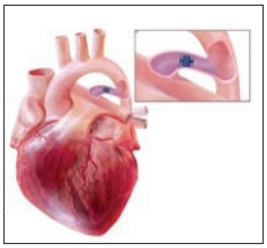


FIG 1 animation showing piccolo device intraductally

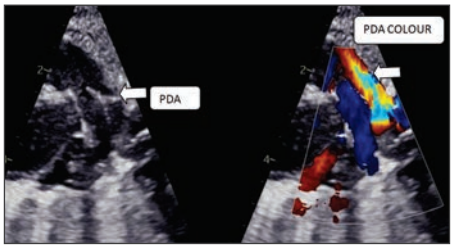


Fig 2 echo showing tubular PDA with2D and colour doppler

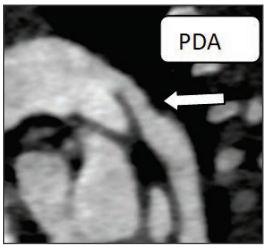


Fig 3 CT still picture showing tubular PDA

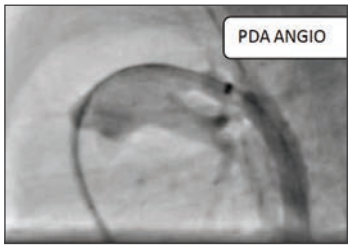


Fig 4 Angiogram still picture showing tubular PDA

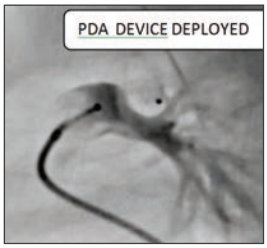


Fig 5 angiogram still picture showing piccolo device occluging PDA

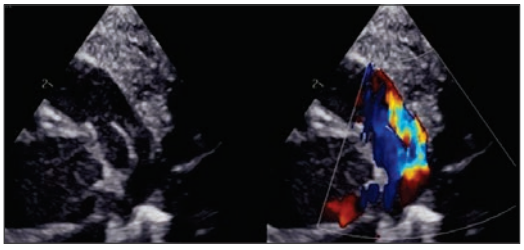


Fig 6PRE PDA DEVICE ECHO

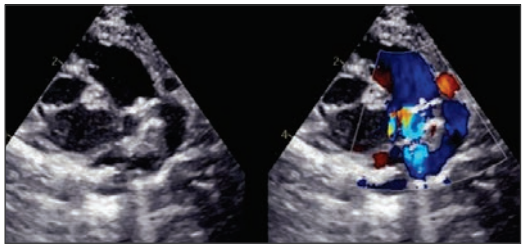


Fig 7 POSTPDA DEVICE ECHO

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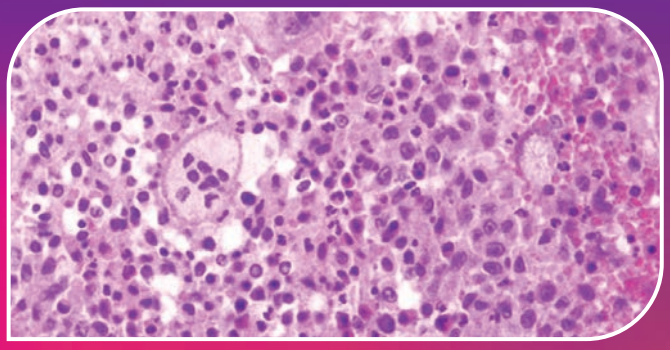
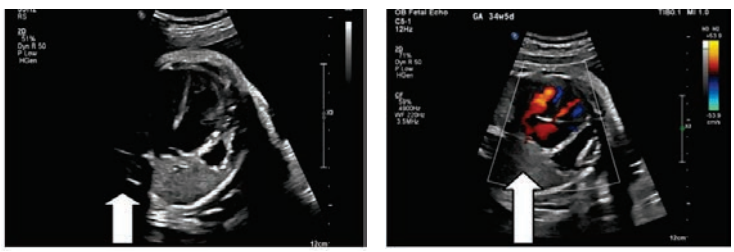
Consultant Interventional Paediatric Cardiologist



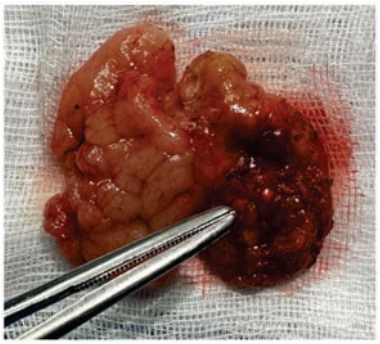
A Rare Case Of Thymic Langerhans Cell Histiocytosis in Neonate: A Case Report

Introduction: Langerhans Cell Histiocytosis (LCH) is a complex systemic disorder characterized by an abnormal proliferation of Langerhans cells, generally organized in granulomas. The estimated prevalence is between 1 and 2 per 100,000 population. The organs most frequently involved are the bone, the skin, the pituitary gland, the lung and, less commonly, the hematopoietic system, the liver and the central nervous system. Thymus involvement is rare. LCH typically occurs in children as part of a multifocal, multisystem process. Only few reports of isolated tumours involving the thymus have been published in adults, either in association with coexistent myasthenia gravis, low grade leiomyosarcoma or multilocular thymic cyst. In the literature, we found only a single case of a child who presented an isolated thymic LCH, mimicking lymphoma . Here, we report a case of isolated Langerhans cell histiocytosis of the thymus in a neonate with non-specific symptoms. We excised the thymic mass successfully.

Case Report: A 12 days old baby which was delivered by LSCS in our hospital was evaluated in NICU for anterior mediastinal mass which was diagnosed antenatally. A few vesicular skin lesions were present over the chest and trunk which spontaneously resolved over time. Echo showed PDA, small ASD with good biventricular function. USG chest done which showed Right paracardiac mediastinal cyst. MRI chest done showed anterior Mediastinal mass involving thymus on right side with calcifications and fat components possibly teratoma with bilateral lung nodules suspicious of metastatic disease. Planned for surgical excision.



Fetal echo showing anterior mediastinal mass

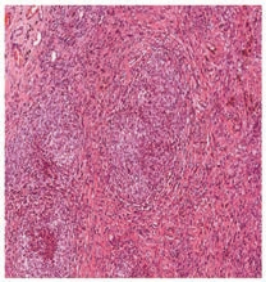


Excised Mass along with thymus showing calcification spots

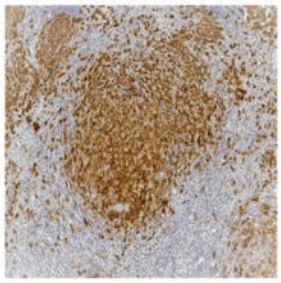
After informed consent, baby was taken up for surgery. There was 2.5x2.5 cm cystic lesion in Right lobe of thymus with specks of calcification seen in the thymic lobe. Total Excision of the mass with Thymectomy was done on 13/03/2023. In the immediate post operative period, baby was doing well and extubated on POD 2. The Wound healed well and she was discharged on 19/03/2023. HPE reported as Mature cystic teratoma with Langerhans cell histiocytosis.

Discussion: Because of its rarity, LCH remains poorly understood. The disease was first described in 1953 by Lichtenstein under the term "histiocytosis X". This entity encompassed a group of rare syndromes of unknown aetiology such as eosinophilic granuloma, Letterer-Siwe disease or Hand-Schuller-Christian disease. In 1987, because of the presence in the tumour of Langerhans cells, a sub group of dendritic histiocytes initially described by Paul Langerhans in 1868, the name was changed to "Langerhans cell histiocytosis".

The disease pattern, i.e. whether LCH is localized or occurs as part of a multisystem process, is known to be a marker of severity. In patients with high risk multisystem disease, the most effective treatment strategy involves a



Langerhans cell histiocytosis, H/E 10x. Infiltrate of medium-size cells with epithelioid features displaying irregular and grooved nuclear membrane, vesicular chromatin, prominent nucleoli, surrounded by lymphocytes and eosinophils.



Langerhans cell histiocytosis, Cd1a stain.

combination of chemotherapy and steroids to limit the risk of complications and improve outcome. By extension, this treatment tends to be also applied in patients with lower risk, localized LCH. Reports of LCH within the thymus are less frequent than within the bone, the skin or the endocrine system. Although thymic lesions are commonly reported in the setting of multisystem disease, isolated forms are rare. Indeed, in a series of 14 LCH patients with thymic involvement, either at presentation or during the course of the disease, reported by Junewick and Fitzgerald, 7 had multisystem involvement, 1 had unisystem but multifocal involvement and 6 had isolated unifocal disease. Several studies have described thymic LCH as an enlargement of the mediastinum due to increased thymic volume. The thymus is enlarged, with lobulated/nodular contours and heterogeneous ultrasound pattern, and possibly contains liquid cysts and/or calcifications. As demonstrated here, the presentation of the disease is highly variable, which makes diagnosis extremely challenging. Because of the diagnostic difficulties, it is hypothesized that the incidence of LCH may be underestimated, as for instance in very young children with typical thymic enlargement associated or not with non-specific episodes of fever and bronchial or pulmonary infection. The incidental discovery of a thymic LCH in young adult patients with myasthenia gravis is also in favour of this hypothesis. Based on these observations, the actual contribution of chemotherapy to the treatment of patients with localized LCH may appear questionable. These patients are likely to have a good response to treatment. The skin rash is the most common presentation like our patient had. In children, the rash may be misdiagnosed for other common skin lesions and it will not respond to typical treatment. The rash of LCH ranges from a single lesion to widespread involvement. Characteristics include scaly papules, nodules, or plaques and can resemble seborrheic dermatitis. One may distinguish LCH by the presence of petechiae, bloody crusting, or firmly indurated nodules. Pulmonary lesions occur in 20% of patients, and lymph node involvement in 30%. As such, the patient may present with pulmonary symptoms or lymphadenopathy. Hepatosplenomegaly may be present as well. Bony involvement occurs in about 78% of patients. Pituitary involvement also seen in few cases. Biopsy of the involved site (usually skin) is required to confirm the diagnosis. Lesions will stain positive for S-100 and CD-1a. When the diagnosis is confirmed, workup for systemic involvement should include a skeletal survey, abdominal ultrasound, complete blood count (with bone marrow biopsy if indication of bone marrow involvement). Treatment varies greatly depending on the involved organs. If the disease is isolated, observation alone may be appropriate. Surgical removal of an isolated area is also a treatment option. Isolated skin lesions may resolve on their own, Chemotherapy and radiation may be used for more systemic involved cases. Our patient had isolated thymus involvement. Pre operatively we managed the baby as isolated anterior mediastinal cystic mass probably as teratoma. Total excision of the mass was done. Postoperative histopathoogy was reported as Mature cystic teratoma with Langerhans cell histiocytosis.

Conclusion: LCH with thymic involvement is a rare but well described disease. Typically, patients with unifocal tumours have a good prognosis and respond well to chemotherapy, although one may question the appropriateness of treating these patients who may well recover spontaneously. The incidence of LCH is probably underestimated because diagnosis is hampered by the lack of specific clinical presentation and poor knowledge of radiological manifestations of the disease. An early diagnosis and proper treatment can achieve good outcome in such children. Our child is well now and is asymptomatic.

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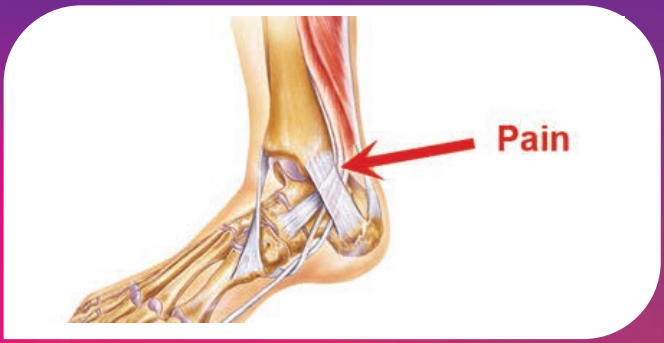
Consultant Paediatric Cardiothoracic Surgeon



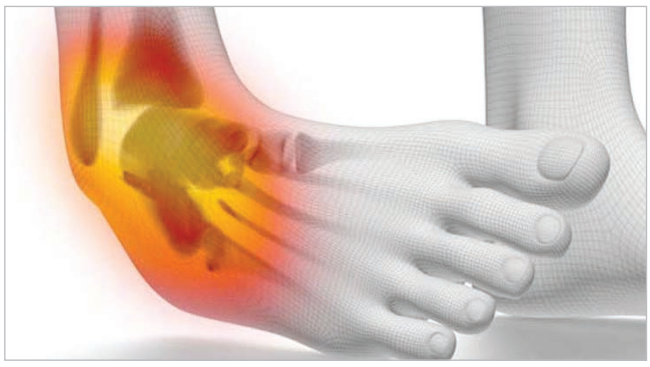
Physiotherapy Department Challenging Case Studies

Case Study: 1

Lateral ligament sprain of Ankle Joint

A 25 year old male came with a history of left ankle joint pain for the past 4 years a left lateral ligament sprain of the ankle joint. Patient cannot stand for more than 10 minutes, walk for more than 3 kms the ankle pain starts and relieves after taking some rest.

He visited many consultants and underwent MRI investigation of which all were normal. If he had any NSAIDS the pain disappears and reoccurs once discontinuation of medications. On examination the IT band, ankle evertors and lateral gastrocnemius on the left side were tight.



On single limb stance test on the left side subtalar joint goes for eversion, forefoot inversion. Releasing of IT band, lateral gastrocnemius and ankle evertors on the left side patient felt pain better and lesser than before. Local application of ice packs was applied.

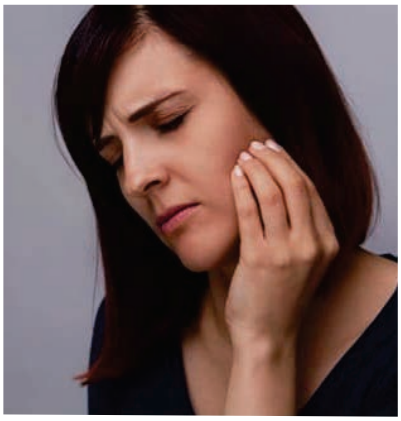
Home exercise was taught to release the above muscles and strengthening of gluteus medius, thigh adductors and calf muscles. When reviewed after a month the pain had subsided and was able to walk and stand for a longer period of time than before.

Case Study: 2

TMJ Arthritis

A 45 year old lady came in with pain in left TMJ joint. History of pain started at the age of 10 years. She had a habit of clenching her teeth at sleep, unable to lie down on the left side, unable to open the mouth fully and on night splint to avoid clenching the teeth. Not responding to NSAIDS.

Dentists advised to remove 6 teeths on her left side. On examination lateral deviation of mandible on the left side was painful and restricted, upper cervical spine was very stiff. VAS score of 9 /10. On mobilizing of upper cervical spine and left side TMJ joint, the patient felt pain better and was able to lie down on the left side comfortably and able to open the mouth fully.



Home exercise to the upper cervical spine and TMJ joint mobilization were taught to patient. When reviewed after 2 weeks, the patient felt better, pain was reduced to VAS core of 2/10 and clenching of teeth at night was stopped.

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Acute Pancreatitis

Hepatitis B & C

Gall Stone

GERD

Jaundice

Local Skin Flaps in the Hand

Skin loss in the hand, resulting from trauma, industrial injuries, following debridement for infections, tumor excision, or other forms of loss, require good and adequate soft tissue cover, for the hand to be functional.

The various skin cover options include,

- Primary/ Delayed / Secondary skin suturing,
- Split/ Full thickness Skin grafts
- Local Flaps
- Regional Flaps
- Distant Flaps
- Free Flaps
- Artificial skin/ Dermis

Local Flaps

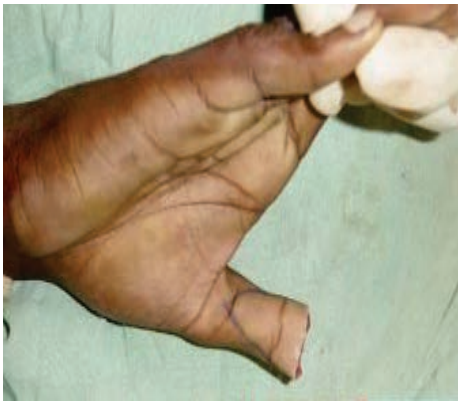
Here, skin is sourced from adjacent areas. Indications are deep wounds over the finger and hand with exposed tendon, pulp loss, exposed bone, or wounds with requirement for sensate skin, as in the thumb.

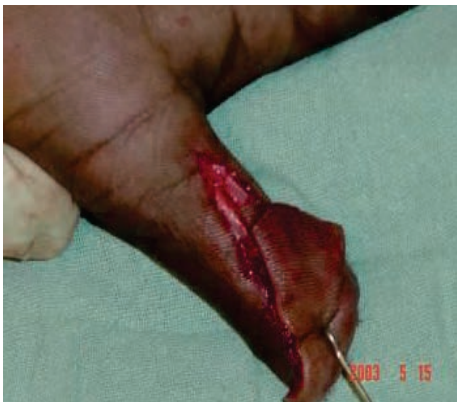
Finger tip loss can be reconstructed with Triangular flaps like Attasoy or Kutler–V-Y advancement flaps, Oblique triangular, or Cross finger flaps. Triangular flaps are based on a Subcutaneous pedicle, useful for finger tip dorsally angulated defects as a V-y advancement. It brings skin that is sensate with a good color match and no additional tissue is sacrificed.

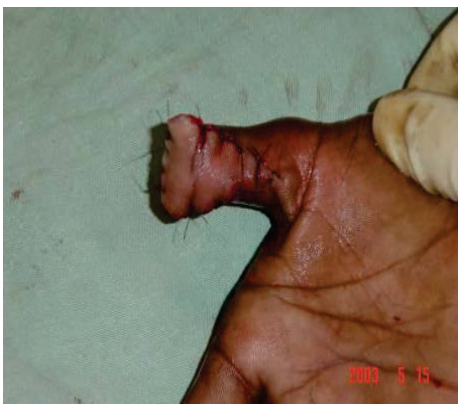
Volar finger defects can be covered with Cross finger flap or Homodigital flaps Thumb defects are treated with sensate skin flaps, like the Neurovascular island flap, Staged NV flaps or the Triangular flap.

Defects of the thumb and fingers can also be covered with Dorsal metacarpal artery flaps.

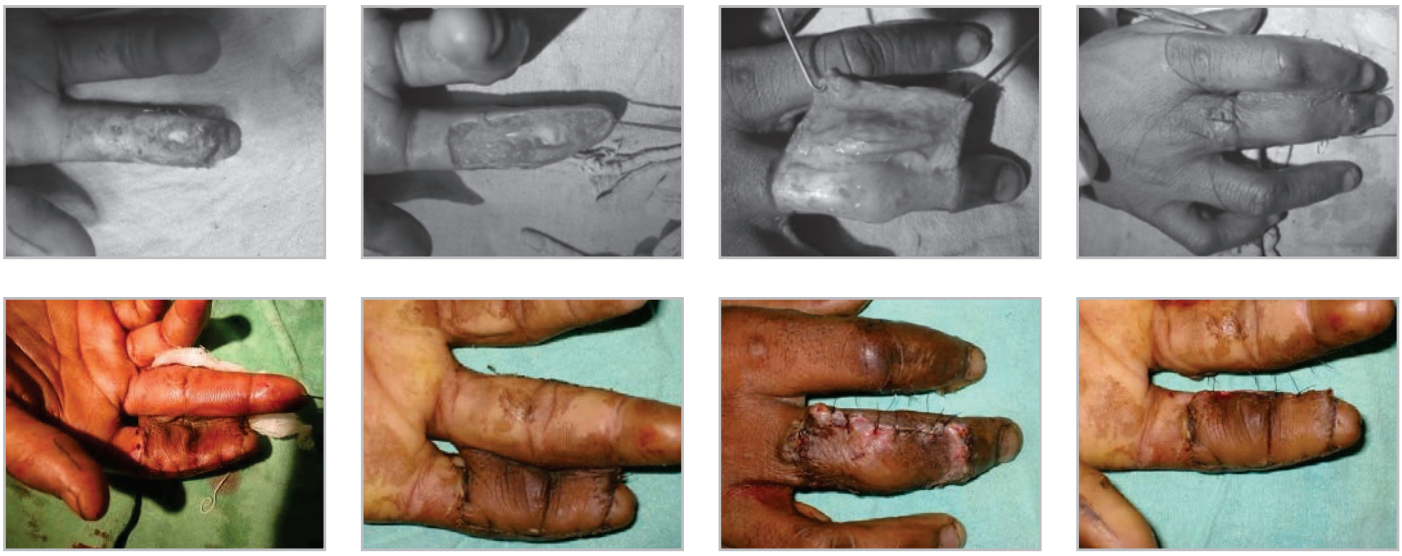
V-Y advancement flap for thumb defect:



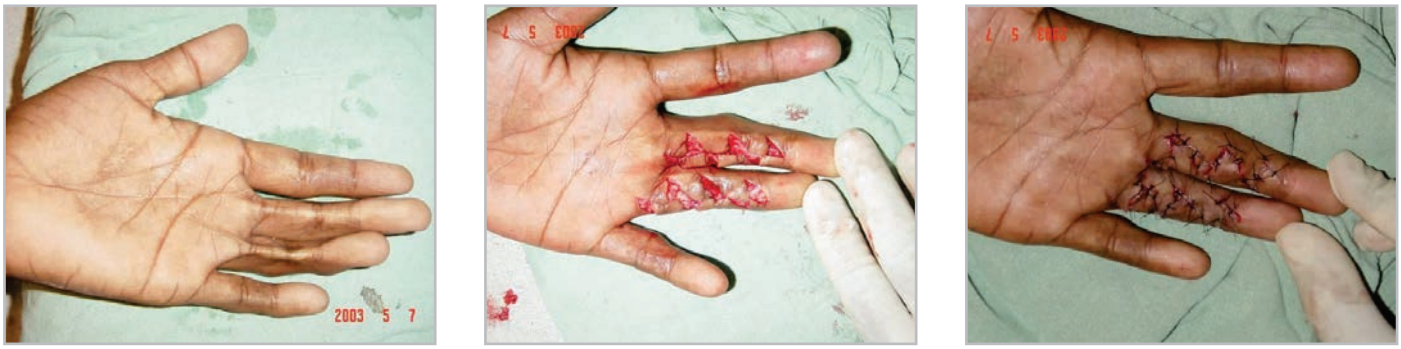




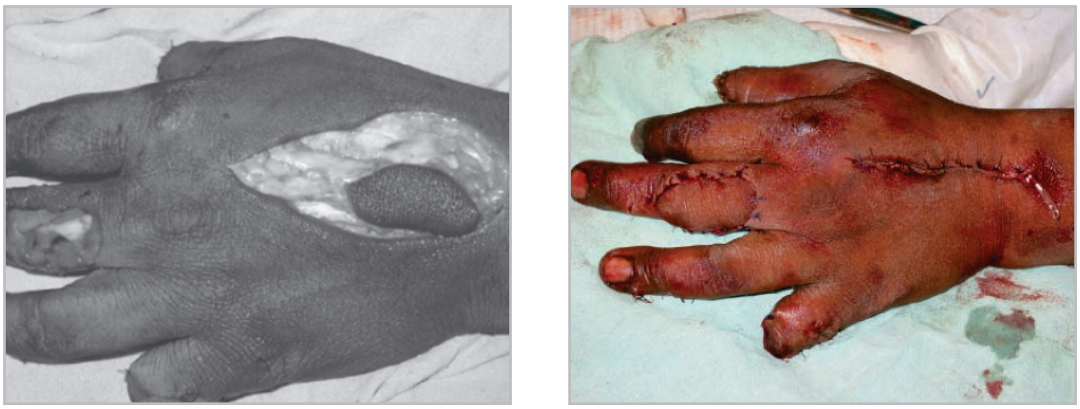
Cross finger flap



Z plasty



Dorsal metacarpal artery flaps



To summarize, local skin flaps, have the advantage of being locally available, and require only limited immobilization. The disadvantages are, limited tissue availability and associated injuries at the potential donor sites.

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Psychiatry

A 66-year-old female was admitted under neurology team with insomnia, decreased mobility, anorexia and spasmodic type of pain around the pelvic/genital area only when sitting. Detailed systemic evaluation including neurological examination and several investigations including blood tests and imaging studies did not show any abnormality. Gynaecological examination was also normal and so a psychiatric opinion was sought.

On psychiatric assessment, she had a six months history of low mood, anhedonia, suicidal thoughts, social isolation, insomnia and lying on bed most of the time to avoid sitting. On probing further, she disclosed that she had the pain for about three years and was convinced that it was due to black magic by her neighbour.

She became preoccupied with these thoughts and started to avoid socializing with others and preferred to be alone. Based on a detailed psychiatric history from her as well as her relatives and a thorough mental status examination, she was diagnosed to have delusional disorder with comorbid depression.

Therefore, she was started on antipsychotic and antidepressant medications. She started to show remarkable improvement within four weeks and she was back to her usual self in a month's time with an improvement in her daily activities and interpersonal functioning.

Discussion

Delusional disorder(DD) is characterized by the presence of one or more non-bizarre delusions but without prominent hallucinations or thought disorder.

The delusions are usually persistent and sometimes lifelong. A delusion is a fixed false belief based on an inaccurate interpretation of an external reality despite evidence to the contrary. Delusions can be characterized as persecutory, referential, jealous, grandiose, erotomanic, nihilistic or somatic.

Patients with DD rarely present directly to psychiatrists. More often they present to neurologists, dermatologists, other physicians or lawyers or police.

The mean age of onset is 40 years and ranges from 18 to 90 years. Persecutory and jealous type of delusion is more common in males while erotomanic type is more common in females.

Diagnostic criteria (DSM -5-TR) of DD are:

- Presence of one or more delusions with a duration of one month or longer.
- Diagnostic criteria for schizophrenia have never been met.
- Apart from the impact of the delusions, patient functioning is not markedly impaired and behaviour is not obviously bizarre or odd.
- If major depressive or manic episodes have occurred, these have been brief relative to the duration of the delusional symptoms.
- The disturbance is not better explained by another medical disorder, such as obsessive-compulsive disorder and is not attributable to the physiological effects of a substance or medication or another systemic medical condition.

In patients with DD, level of consciousness is unimpaired; behaviour, speech and mood may be affected by the emotional tone of delusional content; thought process is generally unimpaired but thought content reflects preoccupation with delusions; hallucinations may occur but generally are not prominent and reflect delusional ideas; cognition and memory are generally intact; insight and their judgement regarding their delusions are impaired.

Assessment of suicidal or homicidal ideation is extremely important in evaluating patients with DD. Patients may also develop anxiety or depression as a result of the delusions. Anger and violence may be present in case of persecutory, jealous or erotomanic delusions. Seeking corroborative collateral information is often crucial.

Treatment of DD is difficult due to lack of insight. A good doctor-patient relationship is a key to treatment success. Treatment includes antipsychotic and other psychotropics to target associated problems (eg, depression, anxiety). DD is usually a chronic condition but prognosis is better with treatment and medication compliance. Some studies have quoted that almost 50% of patients have a good response to medications.

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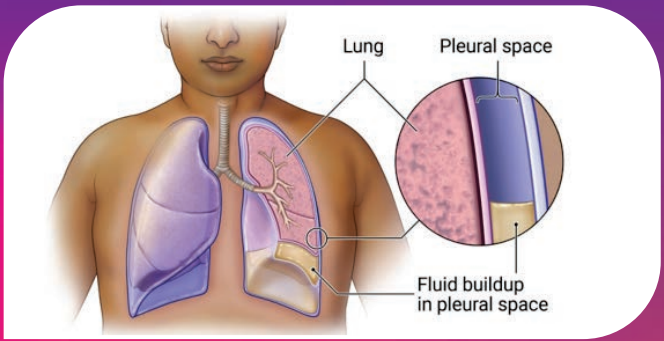


Role of Medical thoracoscopy in the evaluation of Pleural Effusion

The pleural space is bounded by two membranes, the visceral pleura covering the lung and the parietal pleura covering the chest wall and diaphragm. Normally, liquid and protein enter from the systemic circulation and are removed by the parietal pleural lymphatics. Pleural pressure is subatmospheric and thus ensures inflation of the lungs. The mesothelial cells covering the pleura are leaky and thus excess pleural fluid can move across into this lower-pressure, high-capacitance space and collect as a pleural effusion. Pleural effusion results from abnormal collection of fluid due to excessive production or decreased pleural fluid absorption. Thus, pleural effusions are common and of highly diverse etiologies. Excess pleural fluid can accumulate in the pleural space when there is an excessive pleural capillary permeability and there is pleural inflammation. The etiologies for the pleural effusion can have pulmonary, pleural and extra pulmonary causes. The fluid can be transudative or exudative depending on the pleural fluid composition [Light's criteria]. The development of a pleural effusion is a common manifestation of pulmonary disease. In 50 percent of all cases of pleural effusion, the diagnosis is apparent after a thorough history and physical examination and a work-up, including diagnostic thoracentesis and with other selected diagnostic tests. Unfortunately, as many as 15% to 20% of all pleural effusions remain undiagnosed despite intensive efforts for the diagnosis after diagnostic thoracentesis and/or closed pleural biopsy. An undiagnosed pleural effusion often needs histological study for a definitive aetiological diagnosis. Medical thoracoscopy/pleuroscopy is a minimally invasive procedure that allows access to the pleural space using a combination of viewing and working instruments. It also allows for basic diagnostic (undiagnosed pleural fluid or pleural thickening) and therapeutic procedures (pleurodesis) to be performed safely in addition to pleural biopsy for etiological diagnosis of pleural effusion.

A thorough history may provide clues to aetiology. Pleural effusions are classified as transudates or exudates according to the light's criteria. The erect PA chest radiograph is usually abnormal once >200 ml of fluid is present, whereas a lateral film will show blunting of the posterior costophrenic angle with as little as 50 ml. Ultrasound can be used to identify even small effusions. Ultrasound is clearly more sensitive for detecting pleural effusions than a lateral decubitus chest radiograph, and is also better able to predict the nature of the fluid. CT chest allows small amounts of pleural fluid to be detected. CT is helpful in the assessment and management of loculated pleural effusions in addition to obtaining other informations regarding the etiologies of pleural effusion. Why is it important to differentiate transudates from exudates? If a patient has a transudative pleural effusion, then it is only necessary to treat the cause of the effusion, such as heart failure or cirrhosis. However, if it is an exudative effusion, more investigation is indicated to identify the local problem that is causing the pleural effusion.

Medical thoracoscopy,or pleuroscopy, refers to thoracoscopy typically conducted by a nonsurgeon pulmonologist with the patient under local anesthesia and conscious sedation. Pleuroscopy is an endoscopic procedure that examines the pleural cavity, facilitates drainage of pleural fluid, and guides pleural biopsy, talc pleurodesis, and chest tube placement without endotracheal intubation and general anesthesia. Some practitioners perform pleuroscopic sympathectomy for essential hyperhidrosis, and lung biopsy for diffuse lung disease. Medical thoracoscopy is a safe, reliable, and minimally invasive procedure with a high diagnostic yield in pleural effusions of unclear etiology. Contraindications are uncommon and rarely absolute.

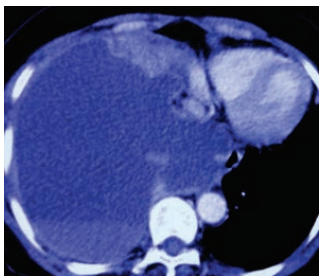
The main limitation for thoracoscopy is the size of free pleural space. Thoracoscopic procedures can be Semi-rigid thoracoscopy and rigid thoracoscopy procedures. Traditionally, medical thoracoscopy had been performed using rigid instruments and the same continued to be the case till the introduction of the semi-rigid thoracoscope.

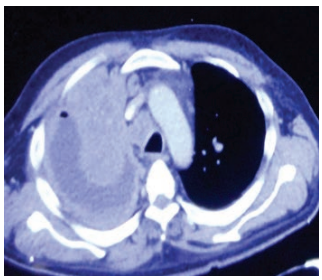
Medical thoracoscopy is an extremely useful diagnostic modality that can often contribute crucially to accurate clinical decision-making in patients with undiagnosed pleural effusion. In patients where a successful pleural biopsy can be obtained, the yield of medical thoracoscopy performed by either rigid or semi-rigid thoracoscopy instruments has been reported to be similar in a randomized comparison between the two techniques. In a prospective randomized study comparing the size, quality and diagnostic adequacy of biopsy specimens obtained by semi-rigid and rigid thoracoscope, it was demonstrated that there were no differences in the quality and interpretability of the specimens obtained by both the procedures. Although the specimens obtained by semi-rigid thoracoscope were smaller, they were still of adequate quality and the diagnostic accuracy was comparable with that of rigid thoracoscopy in the evaluation of pleural effusion of undiagnosed etiology. In cases, where an aggressive adhesiolysis is not the aim, semi-rigid thoracoscope offers particular advantages in terms of the procedure being less painful, lesser requirements of analgesic drugs and a smaller scar size. The greatest advantage, however, is the ease of adoption of the semi-rigid thoracoscope by bronchoscopist as the handling of the instrument essentially resembles that of a flexible bronchoscope.

Radiological (CT), thoracoscopy pleural appearance in malignant pleural efusion

Adenocarcinoma Lung

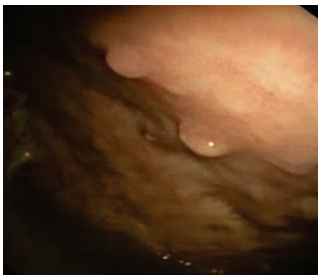
CT chest: Large right pleural effusion with right pleural thickening
Thoracoscopy: Shows variable sized nodules over the parietal pleura with parietal pleural infiltration

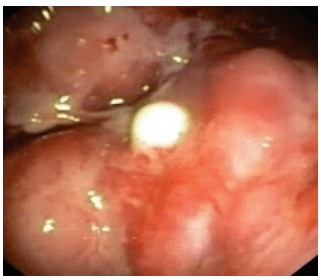


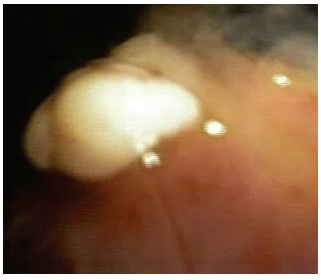


Squamous cell carcinoma lung

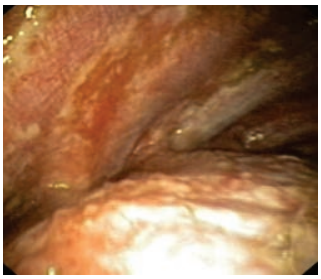
CT chest: Large right pleural effusion associated with right pleural thickening with right pleural nodularity





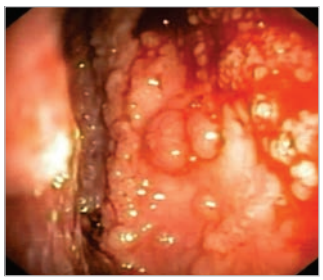


Tuberculosis

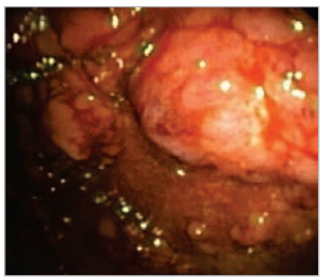


Visceral pleural infiltration by tumour

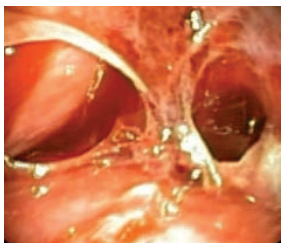
Thoracoscopy: Shows large pleural nodules over the parietal pleura with parietal pleural infiltration



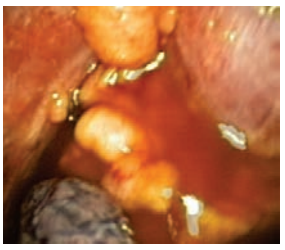
Metastatic pleural effusion



Metastatic pleural effusion



Multiple Pleural adhesions



Multiple parietal pleural nodules

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EBUS TBNA: A Game-Changer in the Diagnosis of Sarcoidosis with Mediastinal Lymphadenopathy

Introduction

Sarcoidosis is a systemic inflammatory disease that can affect various organs in the body, including the lungs, lymph nodes, skin, eyes, heart and joints. The exact cause of sarcoidosis is still unknown, but it is believed to be related to an abnormal immune response. The diagnosis of sarcoidosis can be challenging, as the disease can mimic other conditions, including tuberculosis.

One of the diagnostic tools for sarcoidosis is endobronchial ultrasound-guided transbronchial needle aspiration (EBUS TBNA) with biopsy. EBUS TBNA is a minimally invasive procedure that allows interventional pulmonologists to visualize and sample mediastinal lymph nodes using a specialized ultrasound probe and a needle. The biopsy sample obtained during the procedure can be used to confirm the diagnosis of sarcoidosis by identifying non-caseating granulomas, which are characteristic of the disease.

Case 1:
A 45-year-old policeman admitted under Internal medicine division with complaints of weight loss, general weakness, and fatigue of 2 months duration. Physical examination was rather unremarkable. Initial routine infective workup were all negative. Viral panel tests were negative, Mantoux was negative. CECT thorax showed mediastinal lymphadenopathy with minimal parenchymal infiltrates. EBUS TBNA with biopsy was performed from subcarinal and right lower paratracheal lymph nodes, histopathological analysis of which revealed non-caseating granulomas; microbiological work up for TB including AFB smear, TB NAAT and AFB culture of lymph node aspirate were all negative. Thus a diagnosis of Sarcoidosis was confirmed. Bronchoscopic lavage analysis was inconclusive. The patient was started on corticosteroid therapy and subsequently showed significant improvement in his symptoms.

Case 2:
A 55-year-old male presented to eye OP with uveitis, joint pain and skin rashes. Skin biopsy revealed non specific panniculitis. RA factor, Anti CCP and ANA were negative.
C-ANCA & P-ANCA were also negative.

A chest X-ray revealed bilateral hilar lymphadenopathy, and a CECT thorax confirmed mediastinal lymphadenopathy.

Since, diagnosis remained elusive EBUS TBNA with biopsy was performed from subcarinal, right and left lower paratracheal lymph nodes, histopathological analysis of which revealed non-caseating granulomas. Microbiological tests like AFB smear, TB NAAT and AFB culture were done on the lymph node aspirate, were all negative.

The patient was started on corticosteroid therapy, and gradually his symptoms improved significantly. Uveitis resolved, skin lesions improved as well.

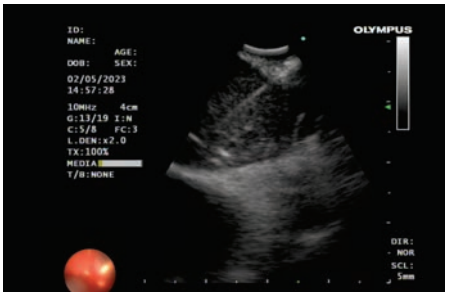
Both these cases of Sarcoidosis, even with classic clinical presentations mimic tuberculosis. The two conditions share many clinical and radiological features, and as such can make the diagnosis challenging.

Tuberculosis is caused by the Mycobacterium tuberculosis bacteria, which can be identified using special stains or cultures. In contrast, sarcoidosis does not have a specific infectious agent that can be identified. Instead, the diagnosis of sarcoidosis is based on the presence of non-caseating granulomas on biopsy and negative reports on microbiology.

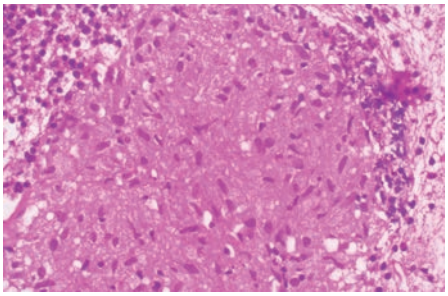
Another interesting thing to note is that serum ACE which was the sole diagnostic marker for sarcoidosis in earlier days, was negative in both the above cases. So acquiring tissue for microbiological and histopathological examination is the key in such cases.

EBUS TBNA has emerged as a minimally invasive technique for obtaining tissue samples from mediastinal lymph nodes, which are often affected in sarcoidosis. EBUS TBNA involves passing a small ultrasound probe through the airways and into the mediastinum, where it can visualize the lymph nodes and surrounding structures in real-time. A fine needle is then passed through the probe, and tissue samples are obtained by aspirating cells from the lymph nodes. The main advantage of EBUS TBNA is that it allows for the accurate and safe sampling of mediastinal lymph nodes, which are often difficult to access by other means. The procedure has a high diagnostic yield, with reported sensitivity and specificity rates of up to 94% and 100%, respectively, for the diagnosis of sarcoidosis. EBUS TBNA can also be used to diagnose other conditions that can affect the mediastinum, including lymphomas, tuberculosis, lung malignancies and metastatic diseases. Sampling yield can be furthermore improved by introducing a forceps needle/ cryobiopsy probe into the mediastinal lymph node through EBUS scope.

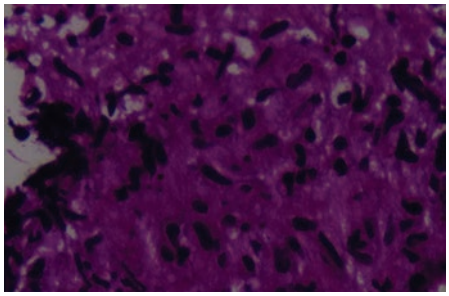
In conclusion, EBUS TBNA has revolutionised the diagnosis of sarcoidosis by providing interventional pulmonologists with a minimally invasive and accurate technique for obtaining tissue samples from mediastinal lymph nodes. The procedure has a high diagnostic yield and can help differentiate sarcoidosis from other conditions that can cause mediastinal lymphadenopathy.



EBUS TBNA needle as traversing the subcarinal node



Non necrotising granuloma of Sarcoidosis in the case-1 patient (Pic courtesy: Dr T Sethumadhavan, Oncopathologist, SRH)



Non necrotising granuloma of Sarcoidosis in the case- 2 patient (Pic courtesy: Dr M. L. Raman, Pathologist, SRH)

References: Oki M, Saka H, Kitagawa C, Tanaka S, Shimokata T, Kawata Y, Mori K, Kajikawa S, Ichihara S, Moritani S. Real-time endobronchial ultrasound-guided transbronchial needle aspiration is useful for diagnosing sarcoidosis. Respirology. 2007 Nov;12(6):863-8.

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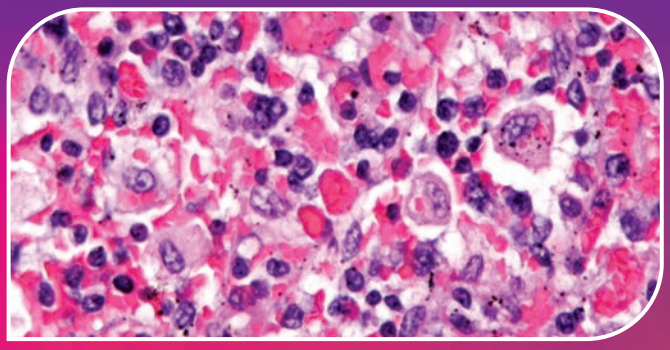

Max Angry Macrophages

A case report of a young female: Hemophagocytic Lymphohistiocytosis(HLH)

Introduction: Hemophagocytic lymphohistiocytosis (HLH) is an autoimmune phenomenon characterized by reactive hyperactivity of cytotoxic T cells and histiocytes, leading to hypercytokinemic injury to cells and organ system, which leads to multiorgan dysfunction and ultimate failure.There are two forms of the disease: primary (that includes familiar forms) and secondary or acquired, usually due to infections, malignancy, and autoimmune/autoinflammatory diseases. Familial HLH usually follows an autosomal recessive inheritance. About 40 to 60 percent of the mutations occur in PRF 1 and Unc-13 Homolog D (UNC13D) genes. Other genes involved are Syntaxin 11 (STX 11) and Syntaxin Binding Protein 2 (STXBP2). The author reports the clinical case of an idiopathic Hemophagocytic lymphohistiocytosis (HLH) in an adult patient, first appearing with nonspecific symptoms, followed by sepsis-like evolution requiring advanced life support

Case report: This is a case report of a 21 years old female who presented with complaints of recurrent fever spikes ,excessive fatigue ,melena ,hematuria ,bleeding gums and weight loss of about 4 kgs in a week . Relevant blood investigations were done. It had a total count of 2300, platelet count of 26000,hemoglobulin of 9.9g/dl. Fever profile was negative. The patient thus had a pancytopenia picture. The serum bilirubin and liver enzymes were elevated. The patient was started on antibiotics

Haematologist consultation was sought in view of pancytopenia and was advised to transfuse platelets and to do additional lab investigations .The patient had elevated levels of ferritin (>5000), elevated LDH (3706),elevated triglyceride levels and low fibrinogen levels. An ultrasound abdomen was done which revealed the presence of moderate ascites and GB sludge. The patient then had an episode of seizure and was intubated and was on ventilator support. ECHO was done, which showed global hypokinesia and reduced EF , trop I was also elevated .The cardiologist gave an impression of myocarditis. The patient underwent bone marrow aspiration and biopsy. The biopsy report showed reticuloendothelial cell activity,hemophagocytosis(Image 3) and illformed granulomas.The patient was started on steroids and cyclosporine. Intrathecal methotrexate was started to prevent CNS manifestations. Neurologist opinion was sought and CT brain and MR brain with contrast were done. The CT brain showed features of cerebral a tropy. MRI Brain showed diffusion hyperintense areas in bilateral parietal, temporal, occipital lobes, splenium of corpus callosum and bilateral basal ganglia.

Discussion: HLH is an autoimmune disease characterised by excess activation of macrophages and histiocytes, resulting in destruction of cell lineages. Fever, hepatosplenomegaly, lymphadenopathy, neurologic involvement, and rash are common manifestations. High serum ferritin levels, pancytopenia, elevated liver function tests (LFTs), elevated D-dimer, hypertriglyceridemia, and hypofibrinogenemia are common laboratory abnormalities in patients with HLH. Neurologic symptoms of HLH include, but are not limited to, irritability, seizures, ataxia, cranial nerve palsies, hemiplegia/tetraplegia, mental status change, and/or encephalitis. Respiratory distress/failure requiring artificial ventilation, hypotension requiring vasopressors, and renal dysfunction requiring dialysis have all been recorded in HLH syndrome. HLH is a clinical diagnosis and it is based on the HLH trail(Refer table 1) 2004 guidelines(Total of 8 criterias out of which 5 must be positive to confirm HLH). Radiological investigations serve as supportive corroborative evidence in the diagnosis and to monitor the prognosis in neurological involvement. In our case, the patient was found to have hepatosplenomegaly in abdominal scans. Splenomegaly is one of the diagnostic criteria for HLH. MRI Brain study of the patient reveals Diffusion and FLAIR hyperintense areas in bilateral temporal lobes, parietal lobes, occipital lobes, bilateral basal ganglia and splenium of corpus callosum(Image 1).This watershed territory kind of involvement leads to differentials like PRES, HIE and HLH. On contrast administration these areas showed

gadolinium uptake in a punctate pattern(Image 2).This punctate pattern of constrast enhancement can be seen in many etiologies like CNS lymphoma, Chronic lymphocytic inflammation with pontine perivascular enhancement responsive to steroids (CLIPPERS), HLH, Erdheim Chester disease, CNS vasculitis, Behcets disease etc. Three neuropathological stages of HLH have been described and these stages are associated with the severity of disease and increased lymphocytic and histiocytic infiltration. Stage 1 disease shows leptomeningeal infiltration. Stage 2 demonstrates additional involvement of the adjacent brain parenchyma with perivascular infiltrations (as route of spread). Stage 3 consists of massive parenchymal infiltration which leads to demyelination, parenchymal necrosis, and calcification. The other system manifestations of HLH are given in table 2. These findings are non specific and not characteristic for HLH but along with clinical and biochemical inputs, the possibility of HLH was more likely.

TABLE 1: HLH CLINICAL TRAIL 2004

Fever (≥38.5°C)
Splenomegaly
Cytopenia (at least 2 of 3: hemoglobin <9 g/dL, platelets <100,000/µL, absolute neutrophil count <1,000/µL)
Hypertriglyceridemia (fasting triglycerides >265 mg/dL) and/or hypofibrinogenemia (fibrinogen <150 mg/dL)
Hyperferritinemia (ferritin >500 ng/mL, although it is usually >3,000 ng/mL)
Elevated soluble CD25 (IL-2 receptor a, two standard deviations above age-adjusted norms)
Low or absent natural killer cell activity (cytotoxicity assay)
Hemophagocytosis in bone marrow, spleen, lymph node, or liver

TABLE 2: OTHER SYSTEM MANIFESTATIONS

CNS	Pulmonary	Abdomen	Musculoskeletal
Diffuse cerebral atrophy	Alveolar or interstitial infiltrates	Hepatosplenomegaly	Periosteal new bone formation
White matter lesions and demyelination	Pleural effusion	Hepatic steatosis	Healing fractures
Cortical and subcortical lesions with or without variable nodular orring enhancement	Peribronchial thickening	Ascites	Osteonecrosis
Hemorrhage, calcification, necrosis	Centrilobular nodules	Gallbladder wall thickening. periportal echogenicity	—
Diffuse brain edema	Consolidation	Nephromegaly. increased cortical echogenicity	—
Subdural collections	Ground glass opacities	—	—

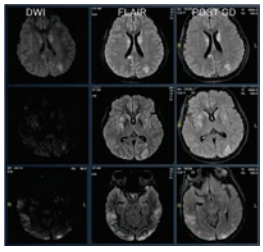

Image 1

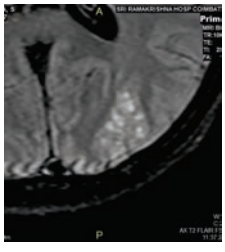
Image 2

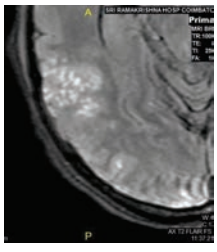
Image 3

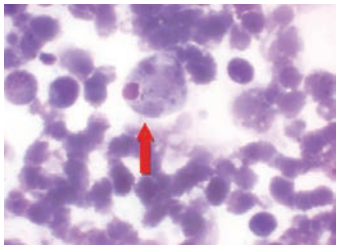
Image 4 (Haemophagocytes)

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Rheumatological causes of fever of unknown origin (FUO)

Febrile illness without an initially obvious etiology is commonly referred as fever of unknown origin (FUO)

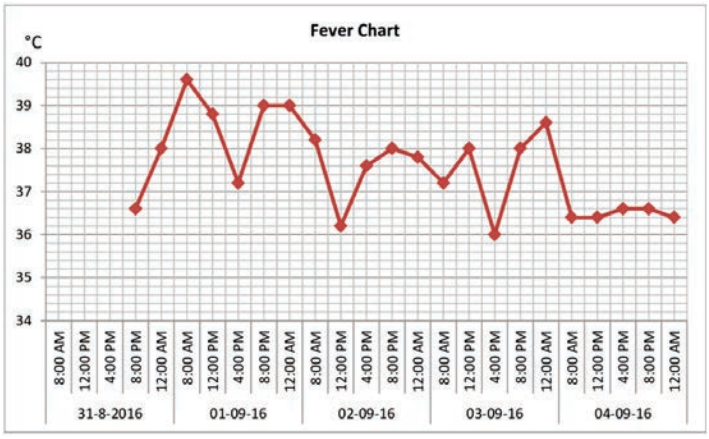
Most febrile illnesses either resolve before a diagnosis can be made or develop characteristic features that help us to make a diagnosis. FUO refers to a prolonged febrile illness without a clear cause or diagnosis despite intensive clinical evaluation and investigations

Definition of FUO derived by Petersdorf and Beeson in 1961 from a prospective analysis of 100 cases has long been the clinical standard:

- Fever higher than 38.3°C on several occasions
- Duration of fever for at least three weeks
- Uncertain diagnosis after one week of study in the hospital

Four common categories of causes of FUO are:

- Infections
- Malignancy
- Systemic rheumatic diseases
- Miscellaneous (e.g. Drug fever, Factitious fever)

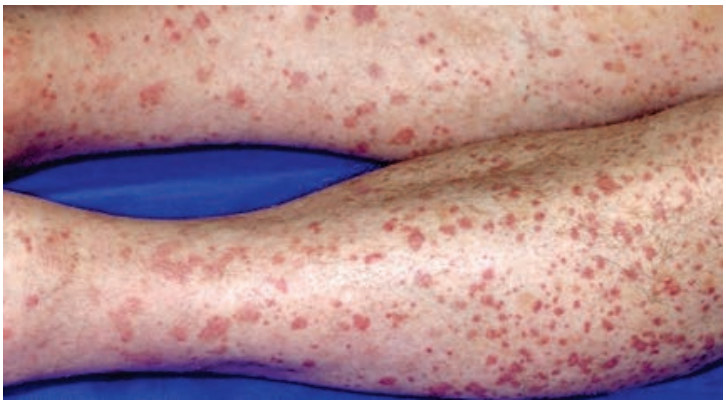


Common rheumatological causes of FUO are:

- Systemic onset Juvenile Idiopathic Arthritis (JIA)
- Adult onset Still's disease
- Connective tissue diseases
  - Systemic lupus erythematosus (SLE)
  - Sjogren's syndrome
  - Systemic sclerosis / Scleroderma
  - Mixed connective tissue disease (MCTD)
  - Idiopathic inflammatory myopathies (IIM)
  - Undifferentiated CTD
- Systemic vasculitis
  - Large vessel vasculitis
    - Takayasu's arteritis (TA)
    - Giant cell arteritis (GCA)
  - Medium vessel vasculitis
    - Polyarteritis nodosa (PAN)
    - Kawasaki disease
  - Small and medium vessel vasculitis (ANCA associated vasculitis)
    - Granulomatosis with polyangiitis (GPA – formerly known as Wegener's granulomatosis)
    - Eosinophilic granulomatosis with polyangiitis (EGPA – formerly known as Churg-Strauss syndrome)
    - Microscopic polyangiitis (MPA)

- Small vessel vasculitis
  - ★ IgA vasculitis (Henoch-Schonlein purpura)
  - ★ Cryoglobulinaemic vasculitis
  - ★ Cutaneous leucocytoclastic vasculitis
  - ★ Hypocomplementaemic urticarial vasculitis (anti C1q vasculitis)
  - ★ Anti-glomerular basement membrane disease (Goodpasture disease)
- Variable vasculitis
  - ★ Behcet syndrome
  - ★ Cogan syndrome
  - ★ Single organ vasculitis (e.g isolated aortitis)
  - ★ Primary central nervous system (CNS) vasculitis
- Secondary vasculitis due to other causes
  - ★ Infections – TB, syphilis, Leprosy, hepatitis, HIV, endocarditis, etc..
  - ★ Drugs – antibiotics, allopurinol, propylthiouracil, etc..
  - ★ Malignancy – leukaemia, lymphoma, etc..

- Polymyalgia rheumatica
- Giant cell arteritis



Diagnostic approach to FUO

Several case reports and series have been reported, systemic rheumatic diseases are common cause for FUO. Therefore, patients presenting with FUO should be carefully evaluated for rheumatological causes. Thorough history and clinical examination are crucial in early diagnosis of autoimmune rheumatic diseases. Diagnostic tests including specific auto-antibody profile and imaging should be carefully interpreted in the right clinical context due to false positive and false negative test results.

Infections such as TB, hepatitis, HIV, viral infections and malignancy may cause false positive auto-antibody tests. Therefore, diagnosis of autoimmune rheumatic diseases should not be solely based on blood tests/immunology profile and all the differential diagnosis should be carefully excluded before starting steroids or immunosuppression. Biopsy of the affected organ or blood vessel should be considered whenever feasible as histopathology is the gold standard for a definite diagnosis of CTD or vasculitis

Therapeutic trials of antimicrobials or glucocorticoids, while tempting in the effort to "do something," rarely establish a diagnosis. In addition, the diagnostic yield of blood cultures and cultures of biopsy material will be compromised following the initiation of antibiotics and steroids

A therapeutic trial of glucocorticoids for an inflammatory process should not replace relevant biopsies for steroid-responsive diseases such as sarcoidosis, other granulomatous diseases, or vasculitis. A careful evaluation for other differential diagnosis including infection and malignancy/para-neoplastic syndrome should precede such a trial to avoid adverse consequences.

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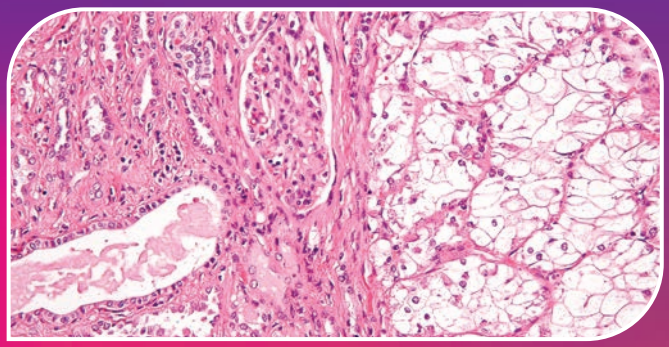


Non – familial Synchronous Bilateral Renel Cell Carcinoma - Surgical Management

Case Report:

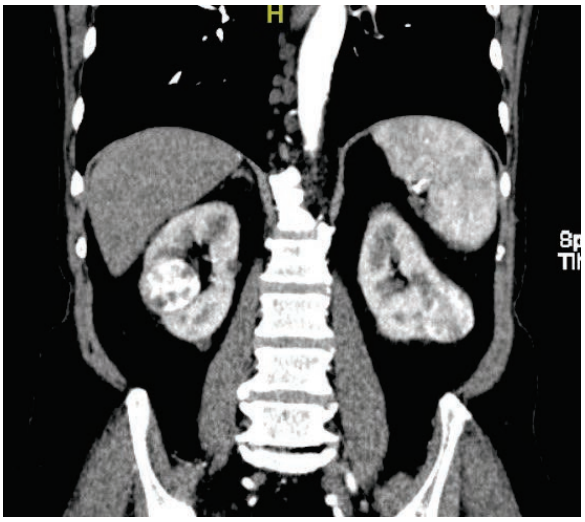
A 66 years old gentleman was presented with history of multiple joint pain, loose stools and vomiting. It is a known case of systemic hypertension and rheumatoid arthritis, with family history of any cancer. His renal functions were normal. On evaluation with USG abdomen and pelvis found to have solid masses in both kidneys with bilateral multiple simple cysts.

Contrast Enhanced CT abdomen and pelvis showed hyper enhancing mass leison of size 4 x3.6x3.5 cm in the interpolar region of right kidney and hyper enhancing mass lesion of size 4.3x4x3.5 cm in the interpolar region of left kidney. Whole body PET CT scan revealed no evidence of metastasis elsewhere.

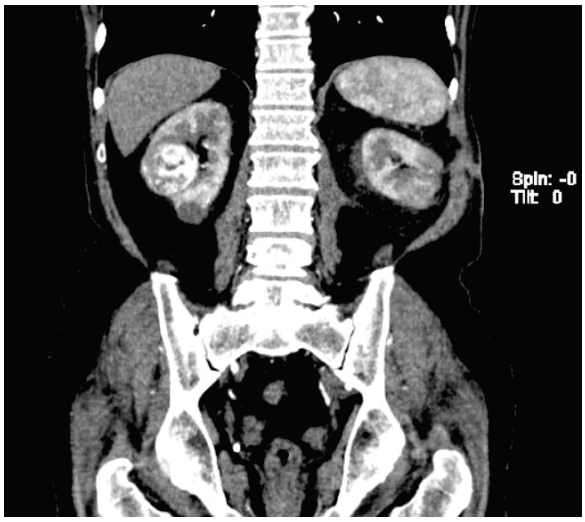
Patient was taken up for partial nephrectomy on the left side. Intra operative ultrasound by the radiologist was used to assess the extent of the Tumor and cancer clearance. Whole tumor mass along with tumor capsule excised in toto and was sent for frozen section. Margins were clear.

The Surgery was successfully completed on the left side. Biopsy has come as clear cell carcinoma WHO/ISUP Grade 1. Patient recovered well. Renal function became normal. 2 months later partial nephrectomy done on the right side in a similar way. Biopsy came as clear cell carcinoma. Margins were negative. Patient recovered well function were normal. DJ stents were kept on both side to avoid urine leak if any, which were removed few weeks later.

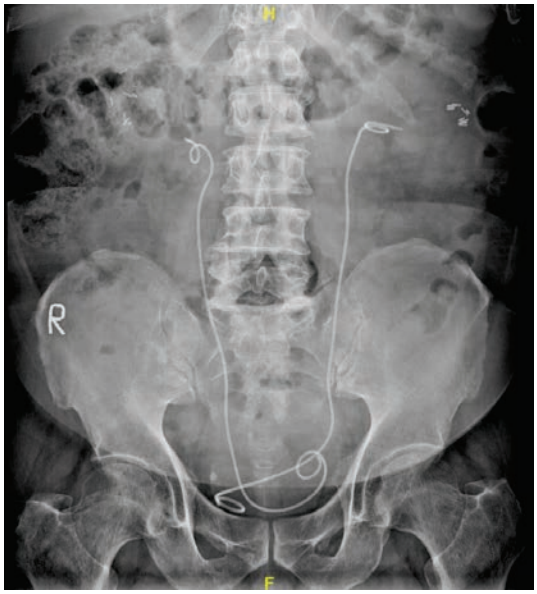
6 months follow up imaging studies showing no recurrence and renal function as normal.



Preoperative CECT Showing Bilateral Midpolar Renal Masses



CECT Showing Midpolar Renal Mass- Right Side Post Partial Nephrectomy - Leftside



Post Bil.partial Nephrectomy
X Ray KUB: DJ Stents And Surgical Clips On

Discussion:

Bilateral renal cell carcinoma (RCC) is a rare entity, occurring in less than 5% of all RCC cases. Bilateral RCC exists in hereditary forms and non-hereditary, apparently sporadic forms. Most bilateral tumors present synchronously, asynchronous lesions may occur many years after original nephrectomy.

Hereditary forms disease has different intrinsic biological behavior compared to sporadic, non familial bilateral RCC, with former trending to occur in a multifocal manner and at youngerage. Bilateral renal cell carcinoma in hereditary form (vonHipple Lindau syndrome, hereditary papillary renal cell carcinoma, hereditary clear cell renal carcinoma) are associated with chromosome abnormalities.

Surgery is the treatment of choice for sporadic bilateral renal cell carcinoma as it has been shown to progress similar to unilateral RCC and may have similar prognosis. Patient with bilateral RCC often undergo nephron sparing surgery (NSS) given the importance of renal preservation. Surgeons must balance the need for complete eradication of cancer, and possible intraoperative and postoperative bleeding complications, while maintaining renal functioning.

Options include:

- Bilateral partial nephrectomies or nephron sparing surgery (NSS) for bilateral small tumors
- Radical nephrectomy for kidney with large or multiple tumors followed by partial nephrectomy of contralateral kidney with small tumor burden
- Surgery can be done in single sitting or staged procedure, which depends on the number, location and size of renal tumors, as well as the surgeon experience.
- Staged operation is performed to avoid simultaneous trauma to both kidneys and risk of haemodialysis. Postoperative urine leak and bleeding complications can be handled better if surgery is done in different stages. Staged procedure also allows change of treatment based on HPE and outcome of first surgery
- Surgery may be done by traditional open, laparoscopic, retrperitoneoscopic or robotic method based on various factors
- Management of bilateral RCC constitutes surgical challenge and there is not a single approach which can be proposed for all the cases.
- Genetic studies are recommended in younger patients (age less than 40) with bilateral RCC and the family members to be screened.

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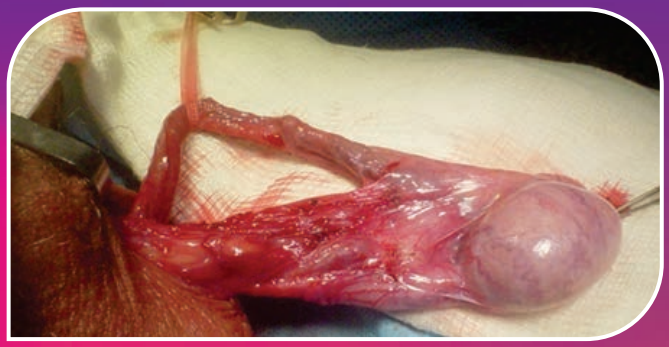


Efficacy of bilateral versus left varicocelectomy in infertile men with left clinical and right subclinical varicocele: a comparative study:

Introduction

- Varicocele is the most common identifiable etiologic factor in male infertility and also one of the most debatable issues in the field of male infertility with regard to surgical intervention.

Background

- The results of clinical research have demonstrated that most left clinical varicocoeles are usually accompanied by right subclinical varicocoeles detected by colour Doppler.
- No consensus has yet been reached on whether the benefit of Bilateral Varicocoelectomy is superior to that of Left Varicocoelectomy.

Aims & Objectives

- To determine whether it is necessary to perform bilateral varicocelectomy (BV) in infertile men with left clinical and right subclinical varicoceles by comparing the outcomes of BV with those of left varicocelectomy (LV) in these patients.

Methods

- Prospective study.
- Sept 2019 to Sept 2022.
- 26 infertile men with left clinical and right subclinical varicoceles were divided into two groups:
  - Group I (unilateral varicocelectomy) 13
  - Group II (bilateral varicocelectomy) 13

Inclusion Criteria

- Married men 20–39 yr of age who had infertility for >1 yr of unprotected intercourse, with clinically palpable unilateral, sonologically detected bilateral varicoceles and impaired semen quality were considered eligible for the study.
- Mean age of the patients was 30.3 ± 3.9 years.

Mean age of the wives was 27.4 ± 2.6 years

Exclusion Criteria

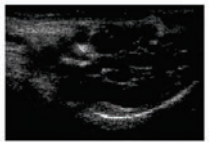
- Patients with recurrent varicoceles,
- Normal semen parameters,
- Azoospermia,
- Abnormal hormonal profile,
- Smokers,
- Occupational heat exposure,
- Female partners >30 yr of age,
- Associated female factor infertility, or
- Unstable marriage were deemed ineligible.

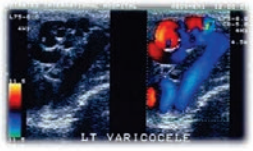
Grading of Varicoceles

- In the present study, clinical varicoceles were graded according to the criteria of Dubin and Amelar:
- Grade 1, palpable venous distension only during a Valsalva maneuver;
- Grade 2, palpable intrascrotal venous distension without a Valsalva maneuver but not visible; and
- Grade 3, the distended venous plexus bulges visibly through the scrotal skin and is easily palpable without a Valsalva maneuver

Materials and Methods

- Subclinical varicoceles were detected using a color Doppler flow imaging system and 7.5-MHZ transducer.



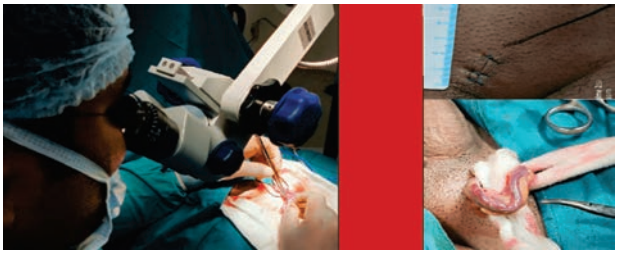


- The diagnostic criteria of a subclinical varicocele is that the spermatic veins are impalpable on a careful physical examination but size of vein > 3 mm with reflux during the valsalva manouver.

- All patients had at least two semen analyses obtained after 2 to 5 days of abstinence and specimens were examined within one hour after collection and assessed for sperm concentration and motility.
- Preoperatively and 6 months after varicocelectomy.

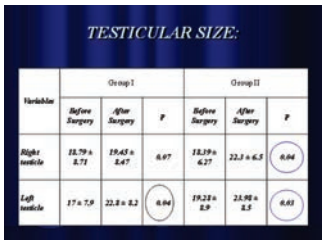
The testicular size was measured by ultrasonography preoperatively and 12 months after varicocelectomy.

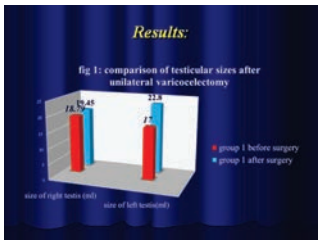
- Both BV and LV were performed using an Inguinal approach with ligation of the dilated internal spermatic veins.

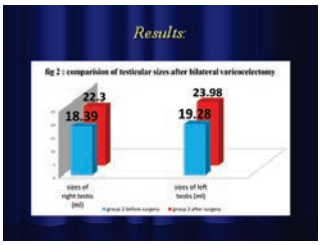


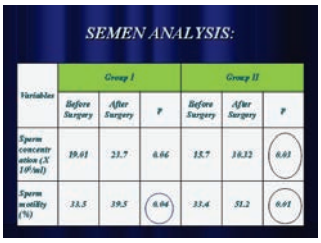
- The sperm concentration, sperm motility, bilateral testicular volume, and spontaneous pregnancy rates were measured postoperatively.
- Values are presented as the mean ± SD, with Student's t-test and the Wilcoxon paired test used for statistical evaluation.
- A chi-square test was used to compare pregnancy rates between Groups I and II.
- A value of $p < 0.05$ was considered statistically significant.
- Statistical calculations were performed with computer software (Statistical Package for Social Sciences, version 10.0 - SPSS inc)
- The achievement of spontaneous pregnancy, which refers to pregnancy without assisted reproductive technology, was recorded within a 12-months follow-up period.

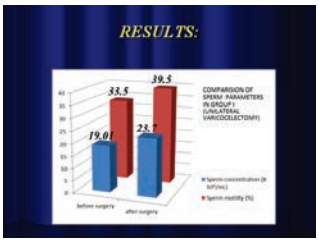
Results

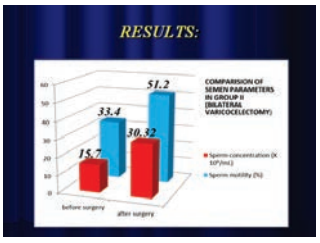


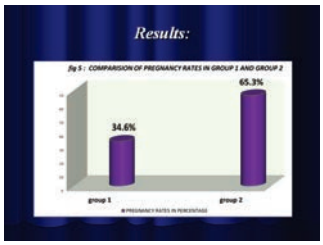












Discussion

- 55-70 % there is abnormal collateral circulation between both sides--- both inside scrotum and / or in the retroperitoneum*.
- Production of increased nitric oxide, its active metabolites and reactive oxygen species in venous blood of varicocele is known to play a role in sperm dysfunction.

This proposed mechanism of testicular toxicity could explain why bilateral dysfunction is seen in many men with unilateral varicocele, because nitric oxide* freely diffuses across membranes.

Conclusions

- Even a small, subclinical unrepaired right varicocele continues to have a detrimental effect on testis size and sperm concentration in a patient with left clinical varicocele.
- Surgically correcting subclinical varicocele improves pregnancy rates.

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