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Editorial Team

EDITORIAL

On behalf of the editorial board of The Interventionalist Journal (TIJ), I would like to extend my deepest appreciation to the founder team, who had built the foundation of this journal.

The aim of The Interventionalist Journal is to provide and served as a platform for all clinicians who are doing minimally invasive procedures to share their findings, expertise, innovations and experiences at the regional and international significance. We envisaged being providing a high-standard and evidence-based platform for publishing high impact publications.

I am humbly inviting each of you to actively participate and contribute to The Interventionalist Journalas an author, reviewer, and reader.The Interventionalist Journal has a strong starting point and I am confident that, we can eventually venture into new heights.

Sincerely,
Ezamin Abdul Rahim
MD, MMed Rad
Editor-in-Chief
The Interventionalist Journal

THE INTERVENTIONALIST JOURNAL

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MYSIR (Malaysian Society of Interventional Radiology) VIRTUAL E-ABSTRACT 1

ABERRATION IN VARIATION: DECEPTION BY A CTA OCCULT BLEEDING VARIANT

Aidi Aswadi Bin Halim Lim[1], Ahmad Razali Bin Md Ralib @ Md Raghib[1], Nur Adilah Binti Shaharuddin[1], Rajeev Bin Shamsuddin Perisamy[1], Nur Fathihah Binti Ahmad[1]

[1]International Islamic University Malaysia, Selangor

Introduction:

The coeliac axis and its major branches are known to have various anatomical variations, some more common than others. The presence of variants may complicate upper abdominal procedures, be it open surgery or interventional radiology procedures.

Result:

This is a case of a 65-year-old gentleman with various co-morbidities, who initially presented with pyogenic spondylodiscitis. On day 7 of admission he developed hypovolaemic shock secondary to upper gastrointestinal bleed, requiring massive transfusion protocol. An oesophago-gastro-duodenoscopy (OGDS) revealed a Forrest 1b ulcer. Initially the bleeding stopped with endoclip application, but the haemorrhage subsequently resumed with further massive transfusion required.

An abdominal CT angiogram (CTA) was then performed revealing active arterial extravasation at the site of the endoclip. However the actual bleeding artery was not apparent. An aberrant right hepatic artery was observed on the CTA.

A subsequent urgent embolization angiographic run revealed some contrast extravasation from the gastroduodenal artery, which in turn arised from the common hepatic artery. 5 pieces of 0.035” coils were deployed at the bleeder. No extravasation seen on the final angiographic run.

However the next day, the patient continued to developed massive haemorrhage. Another abdominal CTA demonstrated further similar extravasation of contrast near the endoclips. Another urgent embolization was then performed. Angiogram via the aberrant right hepatic artery revealed the presence of an accessory gastroduodenal artery; which in turn demonstrated sizable contrast extravasation near the endoclips. A microcatheter was used to deliver Histoacryl glue for embolization, which subsequently stemmed the bleeding.

Conclusion:

This case highlights the difficulty that arises during interventional procedure from the presence of anatomical variant of the coeliac axis. Although CTA is usually a potent assessment tool prior to embolization , the accessory gastroduodenal artery was not opacified in the pre-embolization CTA. This underlines the need for an interventional radiologist to expect difficulty when variants are present.

ATYPICAL MULTICENTRIC EXTRA COMPARTMENTAL AND METACHRONOUS GIANT CELL TUMOR RECURRENCE

Dayang Corieza Awang Rahim[1], Juliana Fairuz Maktar[1]

[1]Hospital Canselor Tuanku Muhriz, Kuala Lumpur

Introduction:

Giant cell tumor (GCT) a benign neoplasm with high local recurrence potential. First line treatment is intralesional curettage. Due to high recurrence rate, en bloc resection with graft reconstruction are now considered. We reported the first case of recurrent GCT on graft with metachronous GCT on proximal radius.

Result:

30 years old female presented with right wrist swelling for 3 months. Radiograph shows expansile lytic lesion with thin internal trabeculation abutting the distal radius articular surface with periosteal reaction, cortical break, and adjacent soft tissue swelling. MRI demonstrate intramedullary lesion at distal radius with cortical breech and soft tissue component with fluid-fluid level within. Intralesional curettage with cement packing was done.On her first recurrence, MRI shows intramedullary lesion proximal to the previous operation site with significant soft tissue component encasing the distal radius. Wide local excision of distal radius and bone graft reconstruction was done. On her second recurrence, MRI shows soft tissue lesion adjacent to the distal ulnar which shows communication of the graft and solid cystic intraosseous lesion in the proximal diaphysis of right radius.

Conclusion:

GCT recurrence rate is associated with higher tumor grade radiologically and the prevalence of soft tissue extension. In our patient, initial tumor appearance shows aggressive features with cortical breech with and tissue extension (Campanacci's grade III) and this may attribute to the extra-compartmental soft tissue lesions recurrences. The metachronous lesion in proximal radius and intramuscular lesion at distal forearm may represent a different pathology such as a low grade sarcoma or metastasis. Despite the atypical location and extracompartmental component of these lesions which raises concerns of other neoplastic condition, they still exhibit MRI characteristic of the primary tumor in which recurrence still need to be considered. HPE of all of these lesions concludes characteristic of giant cell tumour with secondary aneurysmal bone cyst changes.

A RARE CASE OF PARARENAL MALAKOPLAKIA

Nur Wahida Binti Hussin[1], Leong Yuh Yang[1], Wendy Yin Ling Ng[1], Malinda Abdul Majid[1], Norhayati Bt Omar[1]

[1]Hospital Canselor Tuanku Muhriz, Kuala Lumpur

Introduction:
Malakoplakia is a rare chronic granulomatous inflammation that can affect multiple system.

Result:
A case of 58 years old lady with underlying myasthenia gravis and recurrent thymoma having multiple episodes of sepsis during chemotherapy. CT abdomen showed multifocal thick walled cystic lesions at anterior and posterior cortices of the right kidney. On follow up CT scan 5 months after that demonstrated larger pararenal mass with progressive local extension, which subsequently biopsied and turned out to be malaplakia. Antibiotics was given for a total of 6 weeks and CT scan post treatment showed significant reduction of the pararenal mass.

Conclusion:
Malakoplakia must be considered as one of differential diagnosis of pararenal mass especially in immunocompromised patients.

A CASE OF ERDHEIM CHESTER DISEASE WITH MULTISYSTEM INVOLVEMENT

Fatimah Binti Ismail[1], Nur Yazmin Binti Yaacob[1], Wendy Lin Ying Ng[1], Malinda Binti Abdul Majid[1]

[1]Hospital Canselor Tuanku Muhriz, Kuala Lumpur

Introduction:
Erdheim-Chester disease (ECD) is a rare non-Langerhans cell, lipid-laden histiocytosis with specific histological and radiological findings. The diagnosis of ECD depends on the combination of clinical presentations and imaging features, which are confirmed with histopathologic findings

Result:
A case of the 40 year male who initially presented with neurological symptoms and was found to have a pontine lesion in MRI. Differential diagnosis of demyelinating disease was considered. He then defaulted follow up and presented later with a series of multi system symptoms such as pericardial effusion and respiratory symptoms. Series of radiological findings revealed a multi system involvement of a systemic inflammatory process. Histopathologic findings later revealed Erdheim-Chester disease.

Conclusion:
Precise identification of this disease is essentially a multidisciplinary approach based on clinical and demographic profile, radiological findings, and final confirmation on histopathology.

EXTRAOSSEOUS EWING'S SARCOMA INVOLVING VAS DEFERENS: A CASE REPORT

Fatimah Binti Ismail, Nur Yazmin Binti Yaacob[1], Marina Sophianna Binti Marzukie[1]

[1]Hospital Canselor Tuanku Muhriz, Kuala Lumpur

Introduction:

Extraosseous Ewing's sarcoma belongs to Ewing's sarcoma family of tumors (ESFT) and is generally rare compared to it's osseous counterpart. As of now, there is no case of extraosseous Ewing's sarcoma in the iliac fossa involving the vas deferens has been reported.

Result:

A 9 year old boy who initially was suspected to have appendicitis turned out to have an iliac lymphadenopathy during the surgery. It revealed a peripheral neuroectodermal tumor (PNET)/ extraosseous Ewing's sarcoma following histopathologic examination. After 5 months, there is increase in size of the mass. Chemotherapy was started and he responded well to the second line therapy as CT showed significant reduction in size . Eventually he underwent laparotomy and tumor excision which revealed malignant cells surrounding muscular tubular structure lined by intact and benign pseudostratified columnar epithelium reminiscent of the ductus deferense.

Conclusion:

Ewing's sarcoma family of tumors represents a family of morphologically similar small round-cell neoplasms. Extraskeletal Ewing sarcoma is rare in comparison with Ewing sarcoma of bone. The prevalence is between 15% and 20% of that of Ewing sarcoma of bone. The most commonly reported locations of extraskeletal Ewing sarcoma include the paravertebral region and lower extremities. Overall, imaging features of extra skeletal Ewing sarcoma are nonspecific.

MYSIR (Malaysian Society of Interventional Radiology) VIRTUAL E-ABSTRACT 2

A RED HERRING OF MEDIASTINAL LYMPHOMA

Fatimah Binti Ismail[1], Nur Yazmin Binti Yaacob[1], Nik Azuan Bin Nik Ismail[1]

[1]Hospital Canselor Tuanku Muhriz, Kuala Lumpur

Introduction:
Central venous occlusion can be caused of a spectrum of etiology ranging from benign to malignant. It can be due to external compression, intraluminal stenosis or thrombosis.

Result:
Our patient is a 56 year old gentleman with underlying ESRF on right BCF for 5 years and multiple history of fistuloplasty in 2019 and April 2021. He initially presented with right upper limb swelling for 2 weeks. No cough, SOB, stridor or constitutional symptoms. A central venogram revealed a occlusion of the right brachiocephalic vein/SVC junction with multiple collaterals and a venoplasty was performed. Subsequently CT Thorax was done to rule out pulmonary embolism and revealed a large paratracheal lymph node causing narrowing of SVC.

Conclusion:
Presence of AVF and previous history of fistuloplasty masked the actual cause of the central venous occlusion. The symptoms for both condition overlaps with each other as they both ultimately cause venous return obstruction and will result in collateral pathways. The pathophysiology of these conditions may overlap whilst the management are different.

ACUTE SUBMANDIBULAR SIALADENITIS; A RARE COMPLICATION POST POSTERIOR FOSSA SURGERY

Nur Wahida Binti Hussin[1], Nik Farhan Nik Fuad[1]

[1]Hospital Canselor Tuanku Muhriz, Kuala Lumpur

Introduction:

Unilateral neck swelling secondary to acute sialadenitis rarely occur as a complication post neurosurgical procedure.

Result:

We reported a case of acute right submandibular sialadenitis complicating a left posterior fossa surgery done in Park Bench position. Patient developed unilateral neck swelling 6 hours post-operatively and requiring re-intubation for airway protection. Contrast enhanced CT neck showed diffusely enlarged right submandibular gland with surrounding mucosal oedema of the oropharynx. Patient was managed by hydration, steroid, antibiotics and subsequently discharged on day 8 post-operative with the swelling gradually reduced in few weeks' time.

Conclusion:

Although rare, acute sialadenitis can progress to a potentially life-threatening course requiring intubation and ICU care thus early recognition of this complication at its beginning is crucial.

A COST ANALYSIS OF INTERVENTION RADIOLOGY RELATED PROCEDURES IN VASCULAR ACCESS FOR HEMODIALYSIS

Fatimah Binti Ismail[1]

[1]Hospital Canselor Tuanku Muhriz, Kuala Lumpur

Introduction:

The incidence of end stage renal failure is on the rise in our country as reported in the Malaysian Society of Nephrology. In its latest annual report in 2016, there are about 6000 new cases of ESRF, totaling up to 18, 000 thousand cases. Studies on the cost of hemodialysis shows that it is very costly and that the majority of the fundings for these procedures are funded by the government. The 2016 MSN report shows that about 6 million ringgit is spent annually for the cost of hemodialysis and 60% is funded by the government. Next to the cost of the procedure of dialyzing the patients, the next bulk of expenditure is contributed to the creation of vascular access for hemodialysis. Either via central catheter or creation of an atrio-venous fistula, these procedures cost around to RM500 to RM2000.

Methodology:

Retrospective observational study over 1 year period June 2019-May 2020. Data will be retrieved from the online records such as IRIS, C-Hets, patients registry, Interventional Radiology Unit census and UKMMC registry. Study population comprise of patients who undergo endovascular related procedures for maintaining vascular access for haemodialysis.

Result:

A large portion of health care expenditure is spent on end stage renal disease patients particularly on the maintenance of vascular access. From our study period, a total of RM 547,487 was spent on vascular access maintenance for end stage renal failure patient on hemodialysis. It is made up of RM 331,772 from cuff catheter insertion and exchange, RM 129,465 on central venoplasty and RM 86,250 for fistuloplasty.

Conclusion:

A large portion of health care expenditure is spent on end stage renal disease patients particularly on the maintenance of vascular access.

A CASE SERIES OF SPONTANEOUS EXTRAPERITONEAL HEMORRHAGE IN COVID-19 PATIENTS IN MALAYSIA

Adib Amir[1], Arvin Rajadurai[1], Zulkifli Zaki Abdul Ghani[1]

[1]Hospital Sungai Buloh, Kuala Lumpur

Introduction:

COVID-19 infection is associated haematological derangement, principally thrombotic events causing micro thrombosis and venous thromboembolism. Use of anticoagulant treatment has been shown to reduce mortality in COVID-19 patients. Spontaneous extraperitoneal haemorrhage (SEH) is a known complication of anticoagulant use and it includes retroperitoneal, iliopsoas and rectus sheath hematomas. The aim of this case series is to highlight the occurrence of SEH in COVID-19 patients, its clinical and radiological manifestations and management pathways.

Method:

A retrospective analysis of COVID 19 patients with SEH treated in Hospital Sungai Buloh from April to September 2021 was performed. A total of 7 patients (5 males and 2 females; mean age, 63 years; range 53-75 years) with COVID-19 infection were confirmed to have SEH. Clinical presentation, radiological features, management and patient outcome were studied.

Result:

All patients were on anticoagulants and presented with abdominal pain and/or swelling with sudden drop in hemoglobin. CT showed contrast extravasation indicative of active bleed. All patients proceeded with conventional angiography with option of trans arterial embolisation (TAE). Bleeding vessels were identified in 5 patients on conventional angiography with good agreement to CT findings. 3 patients showed bleeding points from more than one artery. Single type of embolic agent (coil or gelatine sponge) was used in each case. TAE was successful in achieving hemostasis with no procedure related complication. Despite the technical success of embolization, four patients died within 30 days after embolization. There is no evidence of circulation collapse as a result of bleeding prior to deaths in these patients.

Conclusion:

SEH should be suspected in COVID-19 patients on anticoagulants presenting with abdominal pain or drop in hemoglobin. CT is confirmatory and TAE offers a viable and safe treatment option.

CONCURRENT STENTING OF MALIGNANCY-RELATED SVC & PULMONARY ARTERY STENOSES : A CASE REPORT

Yeat Chia Ming[1], Nik Farhan Nik Fuad[1], Rozman Zakaria[1], Nik Azuan Nik Ismail[1]

[1]Hospital Canselor Tuanku Muhriz, Kuala Lumpur

Introduction:

Endovascular stenting for malignancy-related superior vena cava (SVC) stenosis is well recognized for its efficacy and safety, but less so for pulmonary artery (PA) stenosis. We share our experience with concurrent endovascular stent placements in a case of non-small cell lung carcinoma, with resultant SVC and right PA stenoses.

Result:

A 60-year-old man presented with signs and symptoms of SVC syndrome but was hemodynamically stable. Computed tomography (CT) revealed a right upper lobe mass causing significant SVC and right PA stenoses. Aiming to palliate his symptoms and to prevent potential hemodynamic deterioration, we opted for concurrent stenting of both SVC and right PA. This decision was made after considering the risk of left pulmonary congestion post-SVC stenting due to increased venous return but obstructed outflow into the right PA. Balloon-expandable covered stents (Bentley BeGraft Aortic Stent Graft system) were used, 16mm x 58mm for SVC and 16mm x 38mm for right PA. The patient felt an immediate improvement of symptoms post-procedure. He managed to complete 5-months of palliative chemotherapy before he passed away due to disease progression.

Conclusion:

Our case demonstrated that concurrent stenting of malignancy-related SVC and PA is feasible and should be considered an alternative to chemotherapy and radiotherapy.

MYSIR (Malaysian Society of Interventional Radiology) VIRTUAL E-ABSTRACT 3

HOW TO GET OUT OF JAIL: AN ENDOVASCULAR APPROACH TO A MAL-POSITIONED CENTRAL VENOUS DIALYSIS CATHETER FROM LEFT SUBCLAVIAN ARTERY TO LEFT VENTRICLE

Shu Shyan WONG[1], Nicholas Yong Wah LAM[1], Feona Sibangun JOSEPH[1], Benjamin Dak Keung LEONG[1]

[1]Queen Elizabeth Hospital 2, Kota Kinabalu

Introduction:
Central venous dialysis catheterization is a common procedure for attaining a hemodialysis access. Iatrogenic injuries are known to occur, 4-35%. Injuries involving the arterial system secondary to the procedure are known to be catastrophic and increase morbidity and mortality.

Result:
A 62-year old female, with established renal disease presented to the emergency department for severe sepsis with altered mental status secondary to catheter related blood stream infection from an indwelling left internal jugular catheter. Her co-morbids include hypertension and diabetes mellitus. Infected catheter was removed and a new 12 F catheter was inserted through a new route at the left internal jugular vein. However, this resulted in an unintentional mal-positioning of the catheter, with chest x-ray suggested the tip of catheter to be in the left ventricle. The patient was, then, referred to our team. Computed tomography angiogram revealed the placement of the catheter into the left subclavian artery (LSA) and directed to the aortic valve into the left ventricle. Emergent concurrent removal and endovascular stenting of the LSA were performed, as opposed to open surgical repair. This approach reduced the risk in an unwell patient. Left brachial and left common femoral access were obtained for stenting and angiography respectively. A balloon expandable stent (8x57mm) was inserted in place over a Rosen wire protected by a 6F 45cm sheath. Upon pull back of sheath to expose the stent, the catheter was removed with immediate deployment of the stent. There was minimal blood loss. Final angiography revealed no extravasation of contrast and the patient showed good recovery with good left upper limb perfusion and no neurological complication.

Conclusion:
This case report describes the technical aspect and clinical decision in managing an arterial injury related to central venous hemodialysis catheter- allowing in a relatively bloodless and complication-free procedure.

ENDOVASCULAR TREATMENT OF CAVERNOUS SINUS DURAL ARTERIOVENOUS FISTULA VIA RADIAL ARTERY AND MEDIAN CUBITAL VEIN

Tan Wen Nian[1], Arvin Rajadurai[1], Dhayal Balakrishnan[2]

[1]Hospital Sungai Buloh, Selangor
[2]Sarawak General Hospital, Sarawak

Introduction:
Cavernous sinus dural arteriovenous fistula (CS-DAVF) is an arteriovenous shunt where there is fistulous blood flow from the dural arteries from the internal or external carotid artery into the cavernous sinus. The current mainstay of therapy is endovascular treatment.

Result:
We present a case of restrictive type of CS-DAVF in a 75-year-old male who presented with right eye symptoms. He was treated with embolisation using trans-radial artery access for angiographic runs and a median cubital vein access navigating into the cavernous sinus for coil deployment. This technique completely avoids the conventional technique of a femoral approach and confines all access to the arm. Therefore, there are less risks and complications associated with an arm access, improves patients' comfort and mobility post procedure.

Conclusion:
Transradial artery and cubital vein access allows for a safe and convenient alternative technique using the arm as compared with conventional transfemoral approach for treatment of CS-DAVF.

TUNNELED ADULT PERIPHERALLY INSERTED CENTRAL CATHETER (PICC) FOR CENTRAL VENOUS ACCESS IN PEDIATRICS: A SINGLE CENTRE EXPERIENCE.

Nurul Nabila Mortadza[1], Arvin a/l Rajadurai[1], Zulkifli Zaki bin Abdul Ghani[1], Norhafizah binti Ehsan[1], Ganesan Arthimulam[1], Noorshahrizal bin Nordin[1]

[1]Hospital Sungai Buloh, Selangor

Introduction:

Long term intravenous access in pediatrics has been challenging in terms of ease of procedure, maintenance of catheter and complications that may arise. Our center adopted the use of tunneled adult Peripherally Inserted Central Catheter (PICC) for central venous access in pediatrics with the hope to improve these challenges. We describe a single institute 3-year experience of this technique. Material & Methods: Retrospective medical records were reviewed for pediatric patients aged less than 12 years old who had tunneled PICC insertions from January 2018 till December 2020. The following data were recorded: indication, diagnosis, reason for removal, duration of PICC, vessel inserted, PICC device type and complications.

Result:

Eleven adult PICCs were inserted from this technique in 10 children. The average age was 35.7months and average weight was 13.2kg. The youngest patient was 3 months old at 6.9kg. Most common indication for insertion was for long term antibiotics (82%) and the remainder were for difficult intravenous access. The procedure was done under local anesthetic with sedation in 90% of cases. Average duration of PICC was 26.8 days. Out of 11 PICCs only 1 had line related infection that required premature removal of the catheter. 55% completed the intended duration while 27% PICCs had dislodged.

Conclusion:

Tunneled adult PICC for central venous access in the pediatric age group at our institution has a lower risk of infection. However, almost a third of the catheters inserted still suffered dislodgement.

POST TRAUMATIC FACIAL PAIN; MULTIFACTORIAL CAUSES AND ROLE OF MINIMALLY INVASIVE PAIN INTERVENTION TREATMENT OPTIONS

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Introduction:

Post traumatic facial pain is a complex syndrome with multifactorial causes secondary to complex innervation in this region. Selection of appropriate mode of treatment may require multiple peri-neural infiltration for achievement of adequate pain control.

Result:

A 39-year old male, with a history of motor-vehicle accident in December 2018 underwent CT Brain & Facial bones which was unremarkable, presented to our Oral & Maxillofacial Surgery (OMFS) team in February 2019 with complains of right sided facial pain since the accident. After thorough physical examination, a diagnosis of trigeminal neuralgia was made and patient was subjected for CT guided Gasserian ganglion steroid injection which produced suboptimal pain control. At the time of procedure, preliminary CT scan in bone window demonstrated a right styloid process fracture, hence a CT guided right facial nerve steroid injection was planned thereafter. Patient responded well and thus proceeded for right styloid process removal surgery. Patient had a pain-free period for 16 months and presented again with recurrence of right jaw pain and inability to open the mouth (1 finger width). A temporo-mandibular joint (TMJ) dysfunction was suspected and patient was then scheduled for CT guided TM joint arthrodesis. Patient developed improvement in symptoms and completed three sessions of treatment at 6 monthly interval. Currently, patient is now able to open the mouth with 2 finger width and is awaiting the next follow-up.

Conclusion:

Post traumatic facial pain has a complex etiology and innervation. Detailed history, physical examination and radiological evaluation of multifactorial causes of facial pain is essential prior to administration of interventional treatment.

A RARE CASE OF MECKEL'S DIVERTICULUM IN ELDERLY PRESENTED WITH GASTROINTESTINAL BLEED WITH MULTIPLE INTRAABDOMINAL SMALL VESSELS PSEUDOANEYRYSM.

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[1]Hospital Sultanah Aminah, Johor Bahru

Introduction:

Meckel's diverticulum is the most common congenital anomaly of the gastrointestinal occurring in 2%–3% of the population; main occurred in paediatric and adolescence age group. Most of the patient will remain asymptomatic and the symptoms occurred is due to its complication. In term of presentation, diverticulitis and small-bowel obstruction are the most common presentations in adult series where else in the paediatric population, GI bleeding and small-bowel obstruction are the most common presentations. Hence, we are reporting a rare case of Meckel's diverticulum in elderly presenting with GI bleed.

Result:

67 years old lady presented with per rectal bleeding (hematochezia and melaena). She underwent upper and lower GI endoscopy as well as capsule endoscopy, however unable to locate the bleeder. CTA mesenteric was carried out 3 times and subsequently she underwent 3 session of mesenteric angiography with embolization. Mesenteric angiogram revealed multiple sites of abnormal dilated vessels at mid abdomen (D3 area), left mid abdomen (ileum) and right iliac fossa (distal ileum). However, only the abnormal vessels at right iliac fossa shows contrast blush, which presumable the persistent vitelline artery in Meckel's diverticulum. Embolization of the vessels supplying these vessels was carried out. Despite that, Patient still having GI bleed and proceed with exploratory laparotomy that revealed Meckel's diverticulum located at the ileum, located 20-30cm from the ileoceacal valve.

Conclusion:

Even though Meckel's diverticulum it is rare in elderly, in a presence of obscured GI bleed, one must not put aside the possibility of it, so that specific and appropriate investigations can be carried out. With the advancement of diagnostic imaging, we can now co-operate multiple modalities (CT scan, nuclear imaging and angiography) to obtain the diagnosis. Knowledge of the anatomy and appearance of Meckel's diverticulum is important in making an appropriate diagnosis.

HAEMORRHAGE POST BIOPSY OF A BRONCHIAL CARCINOID

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ABSTRACT

Background: Bronchial carcinoid tumours are rare, indolent, malignant neuroendocrine tumours derived from Kulchitsky cells and are not related to smoking. As these tumours can be asymptomatic or present with nonspecific symptoms, a high index of suspicion is essential to make an early diagnosis which determines the prognosis. Surgery is curative and remains the mainstay of treatment.

Case presentation: A 41-year-old female with no background medical illness first presented with a spontaneous left sided pneumothorax requiring a chest tube insertion. High-resolution CT (HRCT) thorax detected an incidental solitary pulmonary nodule. Bronchoscopy revealed a smooth round tumour sitting at the ostium of the basal right lower lobe bronchus. Endobronchial biopsy was complicated with massive bleeding requiring emergency exploration via rigid bronchoscopy. Multiple attempts to secure haemostasis using Watanabe spigot and argon plasma coagulation failed. She was intubated with a double lumen tube to isolate the healthy left lung. An urgent CT pulmonary angiogram (CTA) was performed to look for collaterals and feasibility of embolization, but no collaterals were seen. She was then referred to the cardiothoracic surgeon for an emergency right lobectomy. Histopathological examination revealed typical carcinoid tumour. She was discharged from the hospital in a stable condition.

Discussion: Bronchial carcinoids embryologically originate from the foregut and patients rarely present with features suggestive of carcinoid syndrome and crisis. Mostly are asymptomatic resulting in late presentation and diagnosis. Majority of the typical carcinoids are centrally located and may present with obstructive symptoms and recurrent pneumonia. Bronchoscopists may face massive bleeding following endobronchial biopsy in bronchial carcinoids.

Conclusion: Massive bleeding after endobronchial biopsy can occur and therefore the bronchoscopist should have anaesthesia, interventional radiology, and cardiothoracic support to handle this complication. Using tumour markers may obviate the need for biopsy in typical bronchial carcinoids to prevent massive bleeding after endobronchial biopsy.

Keywords: Angiography, Arterial cannulation, Angioseal.

INTRODUCTION

Prior to the 1970s, bronchial carcinoids were coined as bronchial adenomas as they were postulated to be benign. Subsequently, these rare, indolent neuroendocrine tumours were recognised for their malignant potential, local invasion as well as distant metastasis commonly to the lung, bone, liver, adrenal, and brain. Bronchial carcinoids which account for less than 2% of all lung tumours are derived predominantly from enterochromaffin

or Kulchitsky cells and are known for their potential to form and secrete a variety of chemical substances(1). Etiologically there is no association to smoking, ambient radiation or any known exposure to carcinogens(2). There has been reports 5% prevalence of bronchial carcinoid tumours in patients with multiple endocrine neoplasia type1 (MEN1) (3). Majority of these tumours are centrally located, arising from the major bronchi; only about 15% are in the periphery of the lung(2). Bronchial carcinoids can be asymptomatic or present with bronchial obstruction symptoms like haemoptysis, cough, pleuritic chest pain, recurrent infection, wheezing, and dyspnoea; as a result of complete or partial bronchial obstruction(2).[2] These symptoms should raise an index of suspicion essential to make an earlier diagnosis for better prognosis(4). Bronchoscopy is an important diagnostic tool for bronchial carcinoids as 75-77% are centrally located and easily accessible for endobronchial biopsy(5). However, bronchoscopists may face massive bleeding following endobronchial biopsy in bronchial carcinoids due to hypervascularity seen especially in patients with haemoptysis(6). Surgery is curative and remains the mainstay of treatment.

CASE PRESENTATION

A 41year old female, para 3, a nurse by profession first presented to us in January 2021 for spontaneous left sided pneumothorax requiring a chest tube. She had no previous admissions for similar problems but was involved in a motor vehicle accident in December 2020, one month prior. She is a non-smoker and there was no history of passive smoking or being exposed to biomass fuel. There were no clinical features to suggest Marfan syndrome or any cystic lung disease. A high-resolution CT (HRCT) thorax was done as part of the workup for the pneumothorax which incidentally detected a solitary pulmonary nodule over the right lower lobe. Brock risk estimation of the probability of the nodule being malignant was 21.5%. However, the initial HRCT thorax was not able to differentiate the solitary pulmonary nodule from a vessel, hence a CT pulmonary angiogram (CTPA) was performed within a month from the HRCT thorax which confirmed a mass measuring 2.4 cm anteroposterior diameter, 2.6 in width and 2.8 cm in intercommissural diameter (CC) over the anterior segment of the right lower lobe. The rest of the lung fields were clear and there were no hilar or mediastinal lymphadenopathy. If proven malignant, the clinical staging would be T1cN0M0 (Stage 1a). Flexible bronchoscopy was performed in May 2021 which revealed a smooth round tumour siting at the ostium of the basal right lower lobe bronchus causing obstruction. Endobronchial biopsy was taken with a 2mm flexible forceps, complicated with massive bleeding requiring an emergency exploration via rigid bronchoscopy.

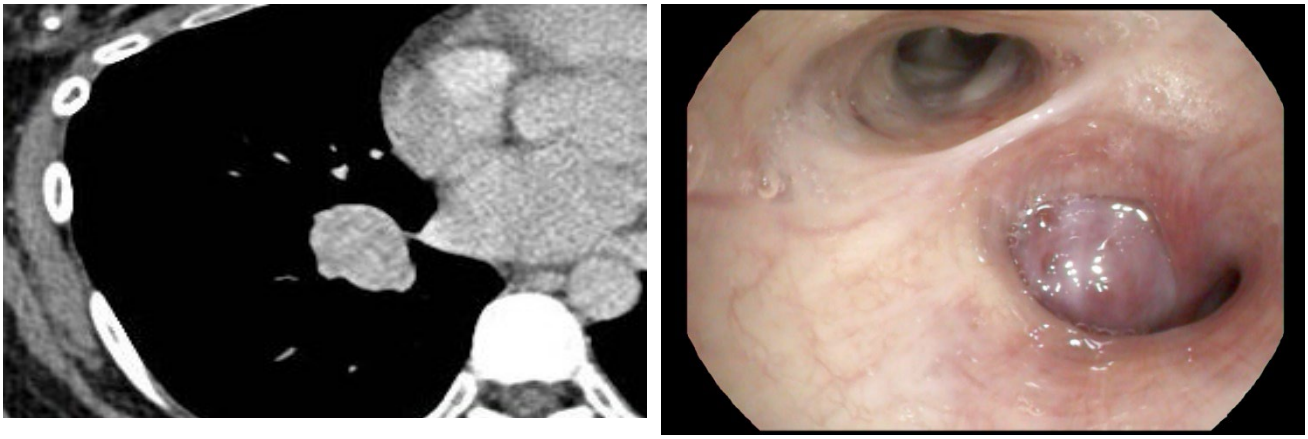

FIGURE 1: Computed tomography pulmonary angiography (CTPA) scan showing a mass over the anterior segment of the right lower lobe

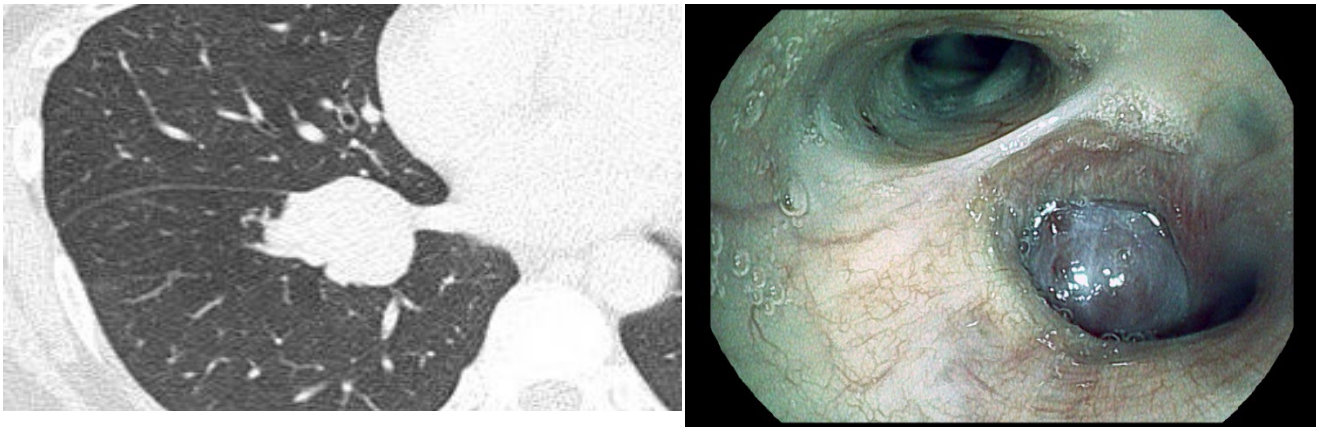

FIGURE 2: Initial bronchoscopy with smooth round tumour at the ostium of the basal right lower lobe bronchus.

Airway examination during rigid bronchoscopy revealed blood clots over right main bronchus with active bleeding. Blot clots were extracted using Erbe flexible cryoprobe 2.4mm and endobronchial biopsy was taken from the right lower lobe using 2mm flexible forceps. Multiple attempts to secure haemostasis using adrenaline (1:1000) flush, Watanabe spigot and argon plasma coagulation failed. She was then reintubated with a 35F double lumen endotracheal tube to isolate the left healthy lung.

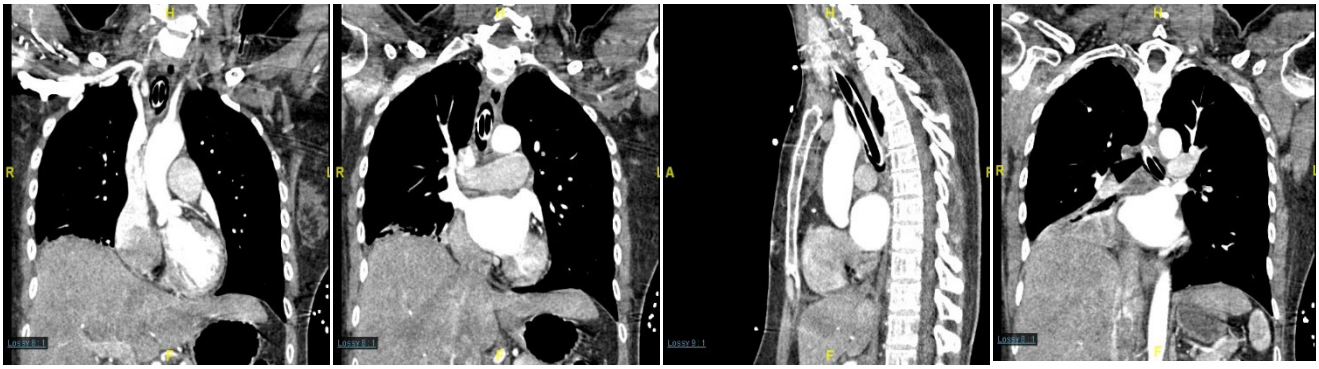

FIGURE 3: Double lumen endotracheal tube (bronchial limb pushed into left main bronchus).

Urgent CT pulmonary angiogram (CTA) was performed to look for collaterals and for feasibility of embolization of the collaterals; however, there were no collaterals visualised. She was then referred to the cardiothoracic surgeon for an emergency thoracotomy and lower lobectomy. Intraoperative findings of right lower endoluminal bronchial tumour which was almost completely obstructing the lumen with right paratracheal (4R) and right interlobar (11R) lymph node. Post operatively, she was transferred to intensive care unit. She had a smooth post-operative recovery and was transferred back to surgical ward 2 days later. The output from chest tube was insignificant and minimal bubbling ceased gradually. Chest x ray taken on her 2nd post op day showed well expanded right upper lobe with no evidence of pneumothorax and the chest tube was removed.

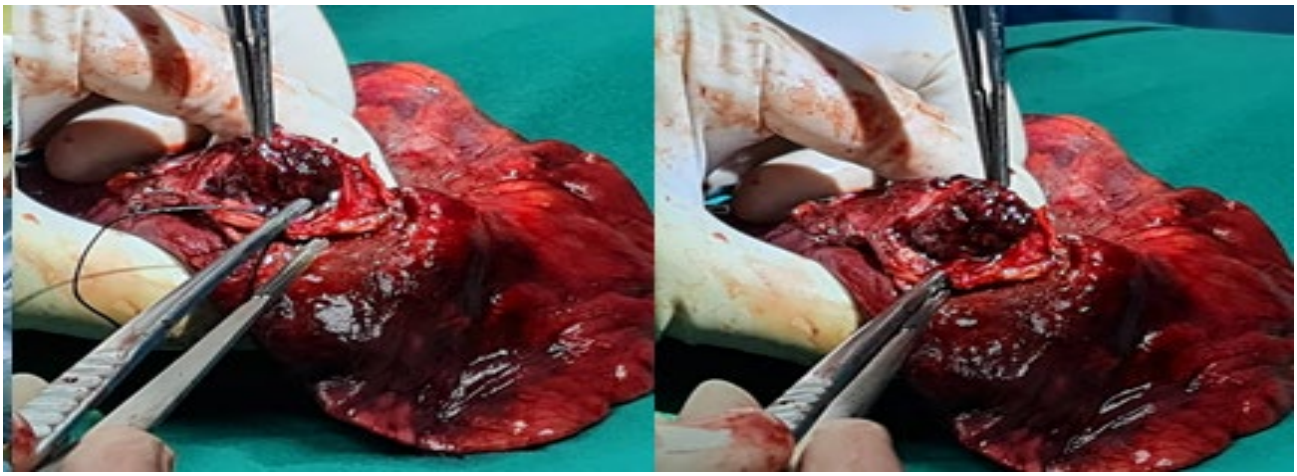

FIGURE 4: Intraoperative image showing obstructive right lower endoluminal bronchial tumour.

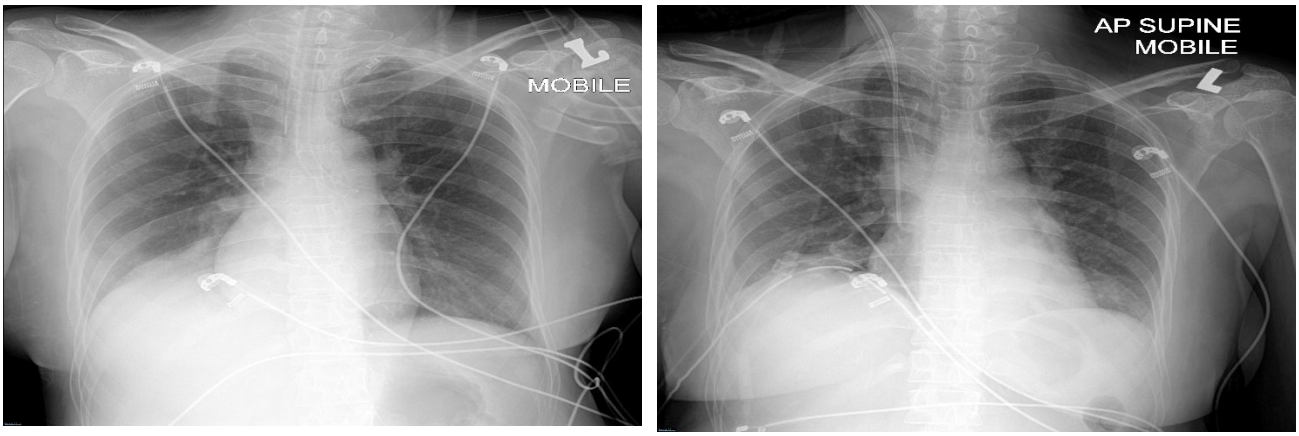

FIGURE 5: Chest radiograph pre and post right lower lobectomy.

Resected specimens sent for urgent histopathological examination (HPE) showed a circumscribed, polypoid endobronchial tumour with neoplastic cells arranged in organoid nesting pattern and trabeculae. The cells had fine granular chromatin, inconspicuous nucleoli, moderate to abundant eosinophilic cytoplasm with mitosis seen at 7/2mm^2. The stroma is vascularised with areas of haemorrhage and no necrosis. The immunohistochemical stains were positive for Chromogranin A, Synaptophysin, Ki-67. The resected right paratracheal and interlobar lymph nodes were free from malignancy. The final diagnosis was typical carcinoid tumour; pathological staging pT2a pN0. 24-hour urinary excretion of 5-Hydroxyindoleacetic acid (5-HIAA) was normal but serum Chromogranin A was significantly high. Other blood investigations done were unremarkable.

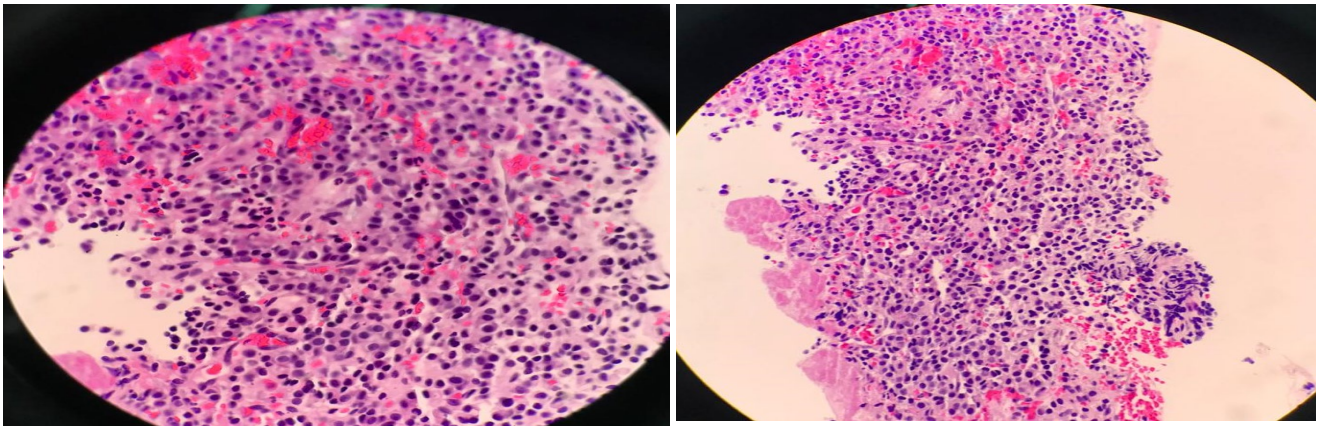

FIGURE 6: Histologic section showing neoplastic cells in organoid nesting pattern with fine granular chromatin and eosinophilic cytoplasm

Gallium-68 DOTATATE PET CT study showed a somatostatin receptor avid focus at right temporo-frontal region of the brain possibly due to meningioma. Otherwise, there was no avid local tumour recurrence in the lung, or any abnormal uptake seen elsewhere throughout the body. The patient showed a remarkable improvement and was discharged from the hospital in a stable condition. She is currently undergoing oncology follow-up at National Cancer Institute.

DISCUSSION

The varied presentation of bronchial carcinoids continues to intrigue and puzzle clinicians. Traditionally these tumours are classified according to their embryological origin as foregut carcinoid tumours. Histologically, the World Health Organization/The International Association for the Study of Lung Cancer (WHO/IASLC) has classified bronchial carcinoids into typical and atypical carcinoids based on cellular morphology, mitotic index, and necrosis(7, 8).

Table 1: Classification of carcinoid pulmonary tumours.

TYPE	PRESUMED CELL OF ORIGIN	HISTOLOGICAL FEATURES	CLINICAL CHARACTERISTICS	5-YEAR SURVIVAL RATE
TYPICAL CARCINOID	Epithelial endocrine cell	No necrosis, <2 mitosis/2mm^2	Usually indolent, may secrete corticotrophin, rarely secretes serotonin.	>90%
ATYPICAL CARCINOID	Epithelial endocrine cell	Focal areas of necrosis, 2-10 mitosis/2mm^2	Usually aggressive, with incidence of metastases.	40-60%

Adapted from (7).

There is no gender predilection for typical carcinoid. There is a bimodal peak incidence during adolescence and 40-50 years of age(9). Although our patient belongs to the second peak of presentation, she likely had the tumour earlier as its indolent and remained asymptomatic till date. Approximately 70% of bronchial carcinoids are centrally located in the major bronchi; only one third of the tumours, mostly atypical carcinoid tumours; are located peripherally in the segmental bronchi or beyond(10). There is a predilection for these tumours to occur in the right lung (61%) especially the middle lobe(10).

Most patients with bronchial carcinoid are asymptomatic or can present with nonspecific symptoms of airway obstruction such as wheezing, haemoptysis, dyspnoea, chest pain and recurrent infections resulting in misdiagnosis or

late diagnosis(9). Furthermore, as these tumours are rare, they are often not considered as a differential diagnosis especially in the young presenting with a myriad of vague symptoms. Bronchial carcinoids have the potential to form and secrete a variety of vasoactive substances into the systemic circulation especially serotonin, which may result in carcinoid syndrome in 1% of the patients(5). A high index of suspicion and a thorough work up including CT scan thorax and bronchoscopy is essential to clinch an accurate diagnosis early in patients with refractory symptoms.

Bronchoscopic biopsy is the gold standard modality for early tissue diagnosis as 75-77% are centrally located and easily accessible.(5) Well-vascularised, well circumscribed lesions that are raspberry coloured, which have a risk of bleeding are pathognomonic of bronchial carcinoids.(5) Bronchial washings or brushing are unrewarding in contrary to biopsy specimens due to the intact surface epithelium of the tumour(10). Bronchoscopists may face massive bleeding following endobronchial biopsy in bronchial carcinoids necessitating emergency pulmonary resection as seen with our patient. Bleeding is common and was found in 30 (71.4%) of 42 patients with typical carcinoid and only 3 (16.7%) of 18 patients with atypical carcinoid ($p<0.05$)(11). In a study by McCaughan et al., bronchoscopic biopsy was not routinely performed due to risk of haemorrhage(10, 12). Hence complication of bleeding post endobronchial biopsy should be well anticipated and the bronchoscopist should have anaesthesia, interventional radiology, and cardiothoracic support to handle this complication.

Rigid bronchoscopy and biopsy under anaesthesia in a controlled setting can reduce the risk of massive bleeding and result in a larger, more reliable sample(10). Alternatively, chromogranin A(CgA) and neuron specific enolase(NSE) tumour markers may be utilised and may obviate the need for biopsy in typical bronchial carcinoids to prevent massive bleeding after endobronchial biopsy(13). CgA, specificity of 75% and sensitivity of 67.9%(14) could be used to detect bronchial carcinoids(15). A raise in NSE may be used to differentiate between carcinoids and small cell carcinoma(16-18). Non-small cell carcinoma, particularly squamous cell carcinoma was ruled out by the negative immunostaining to p63 and p40.

Surgical resection is the mainstay treatment in bronchial carcinoids even when mediastinal nodal metastasis is present(19). These tumours are generally unresponsive to chemotherapy or radiotherapy; the prognosis is excellent for both typical and atypical bronchial carcinoids post-surgical resection(19).

CONCLUSION

Clinical symptoms and imaging studies suggestive of obstructive endobronchial lesion with a raised CgA should raise a high suspicion of bronchial carcinoid tumour. The gold standard to diagnose this rare tumour is bronchoscopic biopsy. Massive bleeding after endobronchial biopsy can occur and therefore the bronchoscopist should have multidisciplinary support from anaesthesia, interventional radiology, and cardiothoracic to handle this complication. Plasma CgA is nonspecific but reliable marker with good correlation to tumour burden; is useful for diagnosis, follow up and even precede radiological evidence of progression(20). Using tumour markers may obviate the need for biopsy in typical bronchial carcinoids and prevent massive bleeding after endobronchial biopsy.

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Narendran Balasubbiah MBBS, MMed Surgery

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LIPIODOL RETENTION MASQUERADING AS TALCUM POWDER IN MAMMOGRAPHY

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ABSTRACT:
Lipiodol (also known as ethiodized oil) is an iodinated poppy seed oil first synthesized in 1901 for therapeutic purposes. The use of lipiodol in lymphangiography in later date has gain popularity as this agent tend to retain in the lymphatic system as opposed to other iodinated hydrosoluble contrast media that diffuse out of lymphatic system rapidly. Over the course of several days and weeks, the iodine within the lipiodol is released by enzymatic cleavage and the fat molecules are degraded. In our case, there is retention of lipiodol in the left axilla which showed as group of round calcifications in Mammogram. This has raised the suspicion of talcum powder usage for the reporting radiologist without revisiting the past surgical and medical procedure. Even though lipiodol washout is a time-dependant process, it can retain in our body or site of injection as long as few years as evidenced in our case.

Keywords: Angiography, Arterial cannulation, Angioseal.

NARRATIVE:
79 years old female with history of right breast carcinoma had large amount of milky drainage (approximately 700ml/day) in the indwelling catheter post mastectomy and axillary clearance in June 2020. Lymphangiogram of bilateral upper limbs was carried out at that time which confirmed the diagnosis of iatrogenic lymphorrhea (Figure 1). Post operative iatrogenic lymphorrhea is an extremely rare complication. Lipiodol (also known as ethiodized oil) is an iodinated poppy seed oil first synthesized in 1901 for therapeutic purposes. It was historically used for bronchography, dacryography, hysterosalpingography (HSG), sialography, fistulography, urethrography and cystography before 1952. [1] The use of lipiodol in lymphangiography in later date has gain popularity as this agent tend to retain in the lymphatic system as opposed to other iodinated hydrosoluble contrast media that diffuse out of lymphatic system rapidly. Over the course of several days and weeks, the iodine within the Lipiodol is releases by enzymatic cleavage and the fat molecules are degraded. [2] This process might take longer time in case of larger Lipiodol collection. In our case, lymph leakage ceased within 2 days after lymphangiography. No further embolization is needed for the right lymphorrhea.

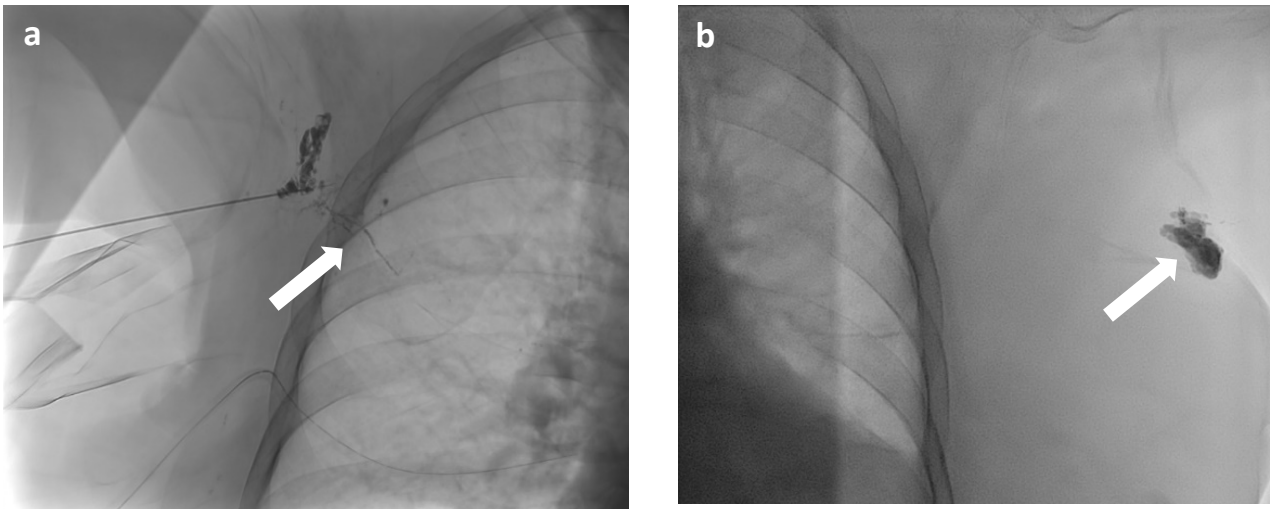

Figure 1: Upper limbs lymphagiogram in right (a) and left (b) axilla show lipiodol uptake into the lymphatic system from direct injection of lipiodol into the mastectomy site with opacified lymphatic vessels (arrow in a). Retention of lipiodol in left axillary lymph node (arrow in b) from direct puncture of lymph node (transnodal approach).

Subsequently, she returns to hospital for yearly mammogram screening which showed group of round calcifications in the left axilla (indicated with circle in figure 2) which was absent in previous study. Otherwise, there was no suspicious breast lesion seen. Patient is keeping well with no new complain. This has raised the suspicion of talcum powder usage for the reporting radiologist without revisiting the past surgical and medical procedure. In conclusion, there is lipiodol retention in the mastectomy site even after 1 year 3 months that masquerading as group of calcifications on mammography.

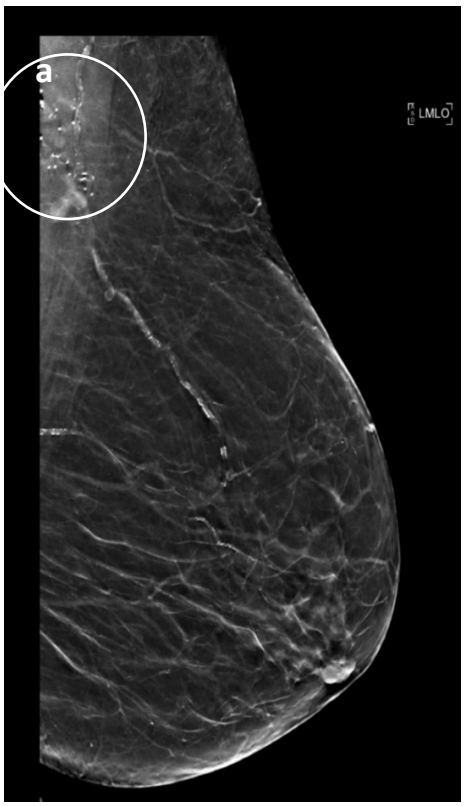

Figure 2: Left breast Mammogram in mediolateral oblique view show group of calcification in the left axilla. No suspicious breast lesion.

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