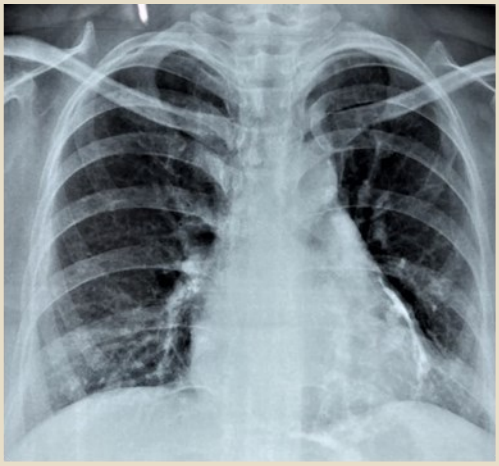
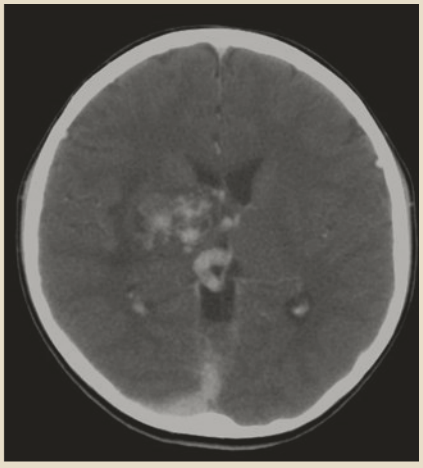
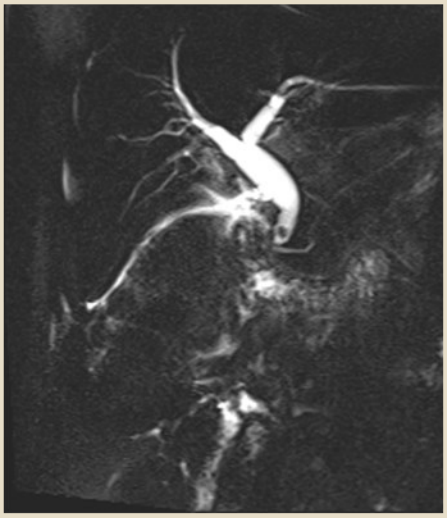
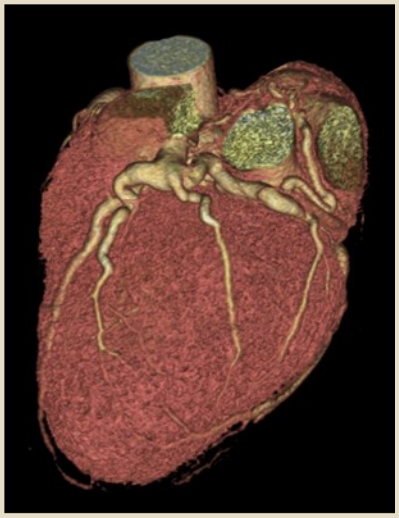
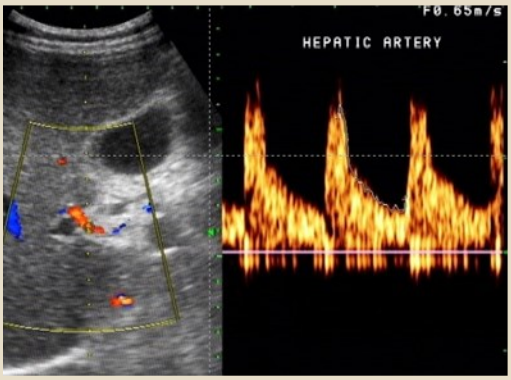
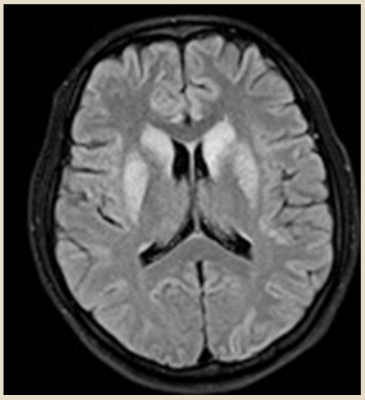
Waves

WAVES: THE OFFICIAL PERIODICAL OF CALCUTTA ACADEMY OF RADIOLOGY
VOLUME V, ISSUE III, JUNE 2024






WAVES
THE OFFICIAL PERIODICAL OF CALCUTTA ACADEMY OF RADIOLOGY
VOLUME V, ISSUE II, APRIL 2024
Joint Editors: Dr. Anup Sadhu, Dr. Bijon Kundu and Dr. Viral Parekh.

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Waves

WAVES: THE OFFICIAL PERIODICAL OF CALCUTTA ACADEMY OF RADIOLOGY

VOLUME V, ISSUE III, JUNE 2024

INSIDE THIS

Editorial: Image synthesis in medical imaging: Dr. Viral Parekh

Image synthesis in the field of medical imaging is a captivating and rapidly evolving area. Its main objective is to generate a target image modality from a given source modality, which can greatly enhance the efficiency of clinical workflows. Image synthesis has been extensively researched and widely utilized in the fields of radiology and radiation oncology. Medical imaging often involves multiple modalities such as CT, MRI, and PET for diagnostic and treatment purposes. However, the cost, time, and labour involved in acquiring high-quality images can make it impractical in a clinical setting. Additionally, radiation constraints and image registration complexity can limit the direct use of certain imaging modalities. To address these challenges, image synthesis techniques have been developed to generate complex images from simpler ones (intermodality synthesis) or enhance the quality of images from low-quality inputs (intramodality synthesis).

Here are some important points to consider regarding image synthesis in medical imaging:

- The primary aim is to simplify clinical workflows by either bypassing or replacing an imaging procedure that may be impractical, or when integrating information from different image modalities is particularly challenging.
- Deep learning and computer vision have played a significant role in advancing this field. These technologies have greatly improved the quality of synthesized images, making them more valuable for clinical applications.
- One exciting application is in MR-only radiotherapy planning, where synthesized CT images generated from MRI scans can be utilized for treatment planning.
- Despite the progress made, there are still limitations and challenges to overcome. Ensuring the accuracy and reliability of synthesized images remains crucial for making informed clinical decisions.

In addition to MRI-based synthetic CT, image synthesis techniques are also being explored for other applications in medical imaging, such as denoising, super-resolution, and image segmentation. These techniques have the potential to enhance the quality of medical images, improve diagnostic accuracy, and ultimately benefit patient outcomes.

Overall, image synthesis in medical imaging is a rapidly advancing field with the potential to revolutionize clinical workflows and improve the quality of patient care. As deep learning techniques continue to evolve and improve, we can expect to see even more innovative applications of image synthesis in the field of medical imaging.

We appreciate the help of Dr. Bhavin Jankharia, Dr. Rajesh Botchu in bringing out this issue of this periodical and we invite every Radiologist to be a part of this academic publication.

Section I
Cases by
Dr. Bhavin Jankharia

Dr. Bhavin Jankharia,
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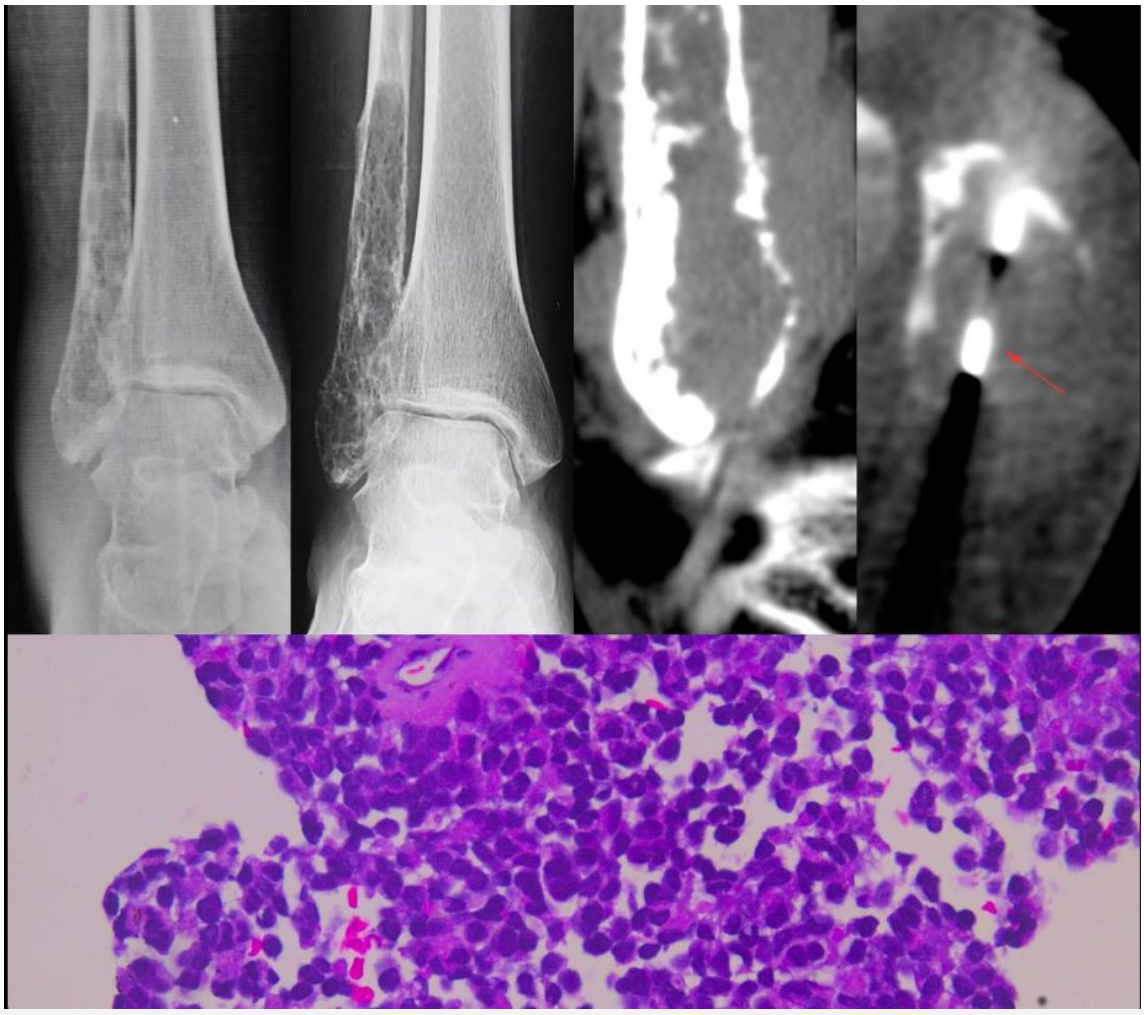
Dr. Bhavin Jankharia is a well-known figure in the Radiology community, recognized for his expertise and contributions to Radiology education. Currently serving as a Consultant Radiologist at Picture This by Jankharia and as a Trustee of the Radiology Education Foundation, he has graciously agreed to share his knowledge with us. With his wealth of experience and expertise, Dr. Jankharia's insights and knowledge are invaluable resources for those in the Radiology community.

Here is a brief overview of his accomplishments:

- **Authored 5 books, 35 chapters, and 57 articles listed on PubMed**
- **Presented 32 posters**
- **Delivered over 1500 invited lectures spanning 27 years**
- **Served as the Editor-in-Chief of the Indian Journal of Radiology & Imaging from 2007 to 2012**
- **Published his latest book "Computed Tomography of Interstitial Lung Diseases" in 2019**
- **Holds the position of Honorary Visiting Consultant in Radiology at Tata Medical Centre, Kolkata**
- **Previously held the role of President of the Indian Radiology & Imaging Association in 2014.**

Dr. Bhavin Jankharia, MD.

Case I : Ewing sarcoma vs Giant Cell Tumor



This 32-years old lady presented with pain in the distal leg in 2016. An MRI done at the time showed some marrow edema and she was treated conservatively and symptomatically.

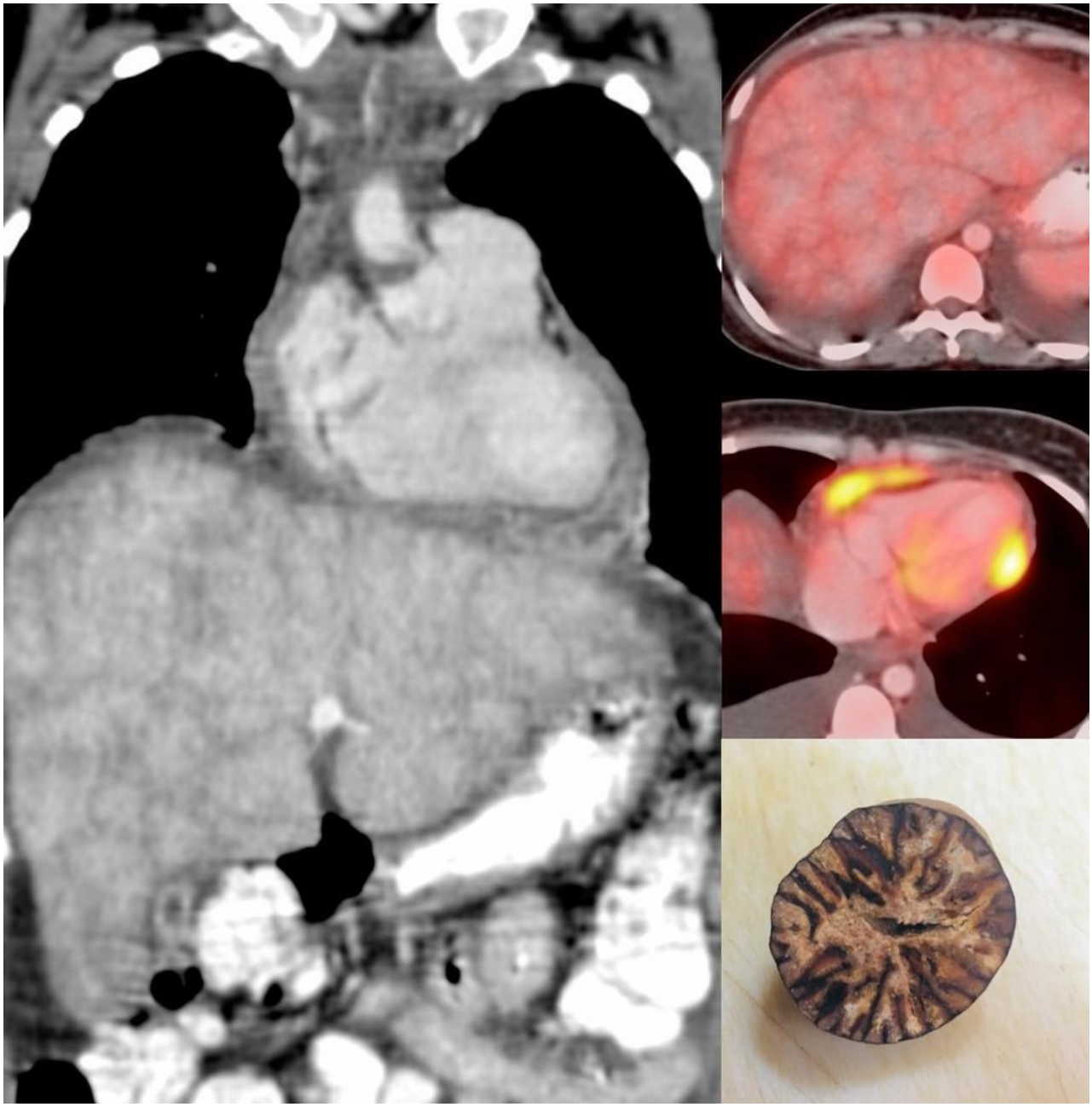
She became pregnant in late 2016 and her pain increased. A radiograph of Feb 2017 shows an osteolytic lesion that was assumed to be giant cell tumor and she was again conserved.

After delivery, the radiograph of Aug 2017 shows mild progression. A biopsy was performed in September. The CT scan at the time of biopsy shows an aggressive lesion with periosteal reaction and extra-osseous soft tissue. The diagnosis is Ewing sarcoma.

Always, always biopsy lesions before treatment.

Dr. Bhavin Jankharia, MD.

Case II : Nutmeg Liver

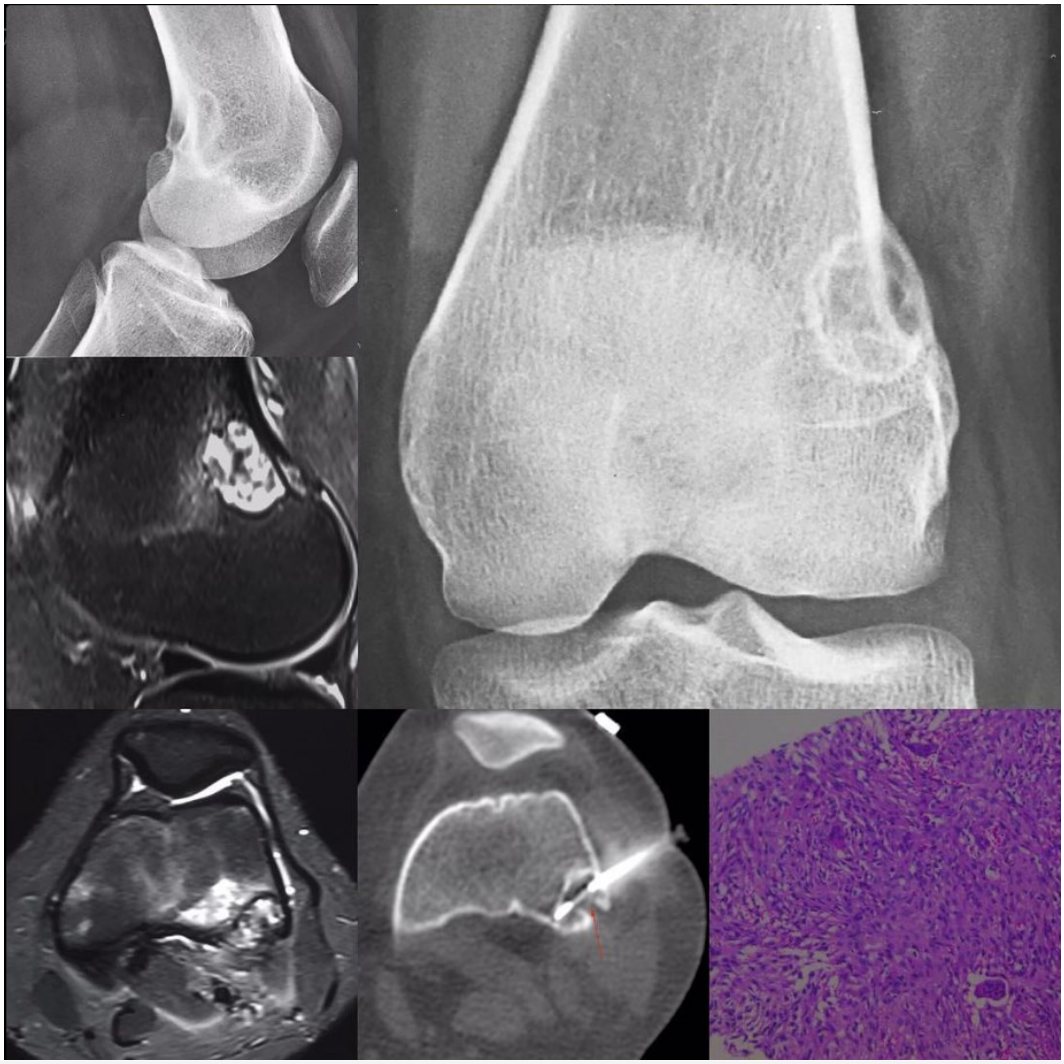


This 32-years old came for a PET. She has pericardial tuberculosis with patchy thickening (arrows). Despite the lack of biatrial dilatation, the bilateral pleural effusions and the appearance of the liver are highly suggestive of a restrictive physiology and consistent with constrictive pericarditis.

The liver shows signs of passive venous congestion as a result - this is often called a nutmeg liver (nutmeg shown for comparison)

Dr. Bhavin Jankharia, MD.

Case III: A Benign Googly



This 20-years old lady presented with pain the knee.

Her radiograph shows a benign looking lesion with sclerotic rim involving the lateral cortex of the distal femoral metaphysis.

The MRI shows a lesion with lobulated hyperintensity and marrow edema while the CT shows the sclerotic rim well.

The possibilities included a non-ossifying fibroma with a possible microfracture and a possible chondromyxoid fibroma. A CT guided biopsy was performed. It showed a benign fibrous histiocytoma, which is an unusual lesion and a difficult pre-biopsy diagnosis.

Section II
MSK Cases by
Dr. Rajesh Botchu

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Dr. Rajesh Botchu possesses an impressive academic background, having successfully obtained his MBBS and MS (Ortho) degrees from Kurnool Medical College. He further pursued MRCSEd (Edinburgh) and MRCSI (Ireland) before undergoing his Radiology training in Leicester.

Additionally, Dr. Botchu completed his MSK subspeciality training in Leicester, ROH Birmingham, NOC Oxford, and CIM Geneva.

With an outstanding record of 328 publications, he undeniably stands as a remarkable scholar. Notably, in the first half of 2024, he has already published 40 papers, which is truly remarkable.

Different faces of Osteosarcoma

1Shashank Chapala, 2Mohsin Hussein, 3Sindhura Mettu, 2Rajesh Botchu
1Department of Radiology, AIG Hospital, Hyderabad, India
2Department of Musculoskeletal Radiology, Royal Orthopedic Hospital, Birmingham, UK
3Department of Radiology, Himagiri Hospital, Hyderabad, India

Osteosarcoma overview:

Osteosarcoma (osteogenic sarcoma) is a rare bone tumour of mesenchymal origin and accounts for approximately 20% of all bone tumours. It typically occurs within the metaphysis of long bones. most commonly occurring around the knee (distal femur and proximal tibia) followed by the proximal humerus, with diaphyseal location being uncommon. Non-long bone involvement in areas such as the pelvis, scapula, jaw bones (gnathic), spine, and skull increases with age [1]. Osteosarcoma is very rarely found beyond the wrist and ankle (acral sites).[3] There are several types of osteosarcoma (Fig.1-6), each having distinctive clinical, imaging, and histologic characteristics. A common feature to all subtypes is the presence of malignant tumour cells which directly form osteoid [2-13]. The majority of osteosarcomas are of unknown aetiology or idiopathic and are considered primary. A smaller proportion of tumours are related to known aetiological factors predisposing to malignancy, such as fibrous dysplasia, Paget's disease, external ionizing irradiation ("radiation-associated osteosarcoma"). [Fig7-9] These are referred to as secondary osteosarcomas. All types of osteosarcomas may be further subdivided by anatomic site into lesions of the appendicular and axial skeleton. Furthermore, they may be classified on the basis of their location in the bone as central (medullary), intracortical, and juxtacortical. Histologically, it may be divided into osteoblastic, chondroblastic or fibroblastic groups according to the predominant features of cells. Extraskeletal or soft-tissue osteosarcomas are a separate group of osteosarcoma which arise primarily from the soft tissues as opposed to bone.

Figure 1. Conventional osteosarcoma. AP radiograph (a), coronal T1 (b) and STIR (c) showing conventional osteosarcoma.

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Radiographic (x-ray) imaging in Osteosarcoma:

The characteristic radiographic features described are of an aggressive periosteal reaction which may manifest as a sun-burst appearance, periosteal elevation and formation of Codman's triangle. There is characteristically bone destruction with new bone formation; given that this occurs rapidly, the lag in bone reparative mechanisms results in a permeative pattern of bone destruction and other specific features according to the osteosarcoma subtype. [3,9,14,15]. For example, the telangiectatic subtype demonstrates predominant osteolysis and bone expansion with evidence of "fluid-fluid" levels attributed to the layering of blood products of differing age, whereas sclerosing subtypes of osteosarcoma show more osteoblastic appearances of dense sclerotic bone formation. The physis (growth plate) normally, but not always, acts as a barrier to the spread of tumor from the metaphysis to the epiphysis. Surface osteosarcomas have typical appearances of cortical erosion, medullary involvement, dense ossification and relatively high circumferential involvement of the bone surface. Following treatment of osteosarcoma with chemotherapy, lesions typically become more well defined, mineralized and encapsulated. Chest radiographs can detect metastasis to the lungs; these classically appear as "cannon ball" lung nodules which may demonstrate ossification. This may lead to spontaneous pneumothorax which can be a presenting complaint. Although radiographs are less sensitive than computed tomography (CT) for the early detection of small and occult sub-centimetre nodules, they are a good initial test and useful in surveillance post-operatively given the reduced radiation dose.[16].

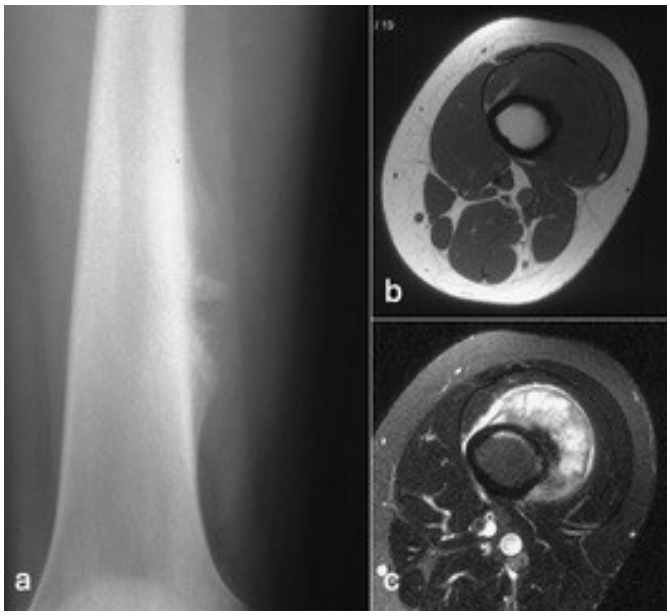

Figure 2.

Periosteal osteosarcoma. AP radiograph (a), axial T1(b) and STIR (c) showing periosteal osteosarcoma

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Figure 3.
Parosteal osteosarcoma. Lateral radiograph (a) and sagittal STIR (b) showing parosteal osteosarcoma.

Figure 4.
Intracortical osteosarcoma. AP radiograph (a), axial T1(b), STIR (c) and T1FS post contrast showing intracortical osteosarcoma.

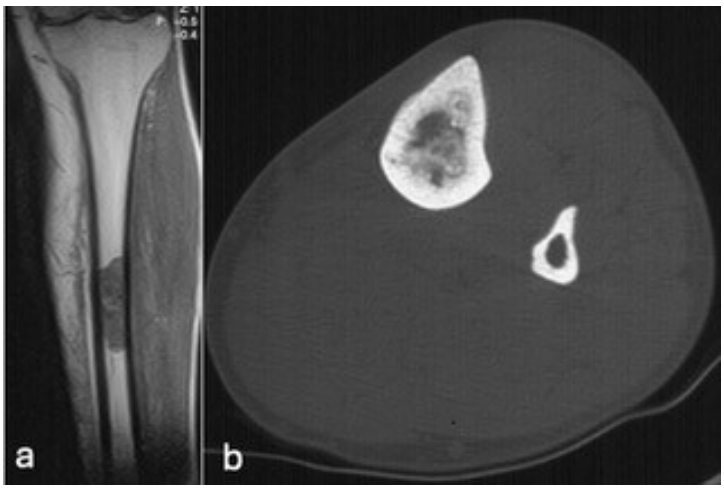

Figure 5.
Low grade central osteosarcoma. AP radiograph (a) and axial CT (b) showing low grade central osteosarcoma.

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Figure 6. Telangiectatic osteosarcoma. AP radiograph (a) and coronal STIR (b) showing telangiectatic osteosarcoma.

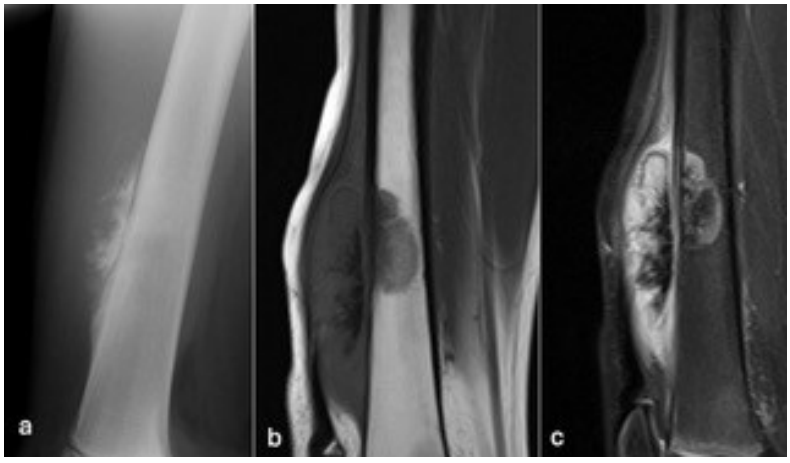

Figure 7. Surface osteosarcoma. Lateral radiograph (a), sagittal T1(b) and STIR (c) showing surface osteosarcoma.

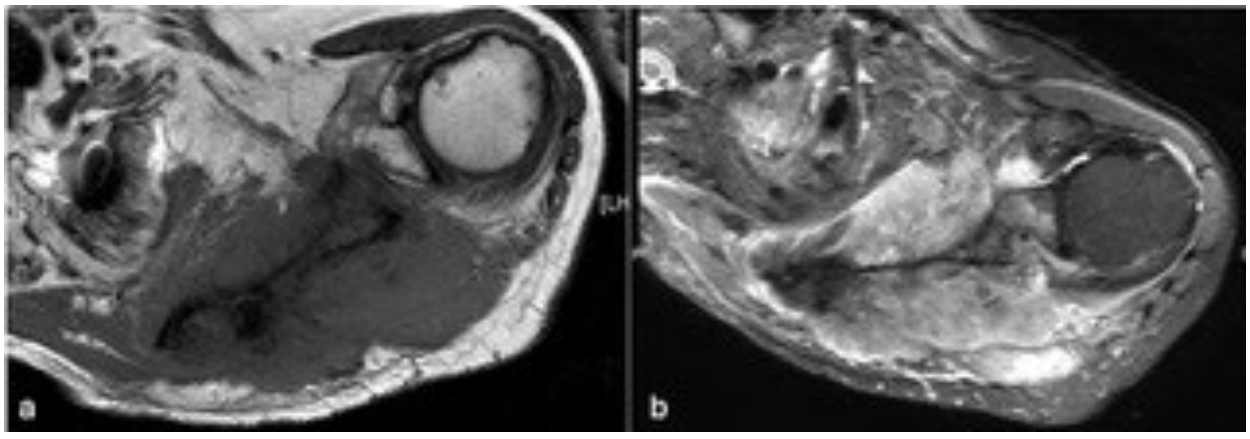

Figure 8. Radiation-induced osteosarcoma. AxialT1 (a) and STIR (b) showing radiation-induced osteosarcoma.

Different faces of Osteosarcoma

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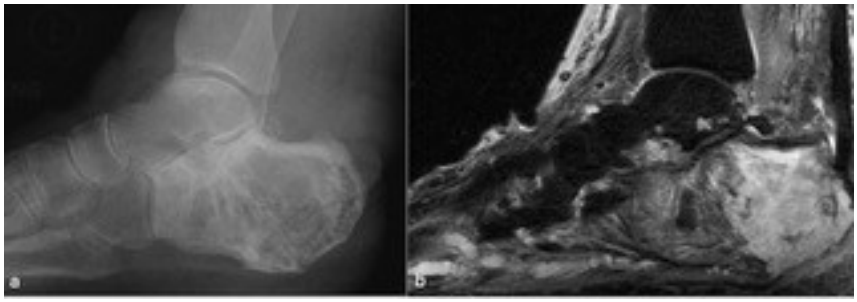

Figure 9.
Paget's sarcoma. Lateral radiograph (a) and sagittal STIR(b) showing Paget's sarcoma.

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Section III

Heat wave and brain stroke

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Heat wave and brain stroke

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Increased environmental heat leads to Heat stroke when our body overheats, and core body temperature rises to more than 39.5 degree Celsius. Stroke is when a blood vessel to the brain bursts or is blocked by a clot.Prolonged exposure to heat affects blood flow and oxygen supply to the brain, potentially leading to a fainting episode.

At high enough temperatures, the blood-brain barrier begins to break down and unwanted proteins and ions can build up in the brain, causing inflammation and hampering normal functioning. Brain tissue is exceptionally sensitive to heat – structural changes occurring with a 3-4 degrees Celsius increase above normal baseline.

Brain Temperature: Why it is important?

1. The brain is the most important organ for survival.
2. Brain tissue is exceptionally sensitive to heat – structural changes occurring with a 3-4^{0}C increase above normal baseline.
3. The brain accounts for 20% of the total oxygen consumption at rest and all energy used for brain metabolism is finally transformed into heat. Therefore, intense heat production appears to be an essential feature of brain metabolic activity.
4. In contrast to body temperature, brain temperature measurements are more complicated and usually impossible in humans and our knowledge on brain temperature changes remains very limited; Brain is a part of the body and its temperature basically depend on and correlates with body Temperature. Although metabolic heat is intensively produced in brain tissue, it is effectively removed from the brain via circulation to the body and then to the external environment, and brain temperature remains relatively stable. The major cooling mechanism of the brain is inflow of colder arterial blood that comes from the lungs and outflow of warmer venous blood that travels again to the lungs and skin surfaces for heat dissipation to the external environment .

Humans have sophisticated thermoregulatory mechanisms that maintain stability of internal temperatures following:

- Robust changes in environmental temperatures. Enhanced heat production associated with physical activity.
- The major cooling mechanism of the brain is inflow of colder arterial blood that comes from the lungs and outflow of warmer venous blood that travels again to

Heat wave and brain stroke

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- the lungs and skin surfaces for heat dissipation to the external environment.
- Physical activity - intense heat production in the body (up to 10x). When heat could dissipate outside, changes in temperature are minor.
- When heat dissipation from skin surfaces is blocked, heat is accumulated in the brain and body, and both temperatures go up to high levels (mean 39.5 C).
- Sustained brain hyperthermia could induce multiple neurochemical excretion leading to loss of blood brain barrier, multiple histochemical and structural changes in brain cells.
- Different types of brain cells have different sensitivity to damage (neurons, glial cells, endothelial cells epithelial cells).

Heat stroke is a multisystem condition that is characterized by central nervous system dysfunction and damage to other organs. It is associated with core body temperature (BT) >40-degree C. This can be caused by exposure to environmental heat (i.e., classic heat stroke) or strenuous physical exercise (i.e., exertional heat stroke). The main heat stroke treatments include rapid cooling and support of multiple organ functions. Despite modern intensive care, heat stroke is often fatal with many survivors sustaining functional impairment. Cerebral edema associated with heat stroke is a major cause of death or disability. However, few studies on severe cerebral edema resulting from heat stroke have reported neuroradiological findings.

Popular belief in Asian subcontinent especially in India is that Stroke is a catastrophe of Winter. The hot tropical climate in our country is well tolerated by the people. But excessive heat leading to heat wave had definite impact on nervous system as we understand today.

From 1st week of May 2024 to till 1st week of June, the maximum temp of Kolkata hovered around 40-42 degree Celsius with excess humidity at times.

We received 8 patients for CT brain during daytime from emergency department (at noon or post-noon--- in winter we get stroke patients mainly in the early morning or late evening which was elaborated in my study of diurnal variation of stroke)

Heat wave and brain stroke

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What we have found

1. Arrival of patients -- noon or afternoon.
2. Mainly local patients. Elderly males.
3. Comorbidity -- diabetes, hypertension.
4. Abuse of drug - no such but missing a dose of antihypertensive was found in two patients.
5. Lack of healthy / nutritious food --obviously these aged patients were less cared at home.
6. Lack of intake of water -- its quite common in the elderly.
7. Physical activities beyond permit at per age -- this causes more heat production in the body.

After arrival at ED (besides our department) ,patients were treated for heat stroke. The patients were selected who were clinically diagnosed to be suffering from heat stroke.

The patients who had neuro deficit or coma were sent for CT scan of brain.

- 5 patients had definite brain changes (haemorrhage 2, MCA infarct 3).
- As most of the patients were aged , brain oedema could not be gauged properly in the background of diffuse cerebral atrophy (mean age 65 years).
- 2 patients had MCA territory haemorrhage.
- 3 pts had ischaemia stroke (all in left circulation).
- Other 3 patients with coma did not show focal changes in brain.

Heat stroke is also an important cause of ischemic venous and arterial stroke contributing to mortality and morbidity in extreme hot weather - especially when hot weather is combined with humidity. A low body temperature due to poor fluid intake and higher body temperature resulting in excess fluid loss causes haemoconcentration, which can lead to increased incidence of ischemic stroke in a stroke predisposed person. The cause of the haemorrhage was probably due to fragile vessels in hypertension or diabetes .

Hence it will be wise , especially in the elderly to follow the guidelines of prevention of heat stroke and the family members must take care of them. As postulated by various scientists, our planet is bound to face heat wave in next few years. We have to take adequate precautions, if possible, we shall try to detect possible side effects of heat wave by isolating biomarkers much before the complications of heat wave. This may also lead us to detect any effect in young people who are apparently healthy individuals. A large dataset from heat wave prone areas of West Bengal will definitely help us understand the pathophysiology of changes in our body in excess atmospheric heat.

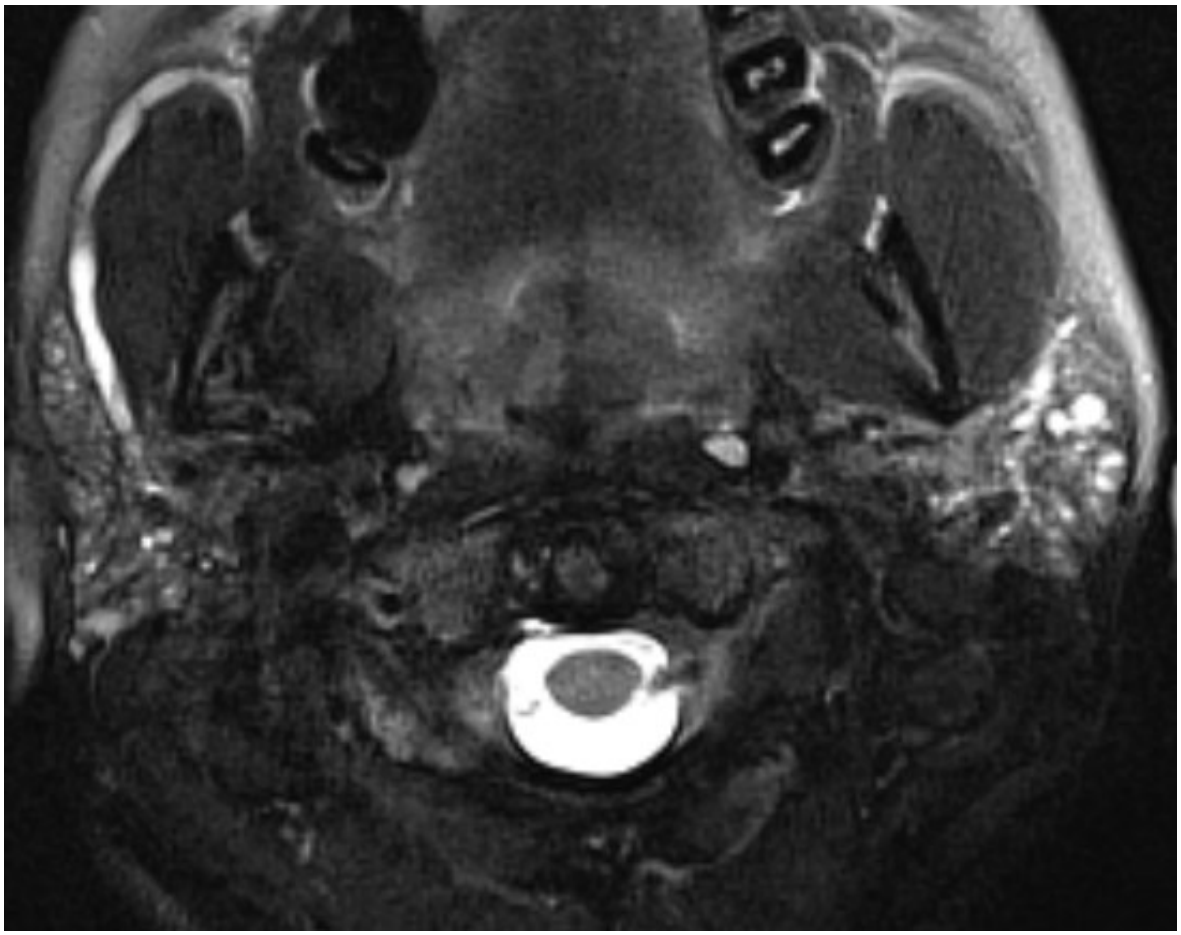
Section IV

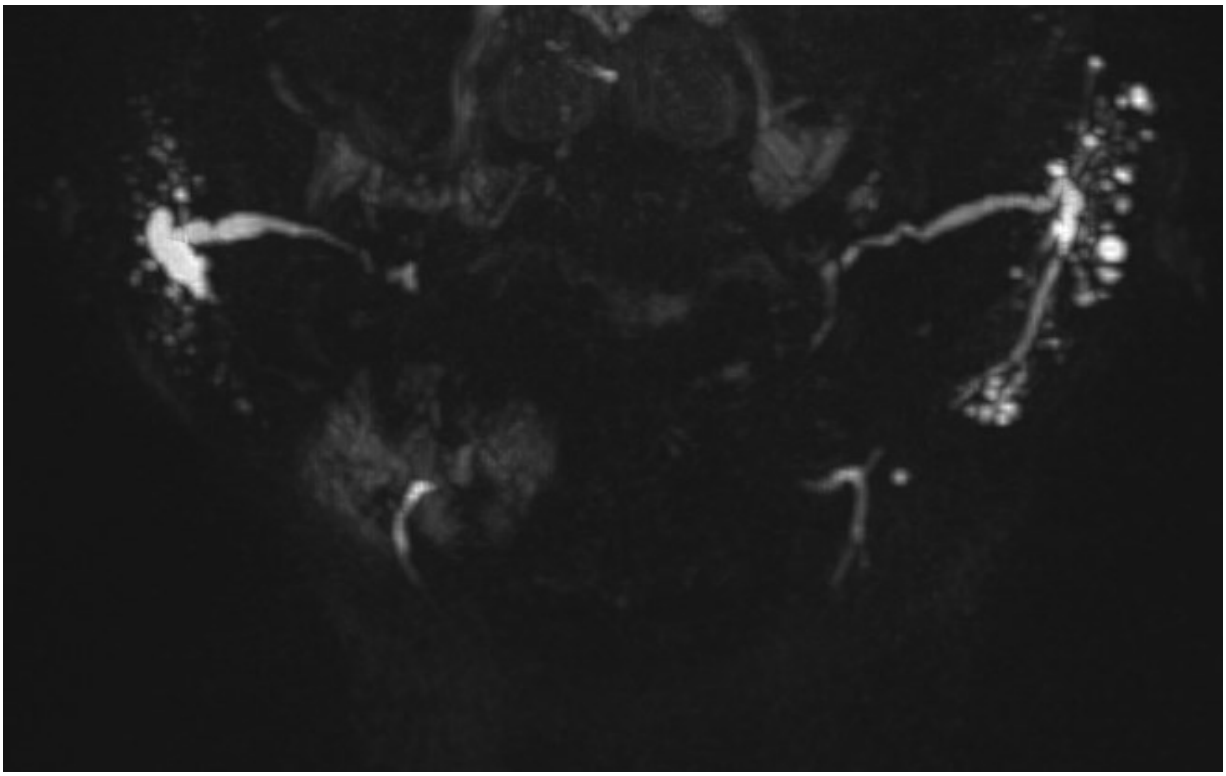
Captivating cases observed in the realm of radiology.

Dr. Viral Parekh

MBBS, DMRD, DNB.

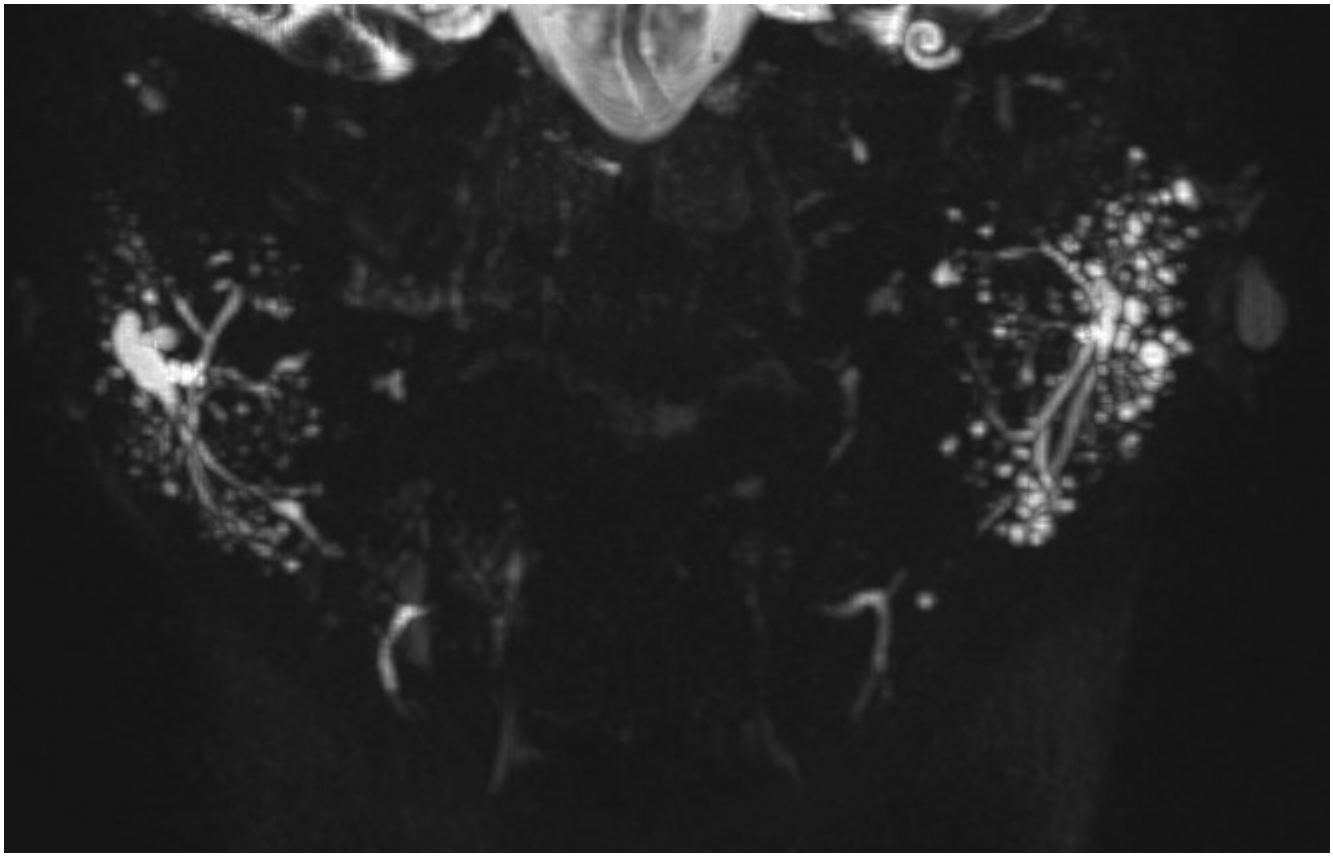
Case I: Punctate Sialectasis

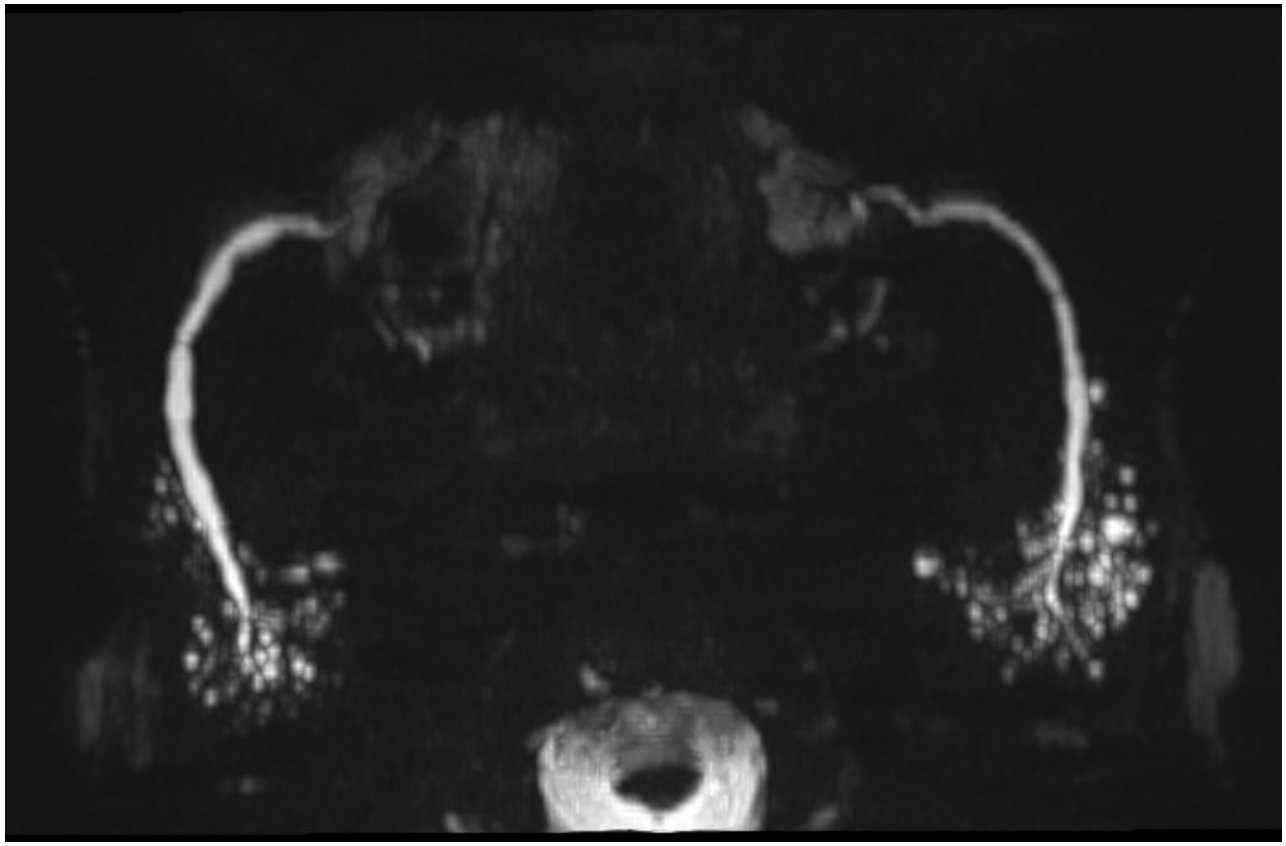




Dr. Viral Parekh, DMRD, DNB

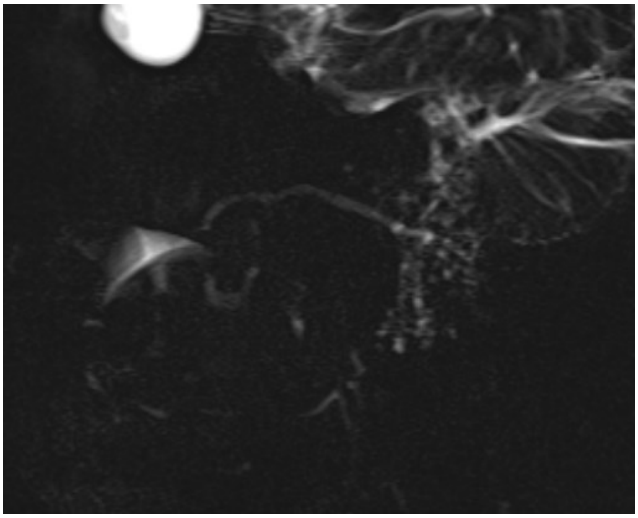
Case I: Punctate Sialectasis

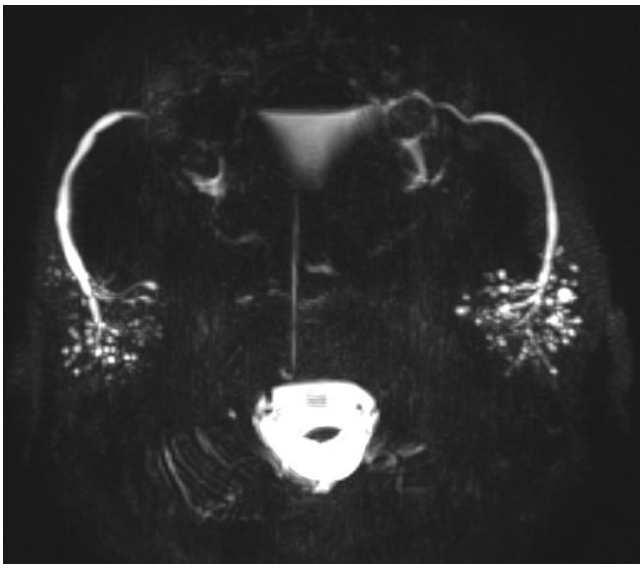




Dr. Viral Parekh, DMRD, DNB

Case I: Punctate Sialectasis





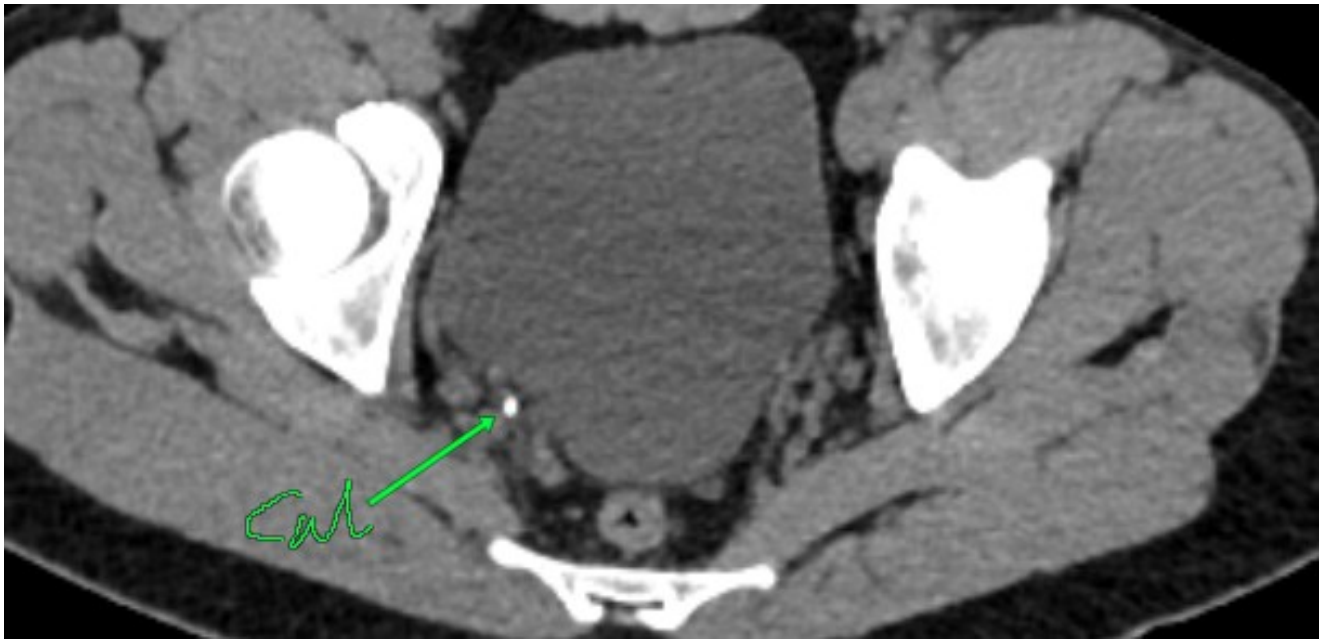
Sialectasis, also known as sialoangiectasis, refers to the enlargement of the ducts within the salivary glands. This condition is commonly observed in the parotid gland and is often associated with ascending infections and gland damage. Various factors can cause chronic inflammation leading to sialectasis, including idiopathic causes, Sjogren syndrome, post-infectious conditions, recurrent sialadenitis, salivary duct strictures, and congenital abnormalities (although rare).

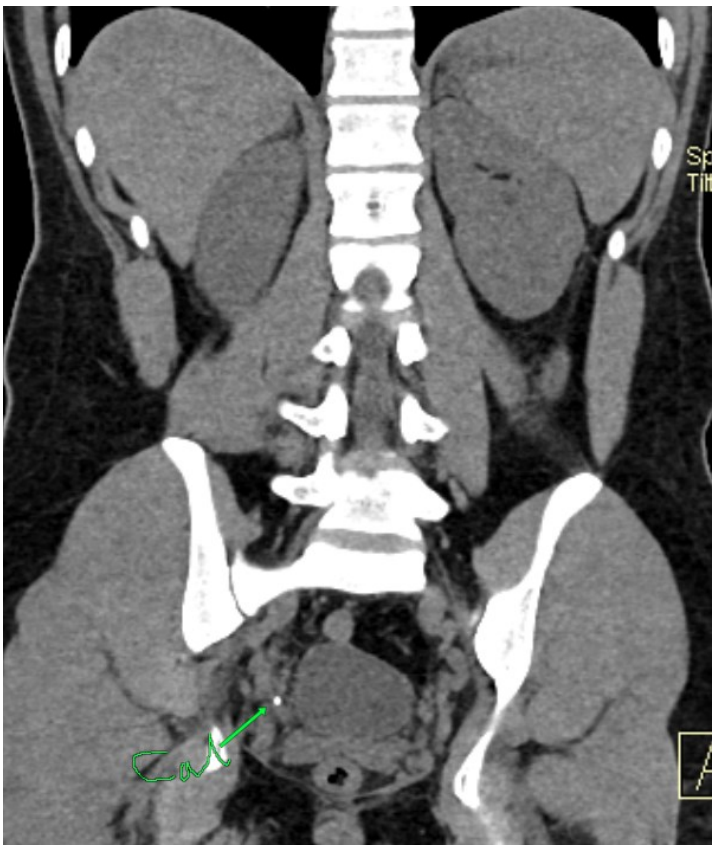
When it comes to radiographic features, MR sialography is routinely used. Digital subtraction sialography is also sometimes used, which involves injecting a contrast medium into the parotid or submandibular duct after stimulation with a sialagogue, such as lemon. Sialectasis can present with different patterns of dilatation, including punctate, globular, cavitary, cylindrical, and fusiform. Stricture of the main duct can be identified by the abrupt tapering of the duct. It is important to obtain a preliminary film to check for any radiopaque stones.

Ultrasound imaging can also be used to assess sialectasis. It typically shows an enlarged gland with multiple hypoechoic branching ducts. In systemic diseases like Sjogren syndrome, the enlargement is often bilateral and symmetrical. A stone within the duct may appear as a small hyperechoic structure, and if it is large enough, post-acoustic shadowing may be observed.

Dr. Viral Parekh, DMRD, DNB

Case II: Spontaneous calyceal rupture due to lower ureteric calculus





This 22 year old male was admitted to hospital with history of acute right lower abdominal pain.
Figure 1abc: The plain CT scan images demonstrate a small right lower ureteric calculus.

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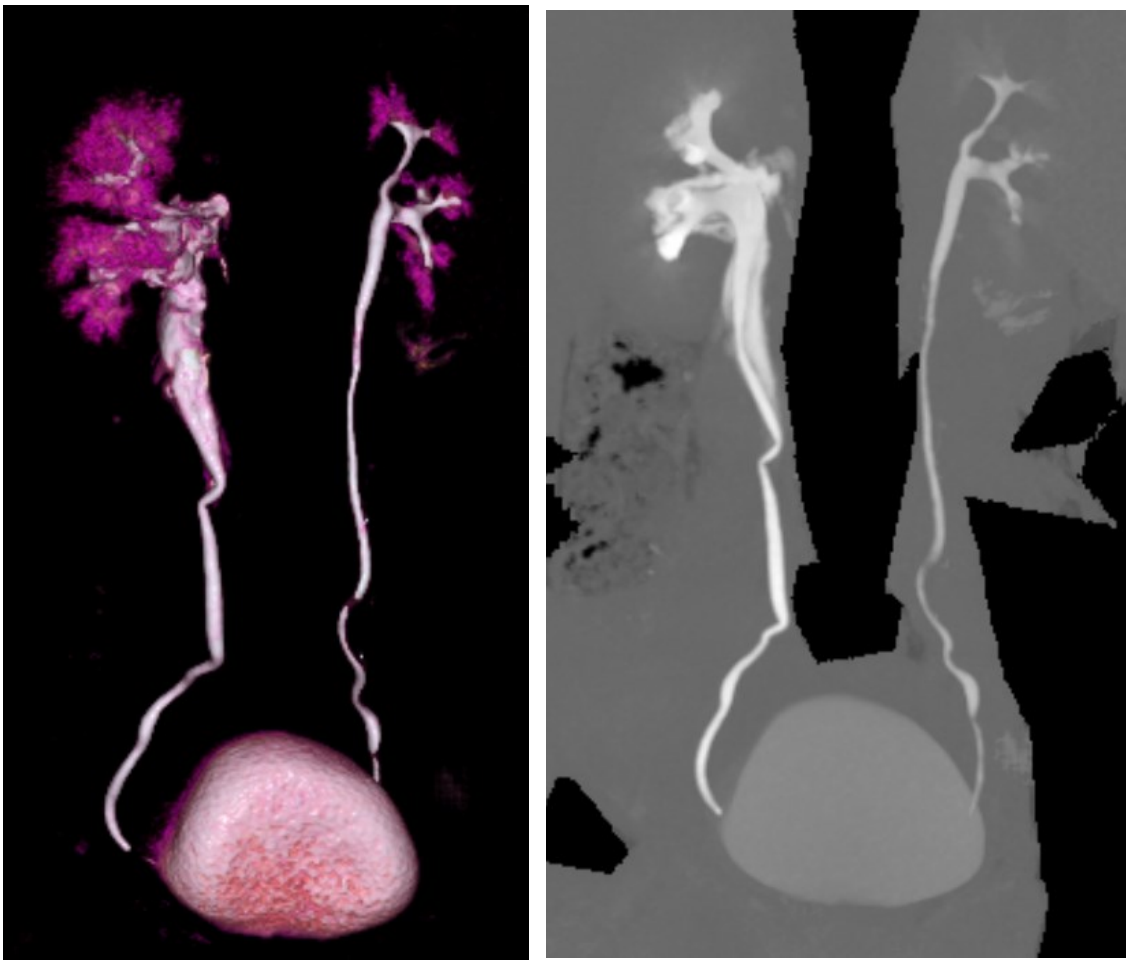
Case II: Spontaneous calyceal rupture due to lower ureteric calculus



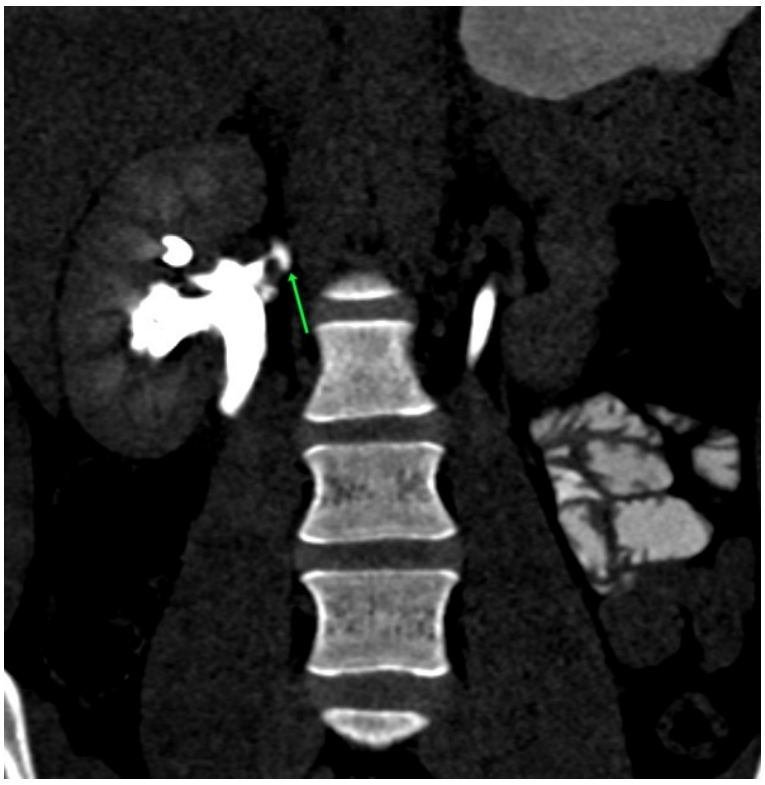


Figure 2abc:

MPR, MIP and VRT images demonstrate right hydroureteronephrosis due to a calculus in right lower ureter, associated with calyceal rupture leading to leakage contrast into the perirenal and upper perireteric regions.

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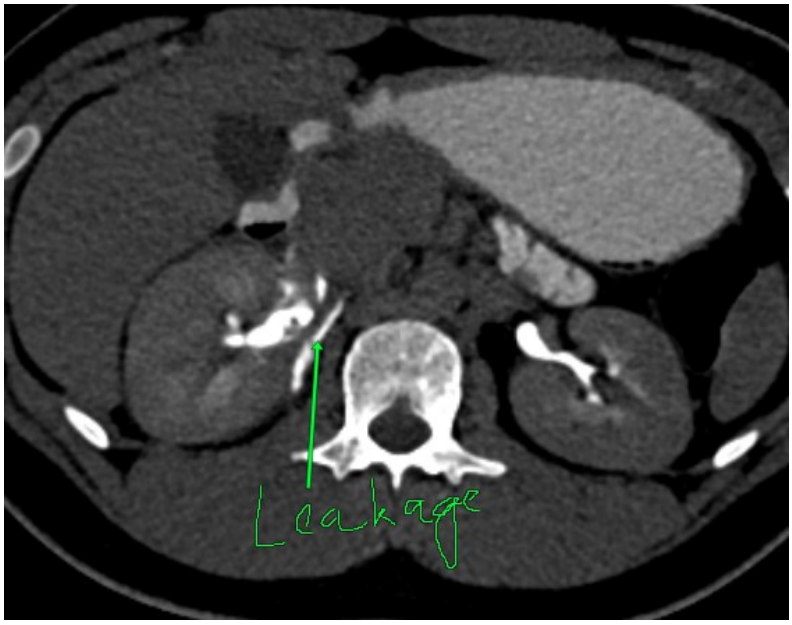
Case II: Spontaneous calyceal rupture due to lower ureteric calculus



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Case II: Spontaneous calyceal rupture due to lower ureteric calculus

Renal colic is a frequently encountered condition in the emergency department, characterized by intense pain in the flank region that originates from the costovertebral angles and radiates towards the groin. The primary cause of renal colic is kidney stones. Several risk factors contribute to the formation of kidney stones, including volume depletion, hypercalciuria, hyperoxaluria, hyperuricosuria, and hypocitraturia.

The management of acute renal colic involves three key components: pain management, addressing the underlying cause, and managing any associated complications. When it comes to diagnosing kidney stones, a CT scan without contrast is the preferred imaging modality. However, there are instances where a contrast study is necessary to clarify the diagnosis, particularly in rare cases involving calyceal rupture, which is often associated with obstructing stones.

Calyceal rupture is an uncommon occurrence in stones smaller than 5 mm, as the majority of them pass spontaneously without causing any obstruction. In the rare instances where stones smaller than 5 mm do cause obstruction, calyceal rupture is typically not observed. This particular case is unique because a stone measuring 3-4 mm resulted in both obstructive uropathy and calyceal rupture.

While a CT scan without contrast is the most effective diagnostic tool for identifying kidney stones, it may not provide clear visualization of calyceal rupture. The clinical presentation of forniceal rupture can vary significantly and may resemble renal colic. The presence of perinephric edema or fluid collection on initial imaging suggests the possibility of calyceal rupture and warrants further investigation. A CT scan with contrast can confirm the presence of contrast leakage and/or urinoma formation. Additionally, a contrast-enhanced CT with a delayed phase protocol offers higher sensitivity by revealing any delayed contrast secretion at the site of obstruction. It also aids in distinguishing between small kidney stones and vascular calcifications. Regardless of the size of the stone, it is advisable to consult a urologist for further management.

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Section V

E-learning: Links of YouTube teaching videos and About Us.

Hyperlinks of academic material published on YouTube by Calcutta Academy of Radiology

1	Imaging of acute Pancreatitis—Dr. Anirudh Kohli
2	USG of rotator cuff - Dr. P. K. Srivastava
3	PET CT Physics - Dr. Sikandar Sk.
4	PET CT in Neurology - Dr. Sikandar Sk.
5	CAR - Case of the week - Case 1 - Megalencephalic leukoencephalopathy with subcortical cysts. - Dr. Viral Parekh
6	CAR - Case of the week - Case 2 - Adenocarcinoma of terminal ileum - Dr. Viral Parekh
7	CAR - Case of the week - Case 3 - Stener lesion - Dr. Nivedita Chakraborty
8	CAR - Case of the week - Case 4 - Anterior shoulder dislocation - Dr. Nivedita Chakraborty
9	CAR - Case of the week - Case 5 - Secondary intracranial hypotension. - Dr. Viral Parekh
10	CAR - Case of the week - Case 6 - Intramyocardial Dissection - Dr. Ritu Agarwal
11	CAR - Case of the week - Case 7 - Radiation Necrosis and BT - RADS - Dr. Nivedita Chakraborty
12	CAR - Case of the week - Case 8 - Undisplaced right ulnar styloid base fracture - Dr. Nivedita Chakraborty
13	CAR - Case of the week - Case 9 - Hypoglycaemic encephalopathy. - Dr. Viral Parekh
14	CAR - Case of the week - Case 10 - Myocardial annular dysjunction - Dr. Ritu Agarwal
15	CAR - Tribute to Wilhelm Conrad Roentgen - Immortal Roentgen.
16	CAR - Case of the week - Case 11 - Dacryocystocele with anatomy of Nasolacrimal apparatus. - Dr. Viral Parekh
17	CAR - Case of the week - Case 12 - Tubercular osteomyelitis - Dr. Nivedita Chakraborty
18	CAR - Case of the week - Case 13 - Marchiafava Bignami disease - Dr. Viral Parekh
19	CAR - Case of the week - Case 14 - Parosteoal Sarcoma - Dr. Nivedita Chakraborty
20	CAR - Case of the week—Case 15 - Adrenal haemangioma - Dr. Viral Parekh

Hyperlinks of academic material published on YouTube by Calcutta Academy of Radiology

21	CAR - Case of the week - Case 16 Patellar GCT - Dr. Nivedita Chakrabarty
22	CAR - Case of the week - Case 17 - MEN Syndrome - Dr. Sayan Sarkar
23	CAR - Case of the week - Case 18 - Langerhans cell histiocytosis - Dr. Sayan Sarkar
24	CAR - Case of the week—Case 19 - Hepatic angiomyolipoma - Dr. Viral Parekh.
25	CAR– Case of the week - Case 20 - Cirsoid aneurysm - Dr. Viral Parekh
26	CAR CME - Heart Anatomy
27	CAR– Case of the week - Case 21 - Pancreatic metastases - Dr. Viral Parekh
28	CAR - Case of the week - Case 22 - Intrapulmonary teratoma - Dr. M. Bhattacharya
29	CAR– Case of the week - Case 23 - Gall stone ileus - Dr. Viral Parekh

We have just unveiled our website cal-academy-radiology.in dedicated to sharing our educational resources. Be sure to explore the site and stay informed. Additionally, you can connect with us on WhatsApp, Telegram, and YouTube. Don't hesitate to share your own cases for a chance to be showcased on our channel.

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A Platform For Radiology Education & Interaction

The Calcutta Academy of Radiology was founded on the 8th of November 2019, the International Day of Radiology, specifically, with the aim of promoting Radiology education for both Residents and practicing Radiologists.

Since then, we have been actively engaging on WhatsApp and Telegram, where members from around the globe have participated in discussions on thousands of cases, allowing us to share experiences and support one another. These social media platforms have proven to be invaluable learning tools.

In February 2020, we successfully organized a half-day CME focusing on GI Radiology. Subsequently, another CME on Neuroradiology was held in July 2022. We have intentions to host more CME programs in the future.

Furthermore, our presence on YouTube enables us to regularly share teaching videos, contributing to the dissemination of Radiology knowledge as widely as possible.

Next issue will be published in August 2024

We release our periodical every two months, so the next edition of "Waves" is set for August 2024. We are in search of compelling cases and original content from our Radiology colleagues, which will be selected based on their quality. We invite all of you to contribute to this publication. Please send your material in Word format with high-resolution images, as well as your photo and workplace details and email address. The deadline for submissions is July 15th, 2024. You can email the Word file to the provided address or share it via WhatsApp using the three listed phone numbers.

On our YouTube channel, we regularly showcase new cases and have received positive feedback on our educational videos. We kindly request all Radiologists to share their educational videos with us. If they contain valuable content, we will definitely feature them on our channel. Our Telegram group currently lacks academic engagement compared to our WhatsApp group. Therefore, we urge all of you to join our Telegram group. Telegram can accommodate up to 200,000 members, so by posting our study material there, we can reach and benefit a larger audience. Stay safe and take care, my friends. We look forward to seeing all of you in the upcoming issue of Waves.

Best regards,

Anup Sadhu, Bijon Kundu, and Viral Parekh.

We appreciate all the contributors who have shared their experiences and literature with us, ultimately assisting the Radiological community.