



CALCUTTA ACADEMY OF RADIOLOGY

CALCUTTA ACADEMY OF RADIOLOGY NEWSLETTER,
VOLUME III, ISSUE IV, AUGUST 2022

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New Challenges - Viral Parekh

Dear friends, colleagues, juniors & seniors; we are happy to publish 15th. Edition of CAR newsletter on this auspicious day of 75th. Anniversary of India's independence. A very warm Jai Hind to all of you from team CAR.

Recently we are seeing a spurt of cases of fever due to various reasons in Kolkata. It would not be an exaggeration that hospitals overflowing with cases of pyrexia due to various reasons. There are various causes of these fever like simple flu, Swine flu, Vivax and Falciparum malaria, COVID and Dengue. Most of the patients do not have any radiologically significant findings. But, few patients can have complications and have positive radiology findings. As a Radiologist, we should be aware of these radiological changes.

In many cases of fever, we have found that fever is due to Swine Flu. Just like COVID, a RT-PCR of throat swab is done to confirm the disease. In severe cases CT findings like Ground-glass attenuation: ~70% region (most common), Bronchial wall thickening: ~45% (second most common), Confluent consolidation: ~30%, Pleural effusion: ~30%, Atelectatic changes: ~25% and pneumothorax/pneumomediastinum are seen.

In most of the cases of either vivax or falciparum malaria, we do not see much radiological changes. But in severe cases one can see Splenomegaly, and in more severe cases we see splenic infarcts also. One can have pulmonary and cerebral manifestations as well in malaria. Pulmonary manifestations include pneumonia, pulmonary edema and pleural effusion. Cerebral manifestations include cerebral infarcts and cerebral edema.

In severe cases of Dengue one can see CNS manifestations like Dengue encephalitis, which is a rare condition resulting from direct involvement of the central nervous system by the dengue virus. Intraparenchymal cerebral haemorrhages are also seen in few cases. Other findings of Dengue are hepatomegaly, splenomegaly, pleural effusions (right-sided more common than bilateral or left-sided), diffuse edema of the gallbladder wall and ascites.

According to latest news as reported in newspapers, there are new cases of polio in USA. Langya Henipavirus is the latest in a series of new infectious viruses to be detected in China, this time in the town of Langya in eastern Shandong province with 35 infections identified so far. Also called LayV, it is related to the Nipah virus which claimed few lives in Kerala in 2018. While its origins are unclear, LayV transmits from animals to humans (zoonotic). With no reported human-to-human transmission, it is not as contagious as coronavirus. Preliminary studies of 26 patients with only LayV infection have shown fever, fatigue, and cough as the immediate symptoms. An estimated 35% of patients showed headaches, vomiting, and impaired liver function. Low platelet count was also noted among some.

So, with recurrence of known diseases and appearances of new disease will keep the medical fraternity on toes and we must update from time to time to keep pace with new developments.

This issue would not have been possible without the help of Dr. Bhavin Jankharia and Dr. Mayukh Bhattacharya. I sincerely thank them.

WISH YOU ALL A VERY HAPPY 76TH. INDEPENDENCE DAY



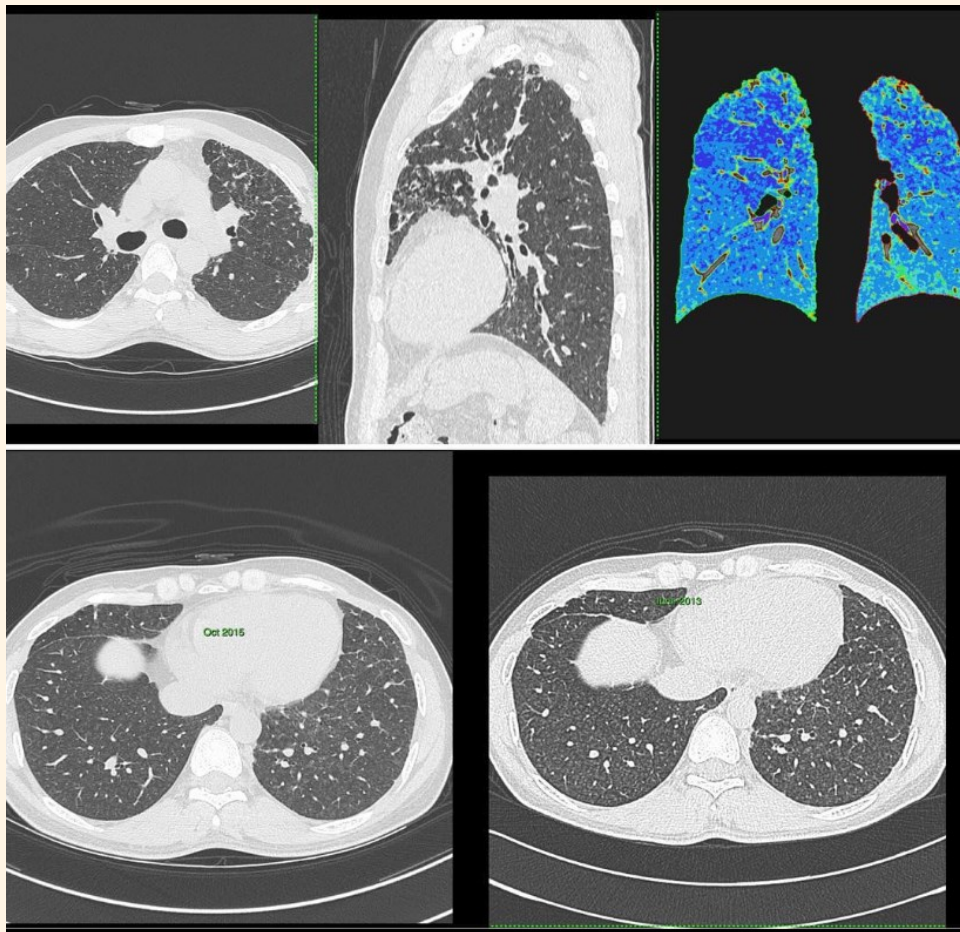
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Dr. Bhavin Jankharia needs no introduction to the Radiology fraternity. As you all know he is a renowned Radiologist and academician and has contributed immensely in propagating Radiology education. Presently, he is a Consultant Radiologist at Picture This by Jankharia. He is also a Trustee of Radiology Education Foundation. He has consented to share some of his work with us, which will help all the Residents as well as practicing Radiologists. Here is some information about him in brief.

- He has written 5 books, 35 chapters, 57 articles (PubMed listed)
- Presented 32 posters
- More than 1500 invited lectures over 27 years
- Editor-in-Chief, Indian Journal of Radiology & Imaging (2007-2012)
- Latest Book (2019): Computed Tomography of Interstitial Lung Diseases
- Hon. Visiting Consultant – Radiology – Tata Medical Centre, Kolkata

Case I - Fibrotic hypersensitivity pneumonitis



Fibrotic hypersensitivity pneumonitis. Note the upper lobe predominance and the ill defined centrilobular nodules that remain persistent. No change over 2 years. The colour map is interesting.

Case II - The Eye Does not See What the Mind Does not Know



This is a 69 years old lady with pulmonary hypertension. Her lung window images from a CT pulmonary angiogram shows a mosaic perfusion pattern that would suggest chronic pulmonary thrombo-embolism. The accompanying CT PA did not show thrombi. The MPA was dilated suggesting pulmonary hypertension and she was labeled as idiopathic PH. The images came for an opinion. A golden rule in patients with PH who get a contrast CT done is to trace the vessels. When we did that, we found a cause. The right superior pulmonary vein drains into the SVC anomalously with a sinus venosus ASD and resultant PH with RA and RV dilatation.

She has lived 69 years with this. I wonder if any surgery at this stage is worth the effort. That will be an interesting conundrum.

Case III - Mediastinal Fibrosis likely Tuberculous



This young lady with fever and cough presented with a mass involving the SVC encasing it in July (right images axial and coronal). This soft tissue showed high density on plain scans. There was no other pathology. Based on clinical parameters she was put on anti-tuberculous treatment and steroids. She is now asymptomatic. The follow-up scan done yesterday (left images axial and coronal) show partial regression and response.

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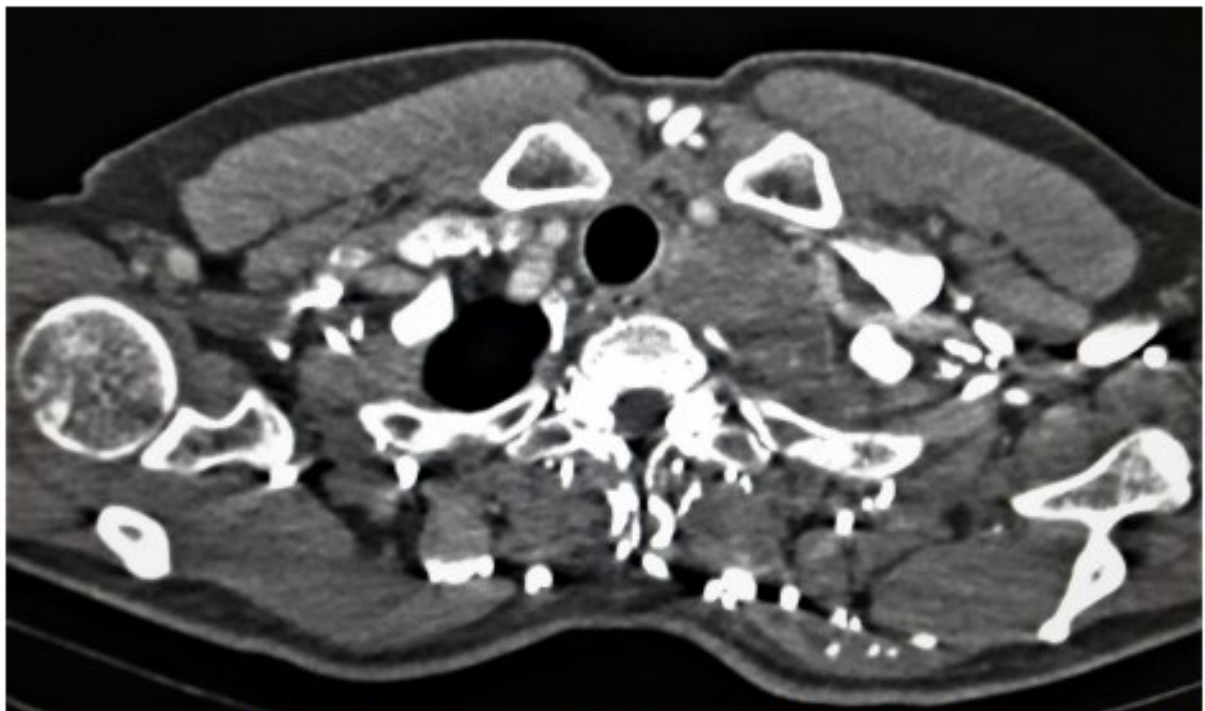


Dr. Mayukh Bhattacharya,
MBBS, MD
Consultant Radiologist

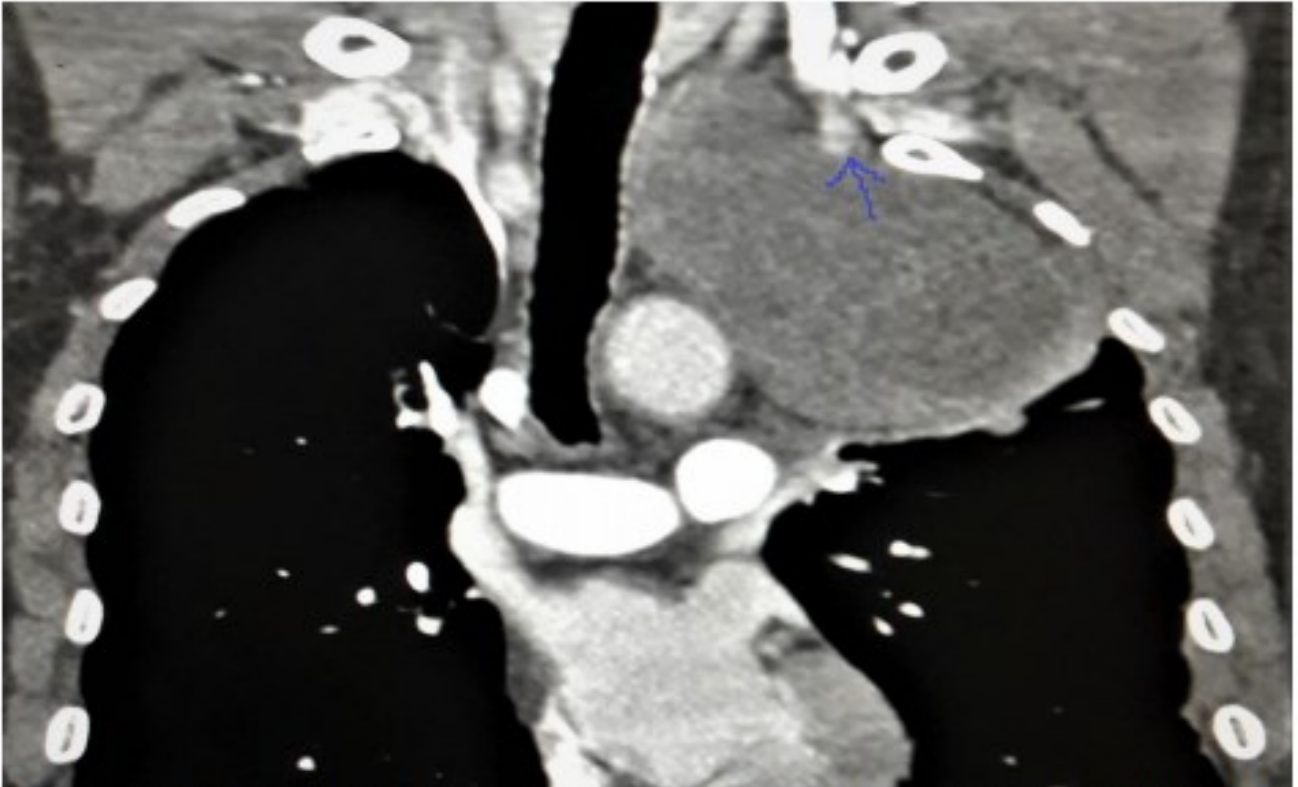
VANISHING BONE METASTASES: A LESS RECOGNISED RADIOLOGIC DIAGNOSIS

In the age of triple phase multi detector multi slice computed tomography, it is not infrequent to encounter cases of vanishing metastases in the axial skeleton. This entity constitutes pseudopathological vertebral body enhancement in contrast enhanced CT scans of patients with thoracic vein obstruction—particularly SVC and brachiocephalic veins resulting from compression / thrombosis due to malignant neoplasms. Less commonly, benign iatrogenic causes like placement of central venous catheters, TPN etc. may also lead to this entity secondary to thrombus in vessel. The radiologist may inadvertently report these enhancing vertebral foci as sclerotic metastasis leading to unnecessary investigations viz. PET-CT and more unfortunately bone biopsy.

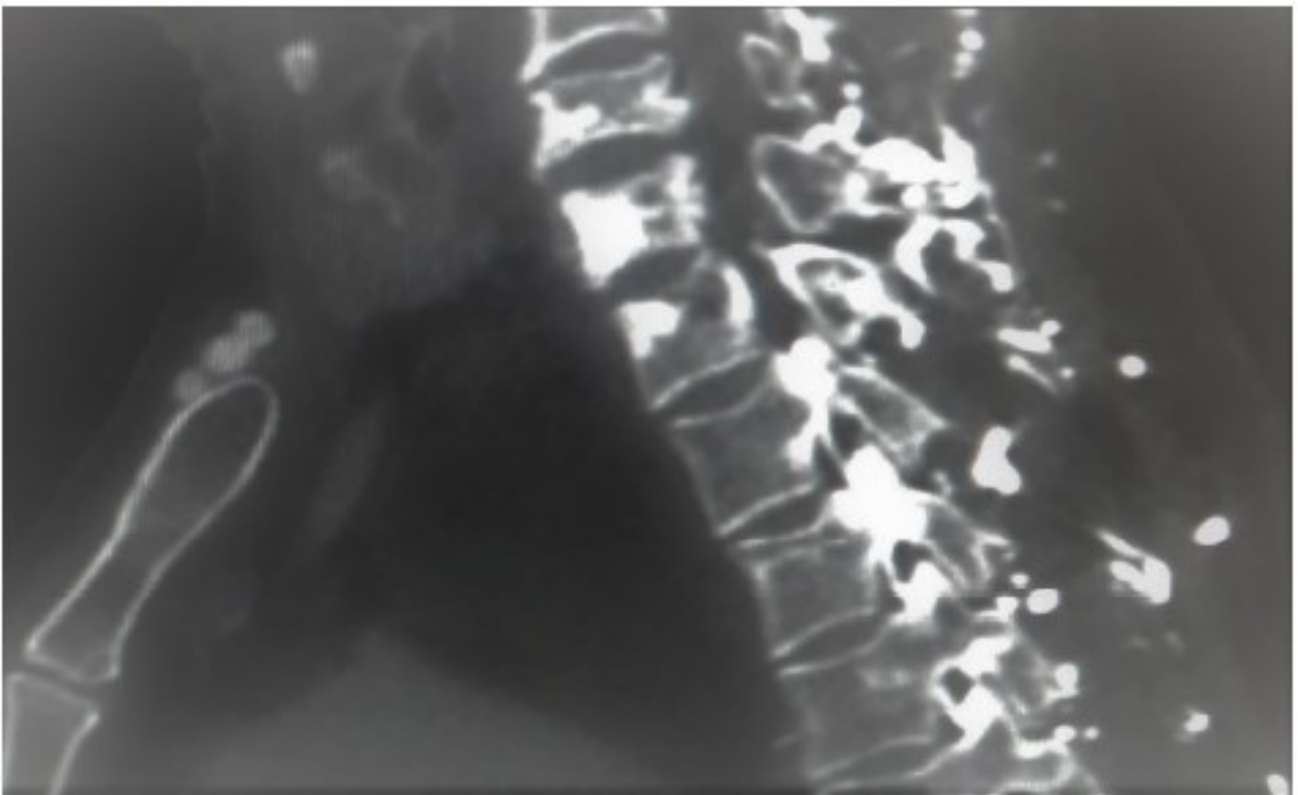
We reported a case of bronchogenic carcinoma in a 60 year old patient in upper lobe of left lung showing enhancing vertebral body foci in multiple cervicodorsal segments in all post contrast CT study phases. CT also showed gross compression of left brachiocephalic vein by the mass and encasement. Precontrast CT failed to demonstrate any sclerotic deposits in the pseudoenhancing vertebrae. Further delayed post contrast CT showed fading areas of increased attenuation in bone and loss of sharp contours of contrast enhancing foci. These findings were consistent with the diagnosis of vanishing bone metastasis as reported in literature.



CECT image showing left upper thoracic mass and multiple venous collaterals involving external vertebral venous plexus around posterior elements and intercostal veins.

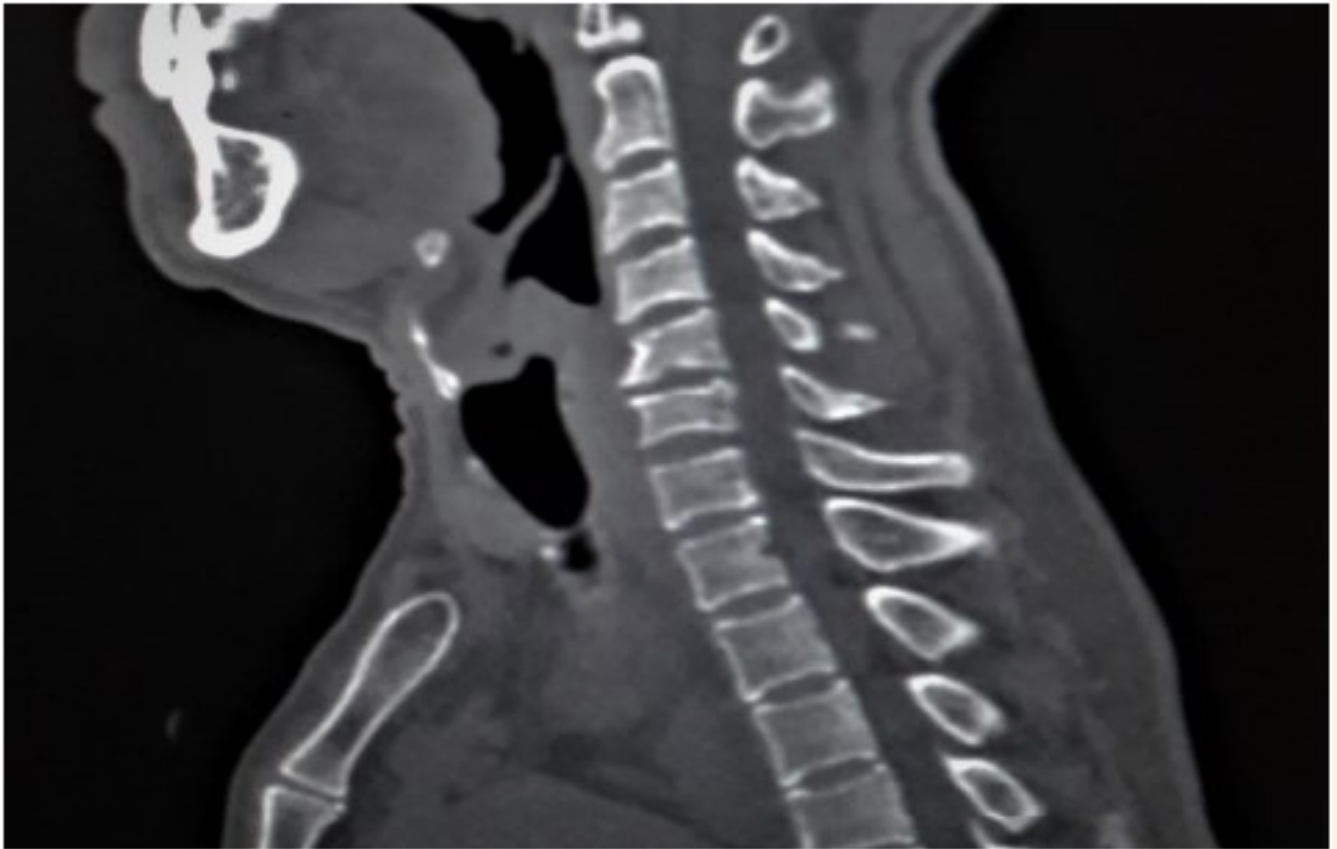


Post contrast CT showing large bronchogenic carcinoma in left upper lobe encasing left brachiocephalic vein (blue arrow).



Post contrast bone window settings showing vertebral pseudometastatic densely enhancing foci.

Dr. Mayukh Bhattacharya, MD



Plain CT study bone window image showing normal attenuation of corresponding cervicodorsal vertebrae without any sclerotic metastases.

DISCUSSION

The pathophysiology of this interesting phenomenon can be explained by the vertebral venous collateral pathways that divert venous blood from the obstructed or thrombosed thoracic veins to IVC. Although more commonly described in patients with thrombosis, as a result of malignant tumor in 80% of cases,¹ VBM may also occur without thrombosis but with extrinsic compression of the brachiocephalic vein between the sternum and the aortic arch.² Reflux of contrast medium in the vertebral venous plexus occurs most commonly in the basivertebral vein. The accumulation of iodinated contrast within the bone depends on the site of injection, the infusion rate of contrast medium, and the level of the obstruction.^{3,4}

Intravenous contrast injected in the arm ipsilateral to venous site of obstruction and higher rates of infusion by auto injector may lead to more common occurrence of vertebral body enhancement due to increased pressure in the collateral venous pathways. Obstruction of brachiocephalic veins or SVC lead to VBM in lower cervical and upper thoracic vertebrae, while hemiazygos / azygos venous occlusion result in pseudometastasis appearance of lower thoracic vertebral bodies.

Dr. Mayukh Bhattacharya, MD

Dr. Mayukh Bhattacharya, MD

CONCLUSION

Vanishing bone metastasis is an important but less recognized pitfall in CECT interpretation of patients with thrombosis or obstruction of thoracic veins not necessarily with underlying neoplastic aetiology. Comparison with non enhanced CT scan and identifying thoracic venous flow compromise with typical vascular phenomenon in vertebral venous system as well as presence of collateral vessels in perivertebral soft tissues serve as the problem solving tools in unravelling this imaging enigma.

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BACK TO BASICS

MAGIC ANGLE

The magic angle is an MRI artifact which occurs on sequences with a short TE (less than 32ms; T1W sequences, PD sequences and gradient echo sequences).

It is confined to regions of tightly bound collagen at 54.74° from the main magnetic field (B_0), and appears hyperintense, thus potentially being mistaken for tendinopathy.

In tightly bound collagen, water molecules are restricted usually causing very short T2 times, accounting for the lack of signal.

Magic angle

Artifact

When molecules lie at 54.74° , there is lengthening of T2 times with corresponding increase in signal. Thus, in short TE sequences, the T2 signal does not decay significantly before the scanner picks up the signal. On the other hand, in long TE sequences (like T2WI), by the time the scanner picks up the signal, T2 signal has already decayed.

The reason for this change is due to quantum mechanics: in the set of equations that describe the interaction of spins (their Hamiltonian), there are several terms that are orientation dependent. Normally, these orientations are averaged over as protons tumble around thermally, but in sites with long-range order these terms can be important. In the case of structured collagen, lots of water binds to the outside of the protein, and therefore exhibits an orientation-dependent effect.

Magic angle

Typical sites include:

- Proximal part of the posterior cruciate ligament (PCL)
- Infrapatellar tendon at the tibial insertion
- Peroneal tendons as they hook around the lateral malleolus
- Cartilage can be affected, e.g., femoral condyles
- Supraspinatus tendon
- Triangular fibrocartilage complex (if the patient is imaged with the arm elevated)

It appears that at 3.0T the effects are reduced.

Other non-pathologic causes of high signal within tendons include near tendon insertions, and/or where the tendon normally fans out or merges with other tendons.

Remedy

Tends to occur only on short TE sequences (e.g., T1, GRE, PD), sequences with a longer TE (e.g., T2 including FSE T2) can be used to avoid this artifact.

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2nd. CME OF Calcutta Academy of Radiology was held recently in Auditorium of Central Hospital, SE Railway, Garden Reach Kolkata on 31st. July, 2022. Here are the glimpses of the CME.



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Dr. Sumita Kundu



Dr. Sukalyan Purakayastha



Dr. Subrata Nag



Dr. Gobinda Pramanik



Dr. Nirmalya Roy

We are thankful to

- 1. Our Guest Speakers:**
Dr. Sumita Kundu
Dr. Sukalyan Purakayastha
Dr. Nirmalya Roy
Dr. Gobinda Pramanik
Dr. Subrata Nag
- 2. Dr. Anjana Malhotra and Dr. Prasanta Majumdar of Central Hospital for providing all the support.**
- 3. Mr. Shantanu Mukherjee of Gentek Lifesciences
Mr. Sharad Newar of Anita Medical Systems.
Mr. Debasish Sengupta of Midnapore Scan Centre.**



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

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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 - Cirroid aneurysm - Dr. Viral Parekh
26	CAR CME - Heart Anatomy

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and various other education materials. Please follow the
blog.**

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**A Platform For Radiology
Education & Interaction**

Calcutta Academy of Radiology was formed on international day of Radiology in 2019, that is on 8th. November, 2019 to promote Radiology education, keeping in mind Residents as well practicing Radiologists.

Since then we are on WhatsApp and Telegram, where thousands of cases have been discussed by members from all over the world and in the process we are sharing our experiences and helping each other. These social media platforms have turned out to be great learning tools.

We had organized a half day CME also on GI Radiology in February, 2020. Another CME on Neuroradiology was organized in July 2022, We have plans to organize more such CME programmes in future .

We are on YouTube also where we regularly post teaching videos and in the process try to propagate Radiology as much as possible.



Next issue will be published in October, 2022

We will be bringing out such Newsletters with a frequency of one issue every two months. So, next issue will be published in October, 2022.

We are hereby inviting good interesting cases and original work from our fellow Radiologists, which will be published on merit basis.

So, I request all of you to contribute to this Newsletter. Please send your material in Word format with good quality images. Please send your photograph and details of your place of work with email address also.

Your material should reach us by 15th. Of September, 2022. You can send the word file to our abovementioned email address or you can WhatsApp it to above-mentioned three phone numbers.

On our YouTube channel, we are presenting a new case every week and there is good response to such teaching videos. I hereby request all Radiologists to share their teaching videos with us and if they contain good teaching material, we will surely publish it on our channel. So friends, during this trying time , stay away from depression by engaging yourself in academic activities.

Our Telegram group is lagging behind in academic activities as compared to two WhatsApp groups, so I request all of

you to join our Telegram group.

Telegram can add up to whopping 200,000 members. So, if we post our study material there; it will reach to and benefit huge number of members.

So friends, take care and be safe.

So, see you all in next issue of CAR newsletter.

So long,

Anup Sadhu, Bijon Kundu and Viral Parekh.

