

**"A RARE ENTITY"  
MASQUERADING AS  
MASSIVE  
UNILATERAL  
PLEURAL EFFUSION**



**AUTHORS:**

**DR. PREETHI PHILOMINA** (PRESENTING AUTHOR),

**DR. PRAMOD PHILIP** (PROFESSOR),

DEPT. OF RADIODIAGNOSIS,

**GSL MEDICAL COLLEGE, INDIA**

# OUTLINE

---

ABSTRACT

---

LEARNING OBJECTIVES

---

INTRODUCTION

---

CASE SUMMARY

---

IMAGES

---

DISCUSSION

---

CONCLUSION

---

REFERENCES

- Common causes of **UNILATERAL PLEURAL EFFUSION** are Tuberculosis in endemic areas, trauma and malignancy. But here this case presented with a different aetiology, which is a rare finding. It is because of this rarity and unusual presentation that this case has been reported.
- Very few such cases have been reported in literature till date. We report a case of a 42year old female whose chief complaint was progressive dyspnoea for 2 weeks. Chest radiograph and plain CT showed **MASSIVE UNILATERAL PLEURAL EFFUSION**. Dynamic study of Contrast enhanced chest CT scan featured a characteristic centripetally enhancing pleural based mass in right apical region.
- This **rare cause** of the case highlights the **importance of updating the checklist** or differential diagnoses of causes of unilateral massive or recurrent pleural effusions in reporting , and the importance of diagnosis which is necessary for prompt surgical intervention and preventing the possibilities of further complications, invasive investigations. **Role of Imaging**, management, and follow-up, apart from diagnosis, is also discussed as a holistic approach.



# ABSTRACT & KEYWORDS

## LEARNING OBJECTIVES

- Awareness of a rare entity as a potential differential diagnosis.
- Recognising typical dynamic CT features
- Imaging importance



# INTRODUCTION



WHAT

IS THE  
CASE



WHY

IS THE CASE  
SPECIAL /  
IMPORTANT  
TO BE HERE



HOW

DID WE  
WORK UP  
THE CASE



WHERE

TO  
FOCUS



WHEN

TO SUSPECT

## WHAT

The case is about a female with shortness of breath for 2 weeks.

Radiograph reveals massive right pleural effusion, with the etiology being worked up.

## WHERE

Typical dynamic features of characteristic contrast enhancement

## WHY

Common causes of Unilateral pleural effusion are Tuberculosis in endemic areas, trauma and malignancy.

But here this case presented with a different aetiology, which is a rare finding.

It is because of this **rarity and unusual presentation** that this case has been reported

## HOW

Radiological investigations - radiograph, plain CT, contrast enhanced CT

BIOCHEMICAL investigations- laboratory reports

## WHEN

Any pleural effusion cases where common findings are all ruled out and still etiology remains a mystery



# CASE SUMMARY

- A 42year old Female
- No significant past history
- Chief complaint of gradually progressive **dyspnoea** for two weeks.
- On physical examination, dull note was noted in almost entire right hemithorax.



# INVESTIGATION WORKUP

✓ PLAIN CHEST RADIOGRAPH

✓ CT CHEST

✓ CECT CHEST

- PLAIN CHEST RADIOGRAPH -

Near complete whiteout/opacification of right hemithorax with collapse/consolidation of right lung and mediastinal shift to opposite side suggesting Massive right pleural effusion

- PLEURAL FLUID CYTOLOGY -

Negative for tuberculous and other infectious and malignant aetiology.

- PLAIN CT

Massive right pleural effusion

- CECT

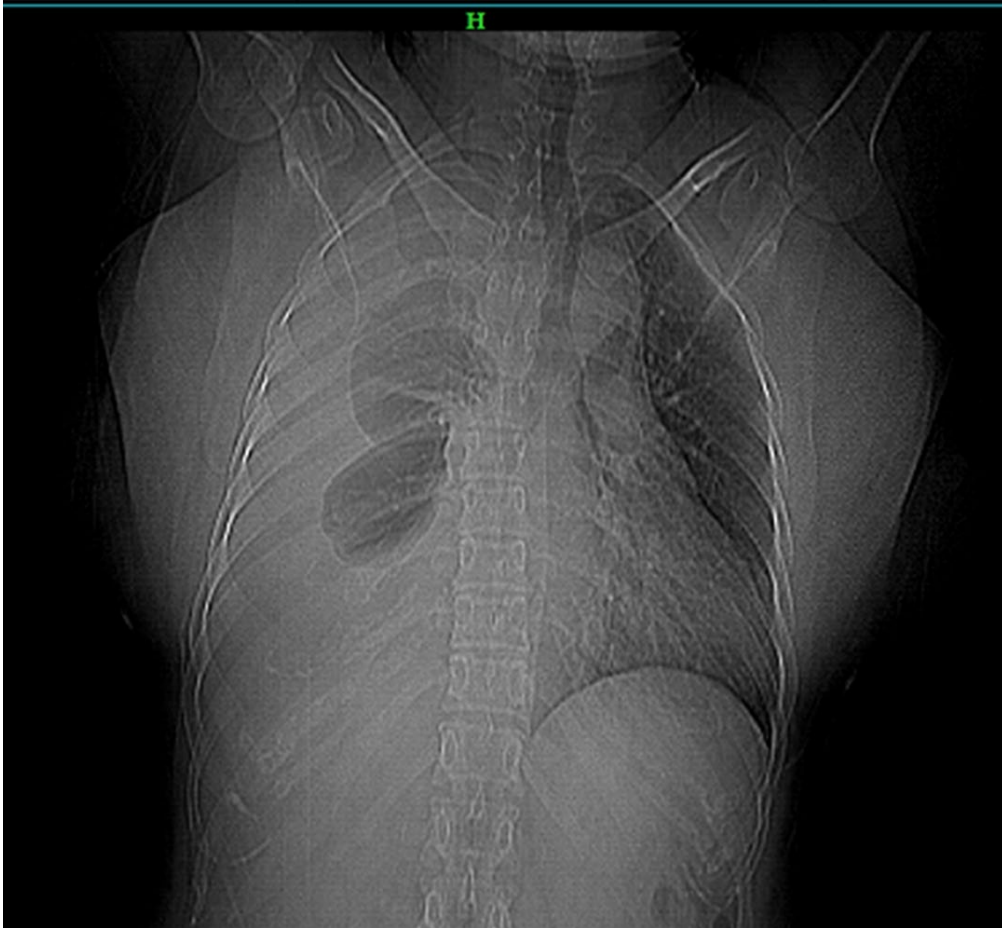
Pleural Mass with characteristic pattern of enhancement





# IMAGES

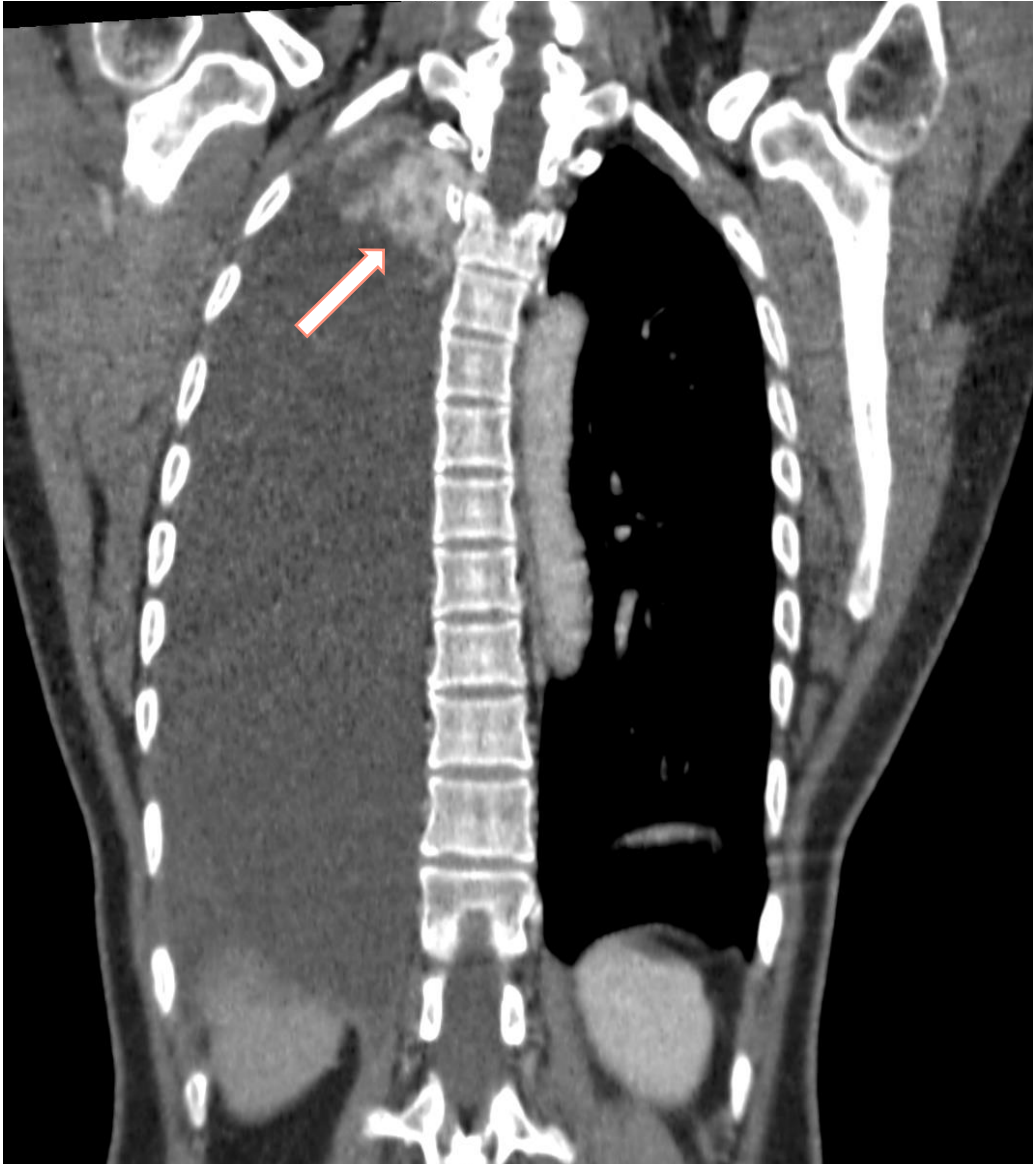
- Areas to focus
- Points to remember



SCANOGRAM



CORONAL POST CONTRAST CT SHOWING SIGNIFICANT RIGHT PLEURAL EFFUSION (RED ARROW) WITH COLLAPSE CONSOLIDATION OF THE RIGHT LUNG (PINK ARROW)



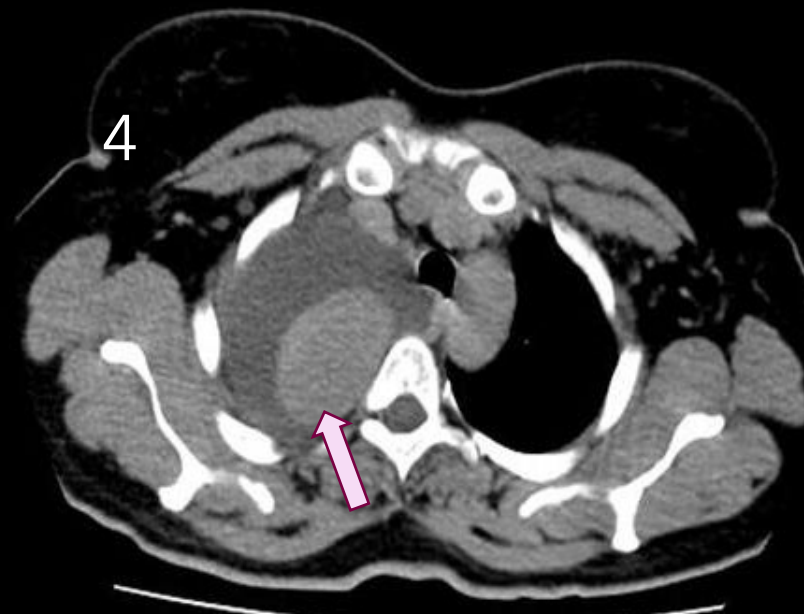
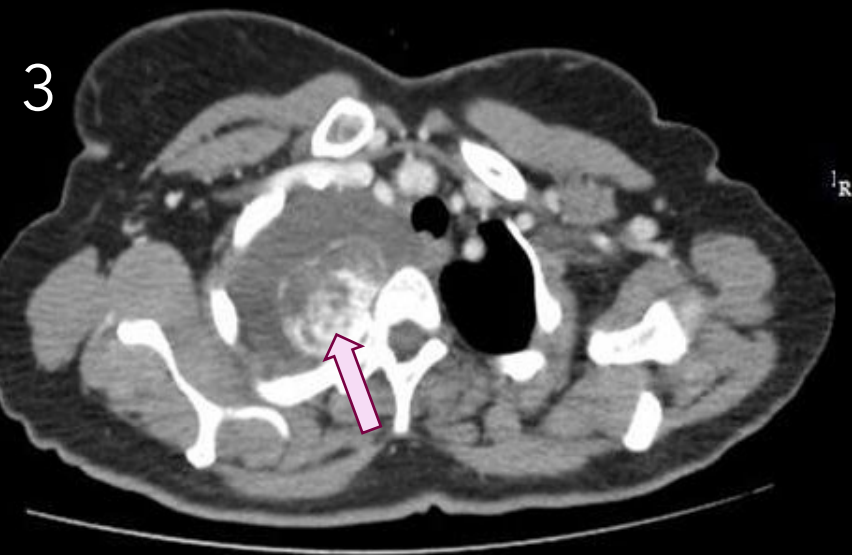
CORONAL



SAGITTAL

**POST  
CONTRAST  
ARTERIAL,  
VENOUS**

Proc



# AXIAL CT CHEST

1. Plain/precontrast
2. Arterial
3. Venous
4. Delayed

**A broad based iso-hypodense mass measuring 5.2 X 3.3 cm in right apical region abutting the pleura posteriorly with characteristic pattern of enhancement. In **arterial phase**, irregular peripheral contrast puddling with gradual centripetal filling up on the **venous phase** and homogenous contrast opacification in **delayed phase**. No calcifications were noted.**



# DIAGNOSIS

Based on characteristic centripetal enhancement

➤ HEMANGIOMA

Based on location

➤ PLEURAL HEMANGIOMA

Right apical region pleural hemangioma with massive right pleural effusion with collapse-consolidation of ipsilateral lung and mediastinal shift.

**Biopsy /invasive investigation was thus contraindicated in strong suspicion of hemangioma as it would further precipitate bleeding and thereby exacerbating the effusion or turning out to be lethal.**



## DDs:

- Solitary fibrous tumour,
- Lipoma,
- Sclerosing pulmonary hemangioma,
- Schwannoma.

Pleural hemangiomas are not to be confused with sclerosing pulmonary hemangiomas which present with cough chest pain or haemoptysis found predominantly in young females and have a malignant potential.[12]

# DISCUSSION

- PLEURAL HEMANGIOMA
- INCIDENCE-RARITY
- PATHOPHYSIOLOGY
- PRESENTATION
- DIAGNOSTIC WORK UP
- MANAGEMENT

- ❑ A hemangioma is a benign tumour which can occur externally on skin and also in internal organs like liver, bone, lung, pleura.
- ❑ **Incidence -**  
**Pleural** hemangioma is a rare entity with its incidence being mostly below 35 years of age with no gender predilection(5)

## □ PATHOPHYSIOLOGY

associated with an imbalance of proangiogenic factors and angiogenesis inhibitors (6)

## □ PRESENTATION

- Incidental findings
- from mild symptoms of cough, chest-pain, to a diagnostic dilemma with pleural effusions and become evident after the explorative CECT or thoracoscopy.[ 2]



- With the advent of technology, Diagnosis mainly depends on Imaging, CECT and MRI being the investigations of choice[7,8].
- **CECT FEATURES:** Morphology, location, extent, and pattern of enhancement [4].

In the **arterial phase** , peripheral, globular heterogenous enhancement is seen. In the **delayed phase**, centripetal enhancement progressing to uniform filling with a low attenuation area in the central portion can be observed.

- **MRI FEATURES[9]** : On T2-weighted images, hemangiomas generally appear as multiple high-signal-intensity lobules that resemble a bunch of grapes due to cavernous or cystic vascular spaces containing stagnant blood. Fluid-fluid levels can also be noted within these spaces. Punctate or reticular low-signal-intensity areas may be present, representing fibrous tissue, fast flow within vessels, or foci of calcification. Areas of thrombosis appear as circular low-signal-intensity areas at MR imaging, similar to phleboliths where conventional radiography or computed tomography (CT) is helpful in diagnosing soft-tissue hemangioma. On T1-weighted MR images, the signal intensity of these lesions is intermediate between that of muscle and fat.
- **FDG-PET** : Sakurai *et al.* described FDG accumulation in thoracic hemangioma as low and similar to extremity hemangioma and is not recommended[10].
- **HISTOPATHOLOGY (EXCISION BIOPSY)** remains gold standard for confirmation as ever.
- **IMMUNOHISTOCHEMISTRY** shows CD4 positivity for endothelial cells[11].

# DIAGNOSTIC WORKUP

- Dependent on its **location, size, depth of infiltration, age of the patient**

#### NON-SURGICAL OPTIONS –

- Radiotherapy,
- Dry ice cryotherapy,
- Steroid treatment,
- Sclerosing agent injection.
- Vascular ligation, vascular embolization, and ultimately
- Surgical excision are considered depending on the above mentioned factors.[13,14]

- Curable with resection or embolization.[15]
- Cyclophosphamide is used if there is no response to steroids /radiation therapy[16].

#### **Role of radiologist**

- Imaging findings suggestive of a **benign tumor and clinical features like slow growth and lack of pain** support a **conservative management strategy**[17].
- Imaging would also play a role in **Follow-up** to rule out any residual tumour/ recurrence of effusion after management.

# MANAGEMENT

# Conclusion

THE EYES CANNOT SEE  
WHAT THE MIND DOESN'T  
KNOW

- ✓ Awareness of this possibility is important to reduce the time-to-diagnose and aid in proper management, though rare in its incidence in this location.
- ✓ An extrapulmonary mass with benign features and typical centripetal enhancement pattern on contrast CT, should raise a suspicion of PLEURAL HEMANGIOMA to be added in the differential diagnoses.
- ✓ When imaging features are suggestive of pleural hemangioma, Preoperative biopsy is not recommended as it may lead to torrential bleeding.

# REFERENCES

1. Avila ED, Molon RS, Conte Neto N, Gabrielli MA, Hochuli- Vieira E. Lip Cavernous hemangioma in a young child. *Braz Dent J*. 2010;21:370–4. [[PubMed](#)] [[Google Scholar](#)]
2. Nanaware S, Gothi D, Joshi JM. Hemorrhagic pleural effusion due to pleural hemangioma. *J Assoc Physicians India* 2003;51:623-5.
3. Sindhvani G, Khanduri R, Nadia S, Jethani V. Pleural haemangioma: A rare cause of recurrent pleural effusion. *Respir Med Case Rep* 2016;17:24-6.
4. Dynamic CT Features of a Hemangioma Originating from the Parietal Pleura: A Case Report, Won Kyung Kim, MD,<sup>1</sup> Jai Soung Park, MD,<sup>1</sup> Sang Hyun Paik, MD,<sup>1</sup> Jang Gyu Cha, MD,<sup>1</sup> Hwa Kyoons Shin, MD,<sup>2</sup> and Eun Suk Koh, MD, *J Korean Soc Radiol*. 2012 Jun;66(6):535-538. English. Published online Jun 30, 2012. <https://doi.org/10.3348/jksr.2012.66.6.535>
5. Davis JM, Mark GJ, Greene R. Benign blood vascular tumors of the mediastinum. Report of four cases and review of the literature. *Radiology* 1978;126:581-7.
6. Atalay M., Gordillo G., Roy S. Anti-angiogenic property of edible berry in a model of hemangioma. *FEBS Lett*. 2003;544:252–257. [[PubMed](#)] [[Google Scholar](#)]
7. Kuo Y.T., Lin M.B., Sheu R.S. Imaging diagnosis of cavernous hemangioma of the rib one case report and review of the literature. *Gaoxiong Yi XueKeXueZa Zhi*. 1994;10:469–473. [[PubMed](#)] [[Google Scholar](#)]
8. Olsen K.I., Stacy G.S., Montag A. Soft-tissue cavernous hemangioma. *Radiographics*. 2004;24:849–854. [[PubMed](#)] [[Google Scholar](#)]
9. Vilanova JC, Barcelo J, Smirniotopoulos JG, et al. (2004) Hemangioma from head to toe: MR imaging with pathologic correlation. *Radiographics* 24:367–385 [PubMed](#) [Google Scholar](#)
10. Sakurai K, Hara M, Ozawa Y, Nakagawa M, Shibamoto Y. Thoracic hemangiomas: imaging via CT, MR, and PET along with pathologic correlation. *J Thorac Imaging* 2008;23:114-20
11. Chatterjee, Debajyoti, and Rajsmitta Bhattacharjee. “Immunohistochemistry in Dermatopathology and its Relevance in Clinical Practice.” *Indian dermatology online journal* vol. 9,4 (2018): 234-244. doi:10.4103/idoj.IDOJ\_8\_18
12. Katzenstein AL, Gmelich J, Carrington C. Sclerosing Hemangiomas of the lung. A clinicopathologic study of 51 cases. *Am J Surg Pathol* 1980;4:343-56
13. Ogino I., Torikai K., Kobayasi S. Radiation therapy for life- or function-threatening infant hemangioma. *Radiology*. 2001;218:834–839. [[PubMed](#)] [[Google Scholar](#)]
14. Hasan Q., Tan S.T., Gush J. Steroid therapy of a proliferating hemangioma: histochemical and molecular changes. *Pediatrics*. 2000;105:117–120. [[PubMed](#)] [[Google Scholar](#)]
15. Cotran RS, Kumar V, Robbins SL. Blood vessels, Freidrich J Schoen and Ramzi S Cotran, 5th edition; Robbins Pathologic Basis of Disease. Philadelphia WB Saunders. 1994;507-32
16. Hurvitz CH, Greenberg SH, Song CH, Gans SL. Hemangiomas of the pleura with hemorrhage and disseminated intravascular coagulation. *J Pediatr Surg* 1982;17:73-5
17. Tateishi U, Gladish GW, Kusumoto M, Hasegawa T, Yokoyama R, Tsuchiya R, et al. Chest wall tumors: radiologic findings and pathologic correlation: part 1. Benign tumors. *Radiographics* 2003;23:1477-1490



A close-up photograph of two people in business attire shaking hands. The person on the left is wearing a dark blue suit jacket, and the person on the right is wearing a light blue dress shirt. The background is blurred, showing what appears to be a modern office or meeting room. The text 'THANK YOU' is overlaid in a bold, pink, sans-serif font in the upper right quadrant.

**THANK YOU**