KREP

2025

KARNATAKA RADIOLOGY EDUCATION PROGRAM

CASE PRESENTATION - CASE 1

CASE OF ANTERIOR MEDIASTINAL TERATOMA

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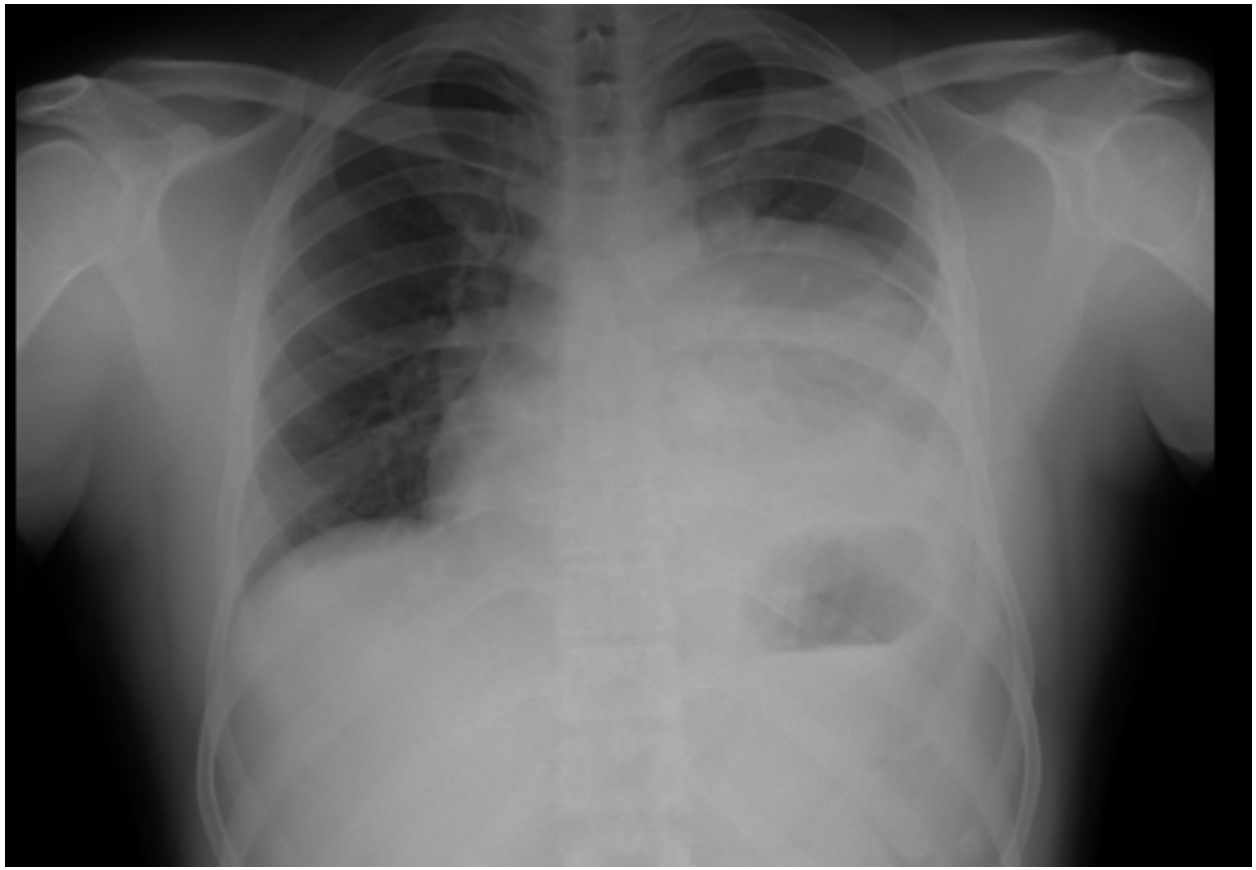
J.N.MEDICAL COLLEGE ,BELAGAVI

CASE 1

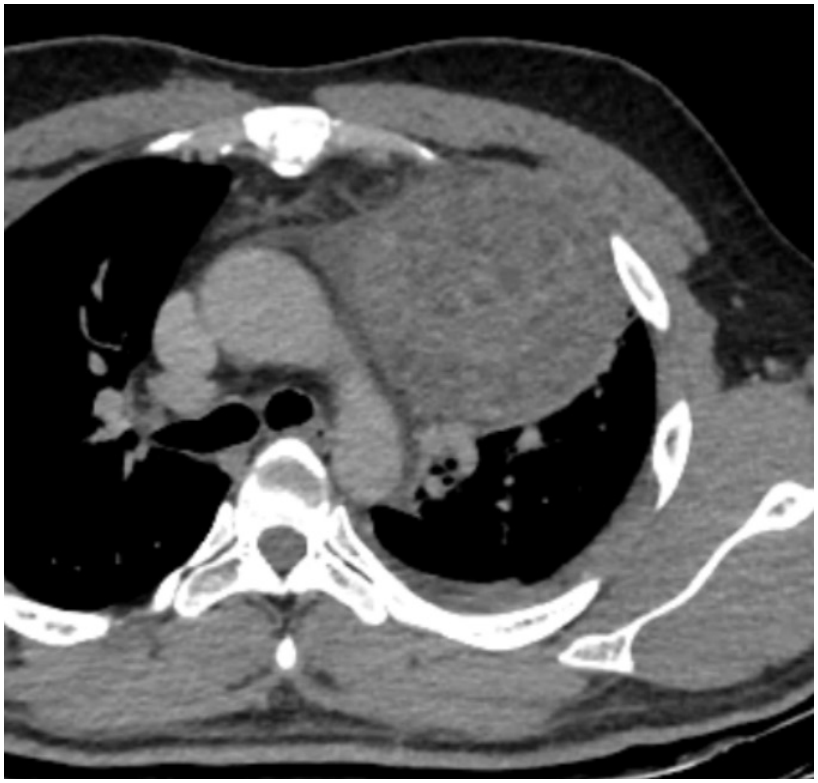
- 27 Y.O. Male patient - c/o chest pain since 2 days
- Radiating to left shoulder & orthopnoea
- No H/O hemoptysis, fever or weightloss

CHEST XRAY

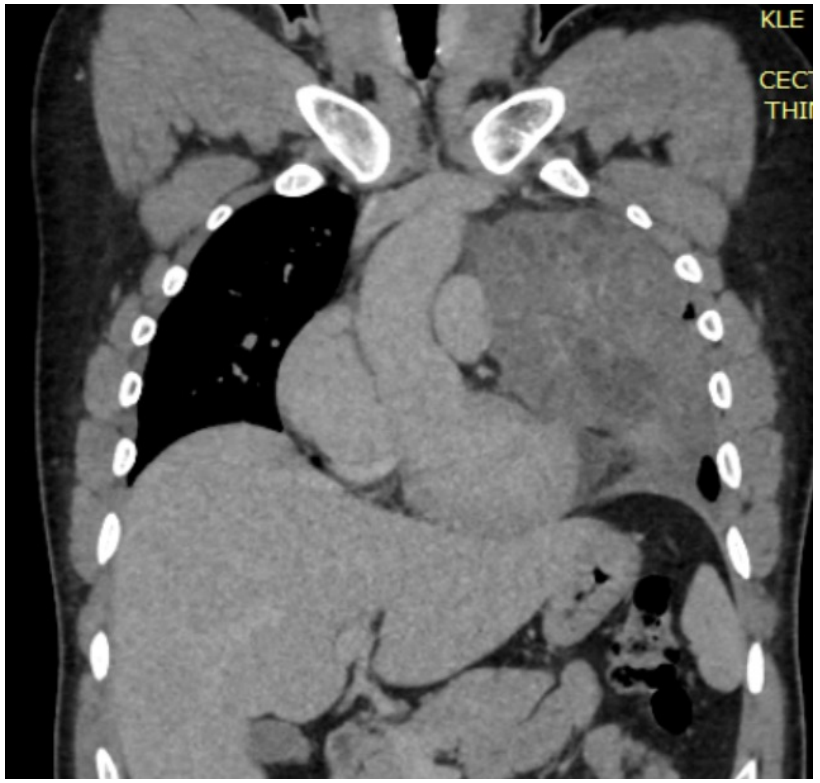


CHEST XRAY PA VIEW –
Well defined homogeneous mass lesion noted in the left mid and lower zones with broad base towards the mediastinum, silhouetting the left heart border, left dome of diaphragm and the CPR
Hilum overlay sign +
Lesion shows sharp lung interface
No obvious mediastinal shift noted
No evidence of rib erosions

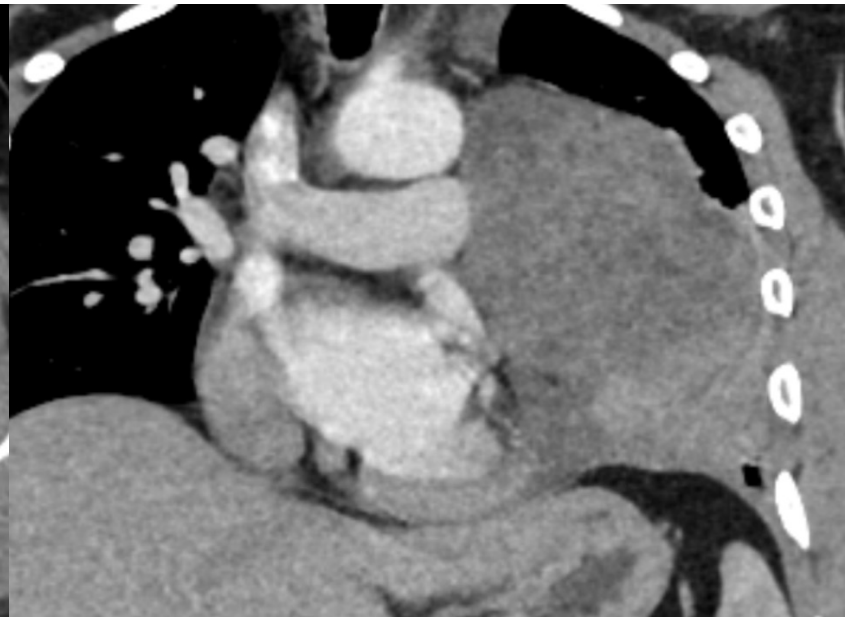
Features suggestive of anterior mediastinal mass



CECT THORAX – VENOUS PHASE



- Heterogeneously enhancing mass lesion noted in the ***anterior mediastinum***
- Few areas of ***loss of fat planes*** with the adjacent intercostal spaces laterally and medially abutting the pulmonary trunk and the left pulmonary artery, left ventricle, however no evidence of vascular infiltration noted
- Areas of ***hemorrhage and necrosis*** noted in the lesion



CECT THORAX – THIN PLAIN:

Areas of hemorrhage and necrosis noted in the lesion

CECT THORAX – ARTERIAL PHASE
No evidence of vascular infiltration noted

DIFFERENTIALS:

- Thymoma
- Teratoma
- Seminoma
- Thymic carcinoma

Thymic epithelial neoplasms
Invasive thymoma

Points in favour	Points against
Located anterior to the aortic arch	Children and 5th to 6th decade
Homogeneous, but necrosis and hemorrhage occur in up to one third	
Intratumoral cysts or areas of necrosis	

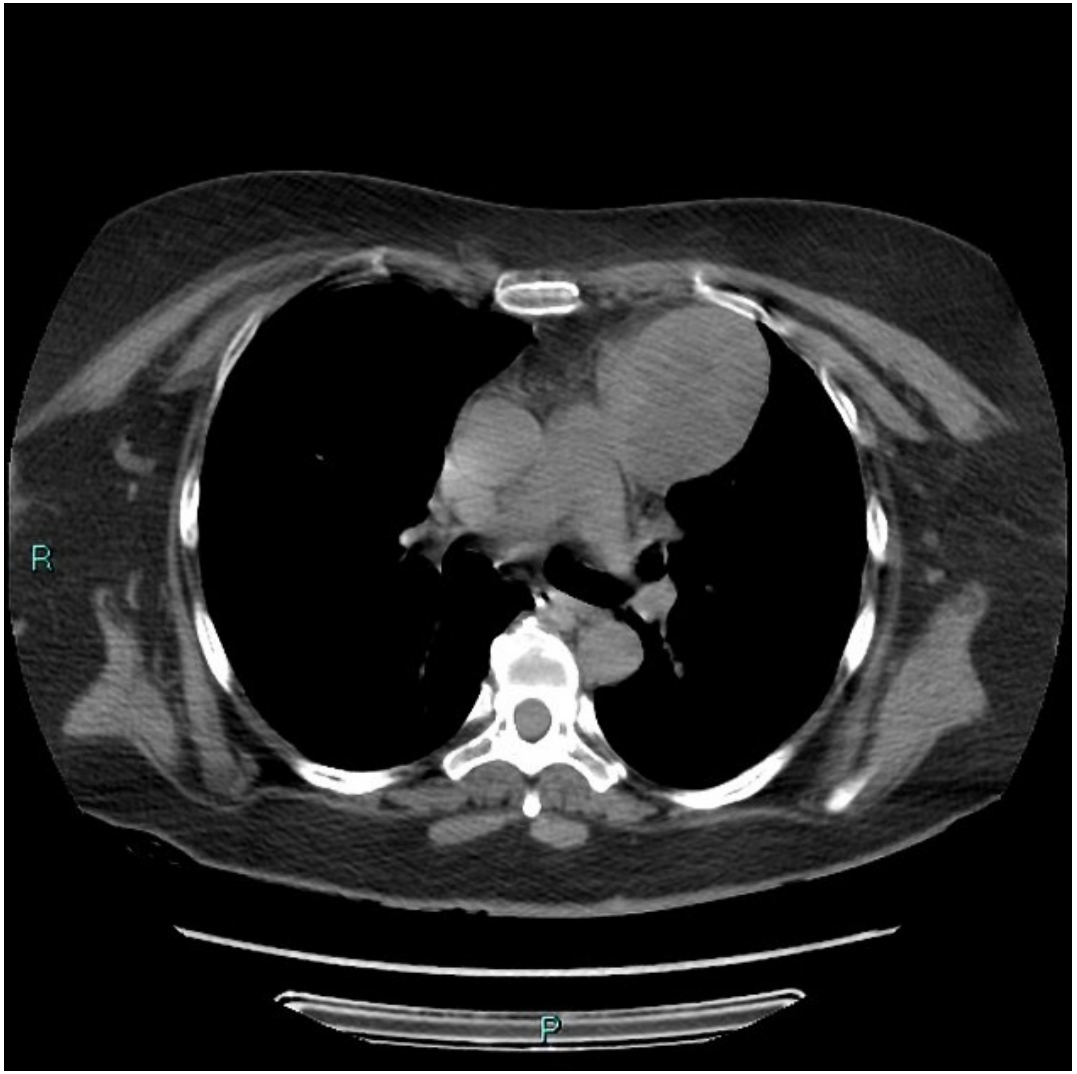
Thymic epithelial tumors

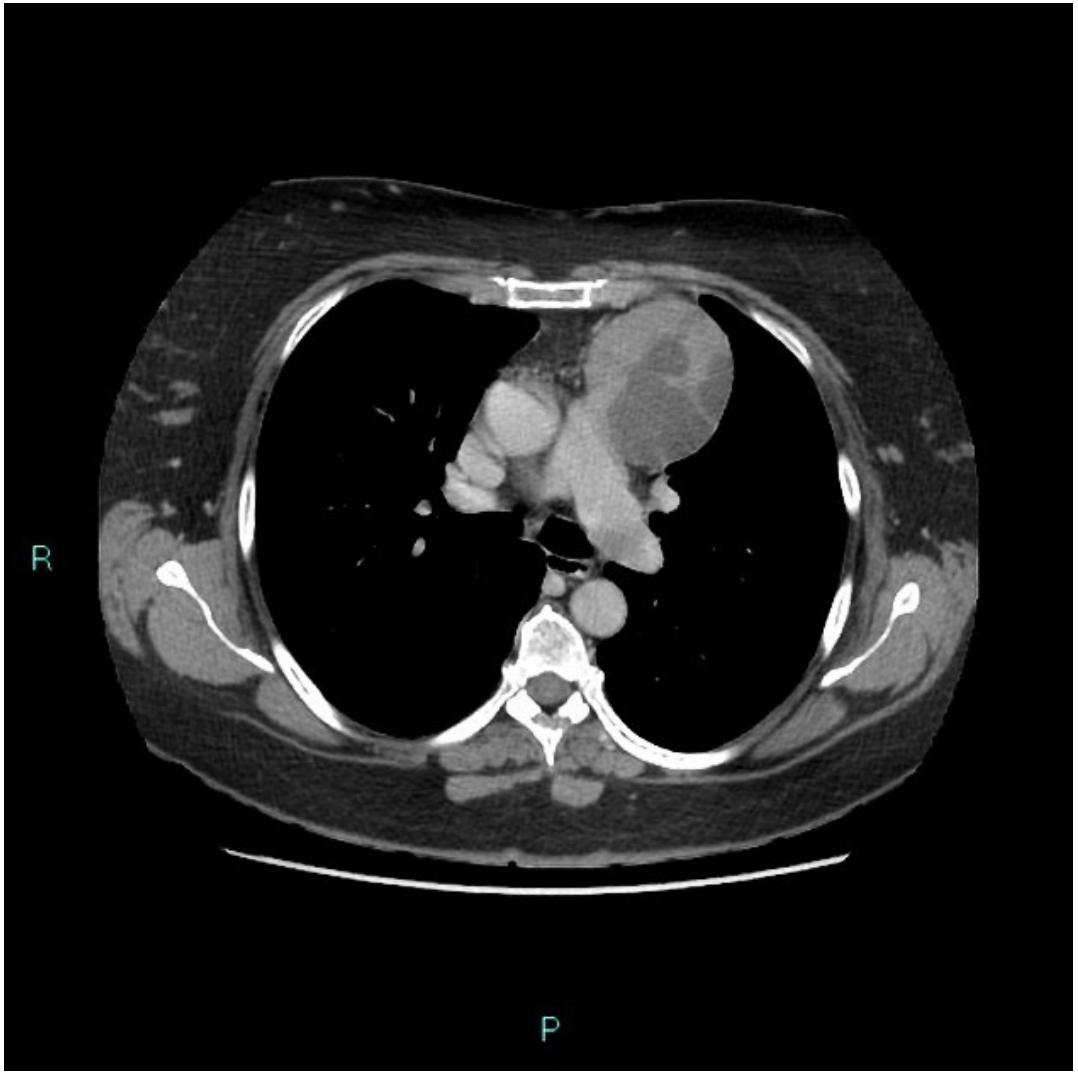
- Thymoma: account for approximately 20% of all mediastinal tumors and are the most common primary tumor of the anterior mediastinum
- Seventy-five percent of thymomas occur in the anterior mediastinum
- 50% of patients with thymoma have myasthenia gravis
- Imaging findings that suggest invasive thymoma on CT or MRI include (1) tumor size **7 cm** or greater, (2) **lobulated contours**, (3) poorly defined or **infiltrative margins**, (3) definite vascular or chest wall **invasion**, (4) **irregular interface** with adjacent lung, and (5) evidence of **spread to pleura**

Thymic epithelial tumors

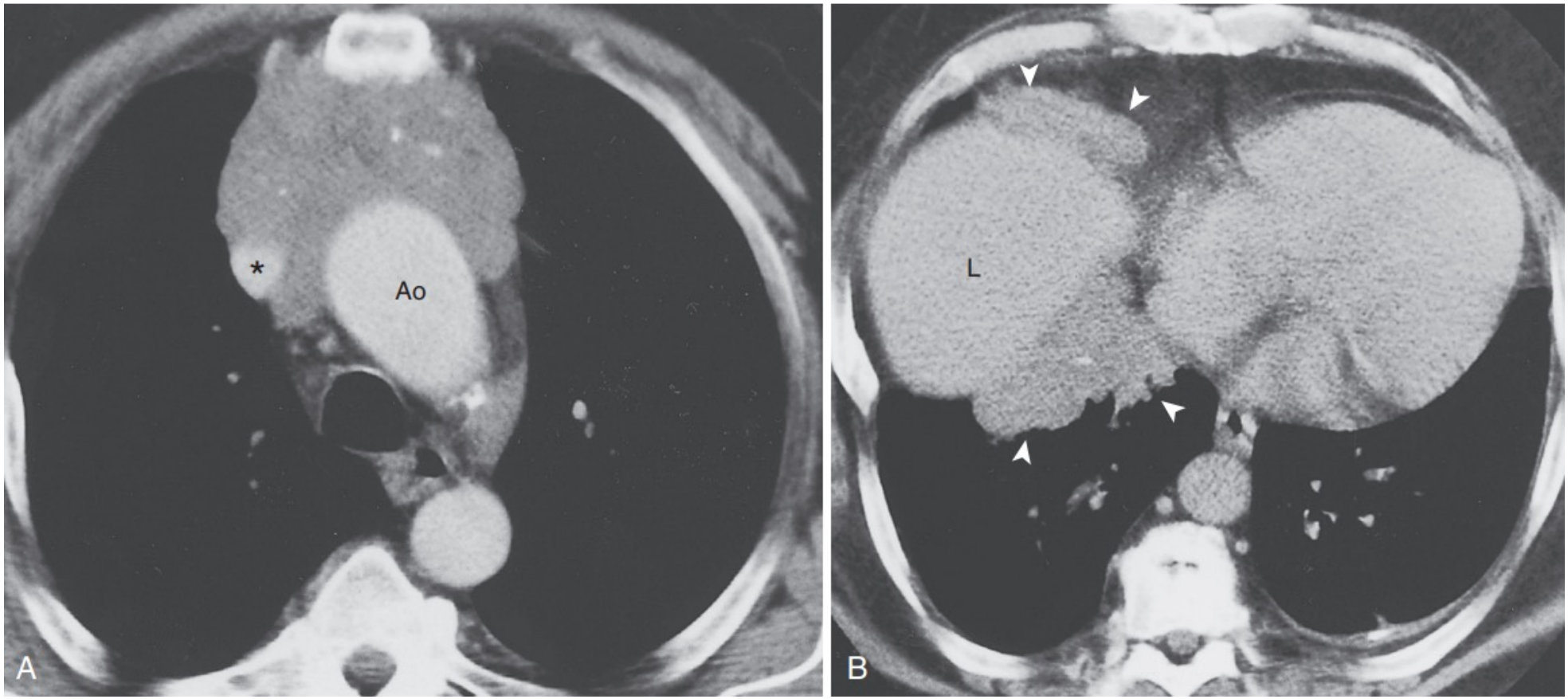
- **CT:**
- Soft tissue attenuation and are commonly found between the sternum and great vessels.
- A cystic component is frequently present, and calcifications occur in 10-50% of cases, usually small and peripherally located.
- Calcifications are more often associated with malignant thymic neoplasms
- **MRI :**
  - **T1:** isointense to slightly hyperintense
  - cystic areas may be seen, especially in larger tumors
  - fibrous septa crossing the mass are of low signal intensity
  - **IP/OOP imaging:** typically no signal drop out, i.e. no chemical shift
  - **T1 C+ (Gd):** linear regions of enhancement may be seen coursing through the mass, thought to represent fibrous septa [6]

Thymic epithelial tumors

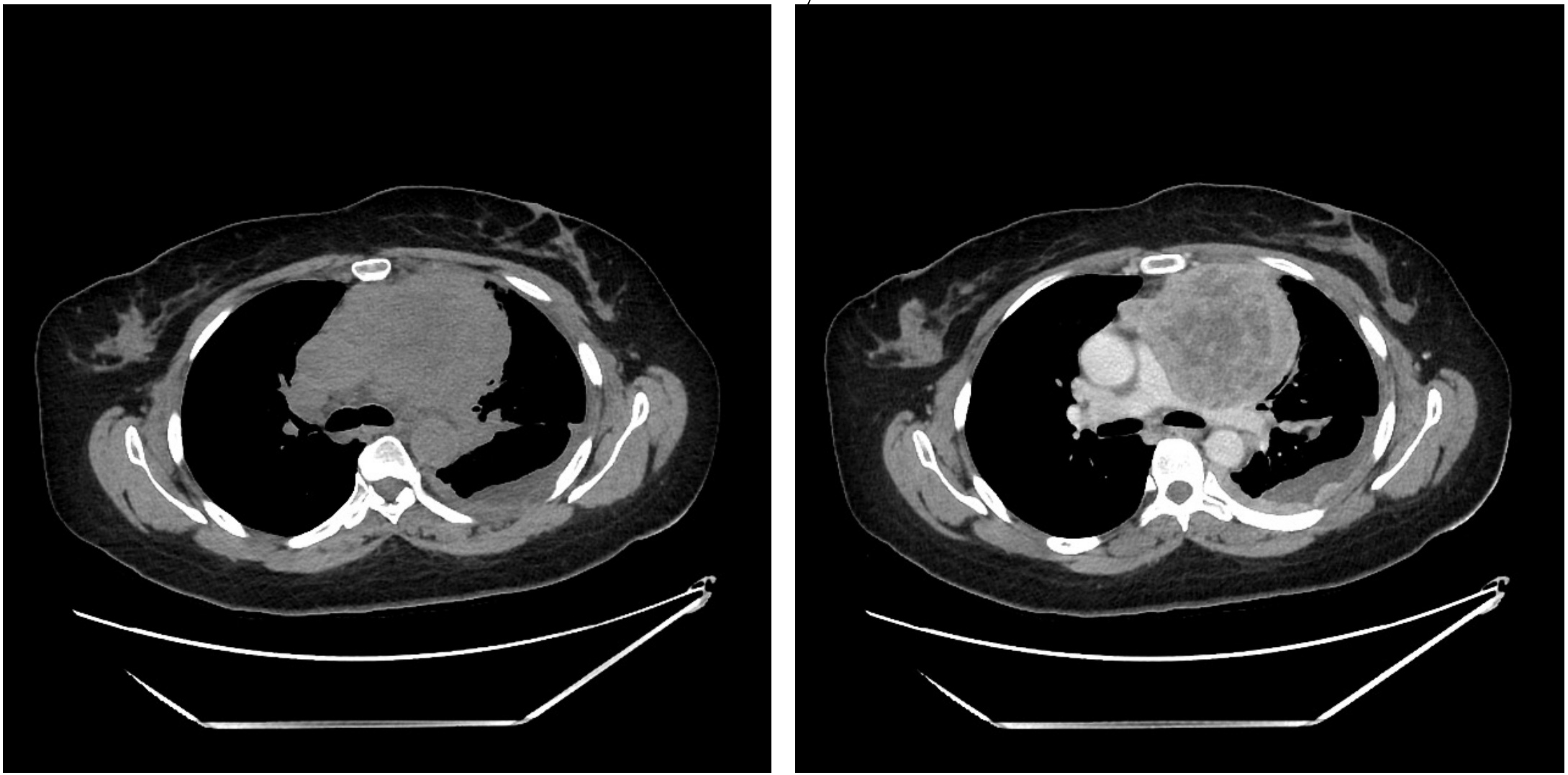




Invasive thymoma



Invasive thymoma



TERATOMA

Points in favour	Points against
Adults (20-30 yrs)	Female predeliction
Size : 3-25 cm	A/w Kleinfelter syndrome
Variable attenuation- fat, water density (cystic spaces), Homogeneous soft-tissue density	Fat-fluid levels (specific), calcification: 26%
80% in anterior medastinum	

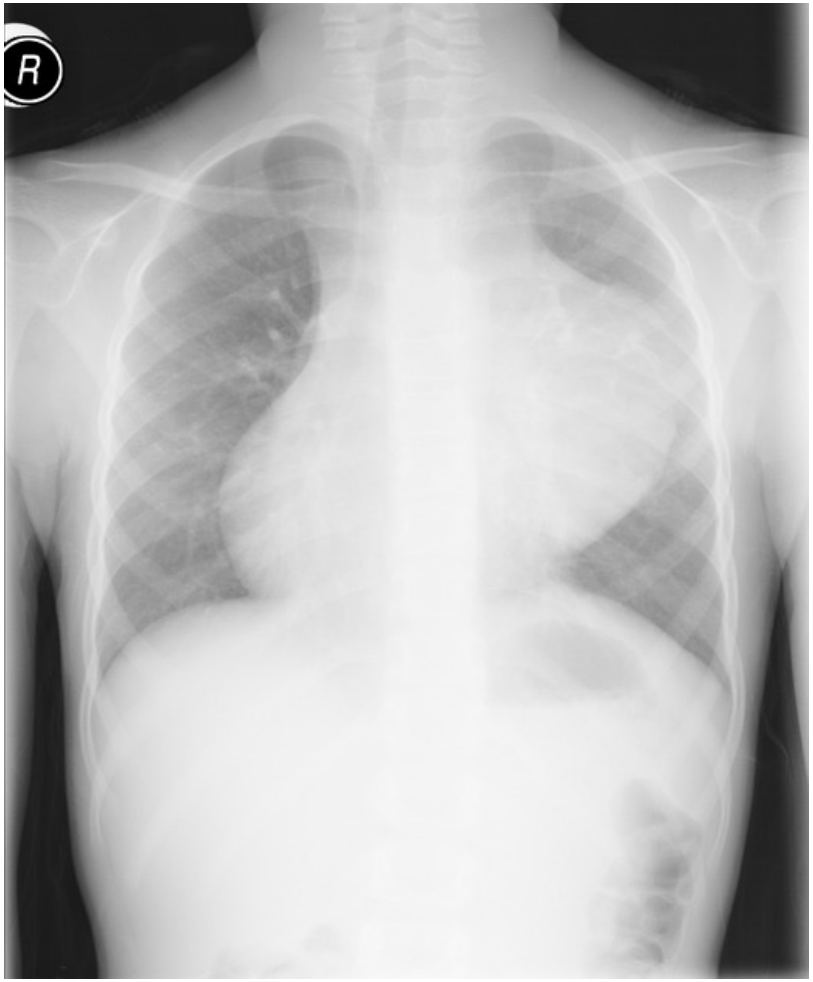
TERATOMA

- Mediastinal teratomas are germ cell tumors that develop from pluripotent stem cells that fail to migrate from the yolk endoderm to the gonads.
  - **Mature**: well-differentiated
  - **Immature**: poorly differentiated
  - With **malignant transformation**
- Mature teratomas and most immature teratomas are benign tumors
- May require surgical excision in symptomatic cases

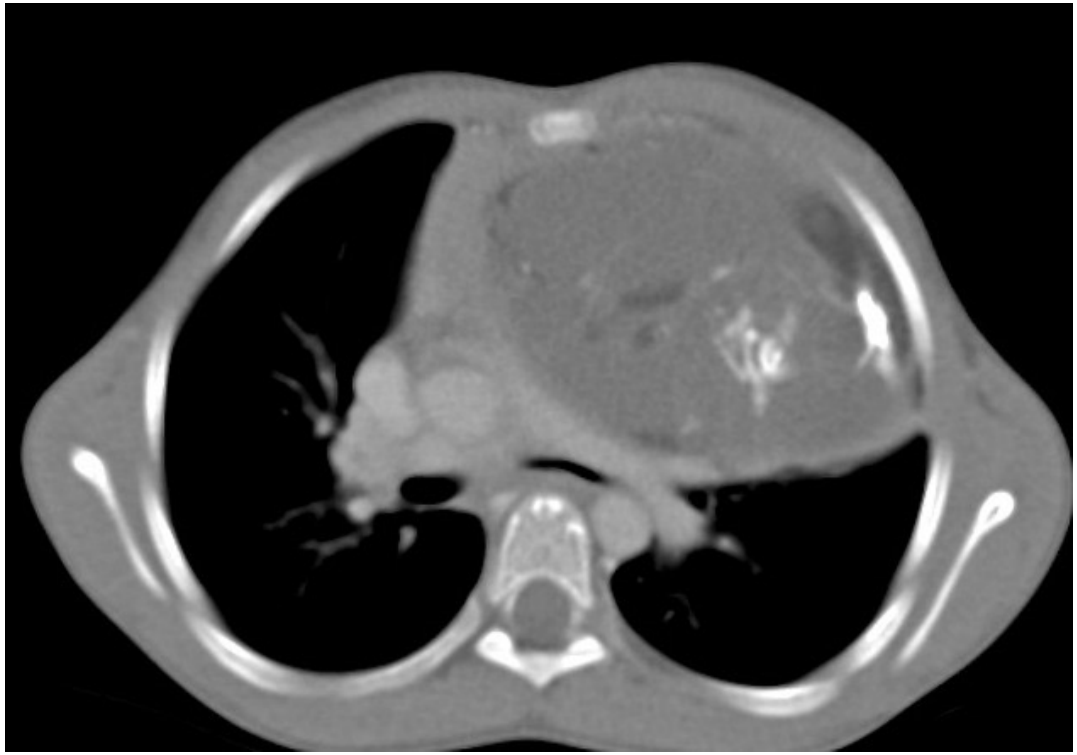
TERATOMA

- Mature teratomas are well-demarcated tumors that displace adjacent structures without invasion.
- Typically cystic (90%), with uni- or multiloculated spaces, septal/rim enhancement, and variable attenuation due to mixed tissue components.
- Key features include fat, water-density cystic spaces, fat-fluid levels (specific), soft-tissue density, and calcifications (26%),
- Normal serum levels of β-human chorionic gonadotropin hormone (β-hCG) and α-fetoprotein (AFP); elevation of these markers implies a malignant component

TERATOMA



TERATOMA



SEMINOMA

Points in favour	Points against
Male	No weight loss, nausea, fever and gyneco mastia
>10 yrs	
Absence of testicular lesion	
Dyspnea, chest pain and cough	
No calcifications	

SEMINOMA

- **Mediastinal seminomas** or **mediastinal germinomas** are primary malignant germ cell tumors of the mediastinum.
- Diagnostic criteria according to the WHO classification of thoracic tumors (2021 - blue book):
  - Small sheets or clusters of polygonal epithelioid cells with a clear, pale or eosinophilic cytoplasm
  - Lymphocytic and/or granulomatous environment
  - No testicular lesion on imaging
  - Male patient

- **Imaging findings**
- On thoracic CT mediastinal seminomas do usually not show any calcifications.
- They appear as bulky, lobulated fairly homogeneous soft tissue masses with irregular contours and mild contrast enhancement
- Heterogeneous with Cystic and necrotic spaces +

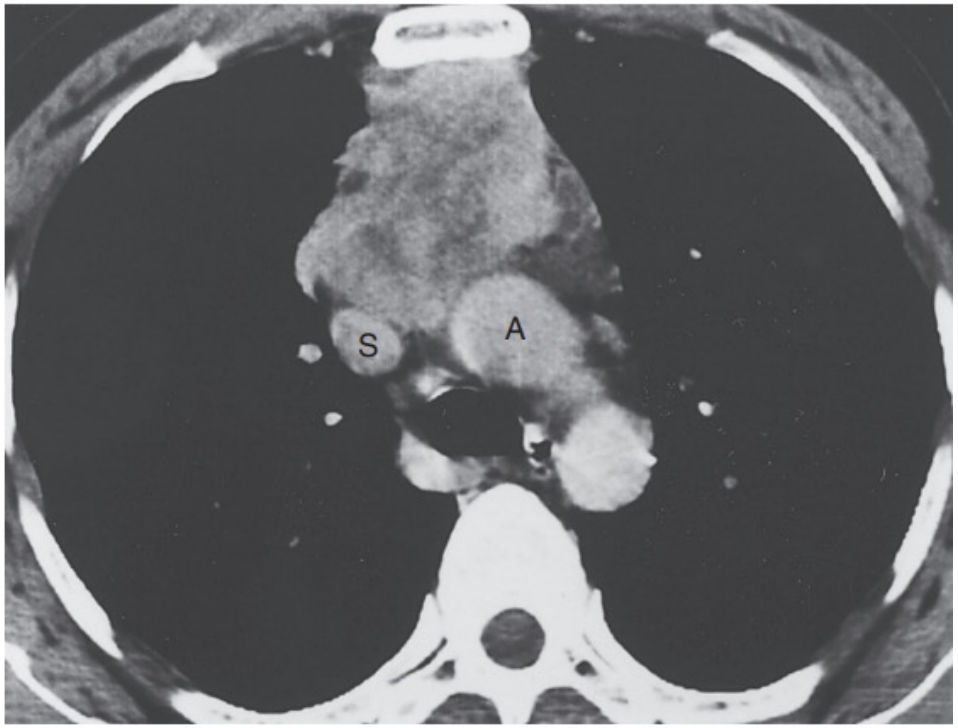
Thymic epithelial neoplasms thymic carcinoma

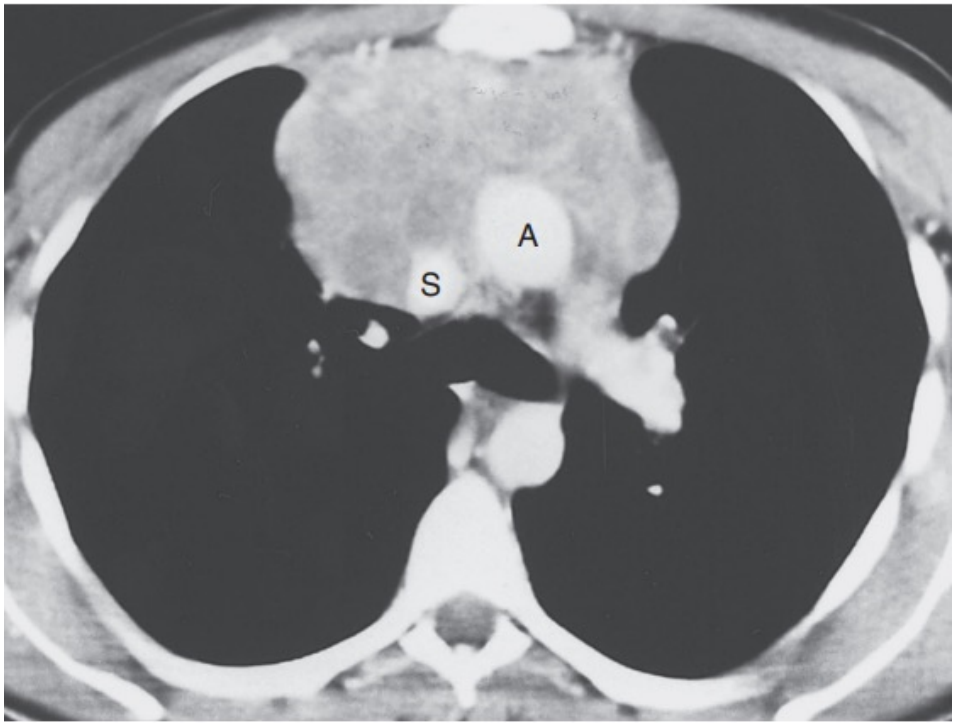
Points in favour	Points against
Asociation with paraneoplastic syndromes are rare	Intrathoracic lymphadenopathy
Necrotic or cystic component,	Pleural and pericardial effusion
Heterogeneous enhancement	Poorly defined infiltrative margins

Thymic epithelial tumors

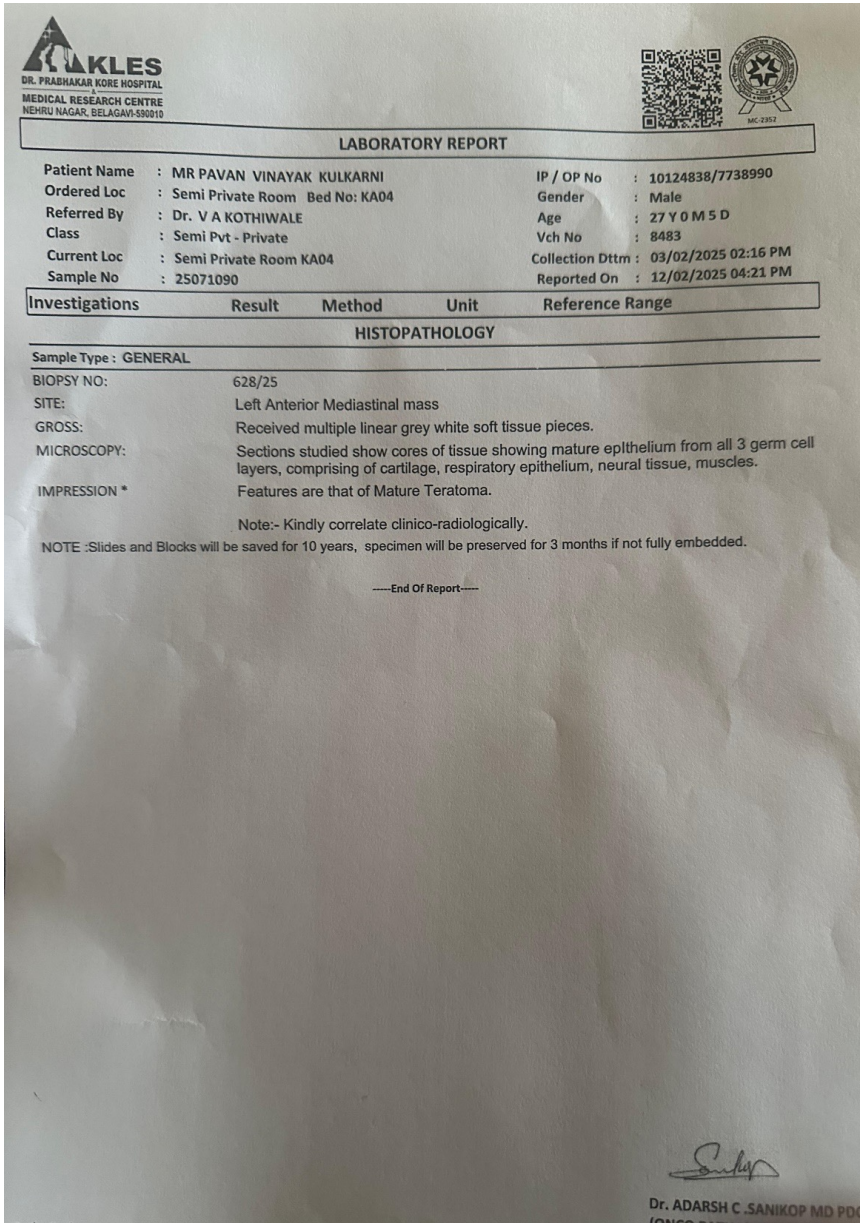
- Thymic carcinoma:
- account for 20% of thymic tumors
- gross invasion of contiguous mediastinal structures and wide spread to involve distant intrathoracic sites
- Distant metastases (lung, liver, brain, bone) are detected in 50% to 65% of patients at presentation.

Thymic carcinoma





CASE 1:
Anterior mediastinal teratoma



KLES
DR. PRABHAKAR KORE HOSPITAL & MEDICAL RESEARCH CENTRE
NEHRU NAGAR, BELAGAVI-590010

MC-2357

LABORATORY REPORT

Patient Name	: MR PAVAN VINAYAK KULKARNI	IP / OP No	: 10124838/7738990
Ordered Loc	: Semi Private Room Bed No: KA04	Gender	: Male
Referred By	: Dr. V A KOTHIWALE	Age	: 27 Y 0 M 5 D
Class	: Semi Pvt - Private	Vch No	: 8483
Current Loc	: Semi Private Room KA04	Collection Dttm	: 03/02/2025 02:16 PM
Sample No	: 25071090	Reported On	: 12/02/2025 04:21 PM

Investigations	Result	Method	Unit	Reference Range

HISTOPATHOLOGY

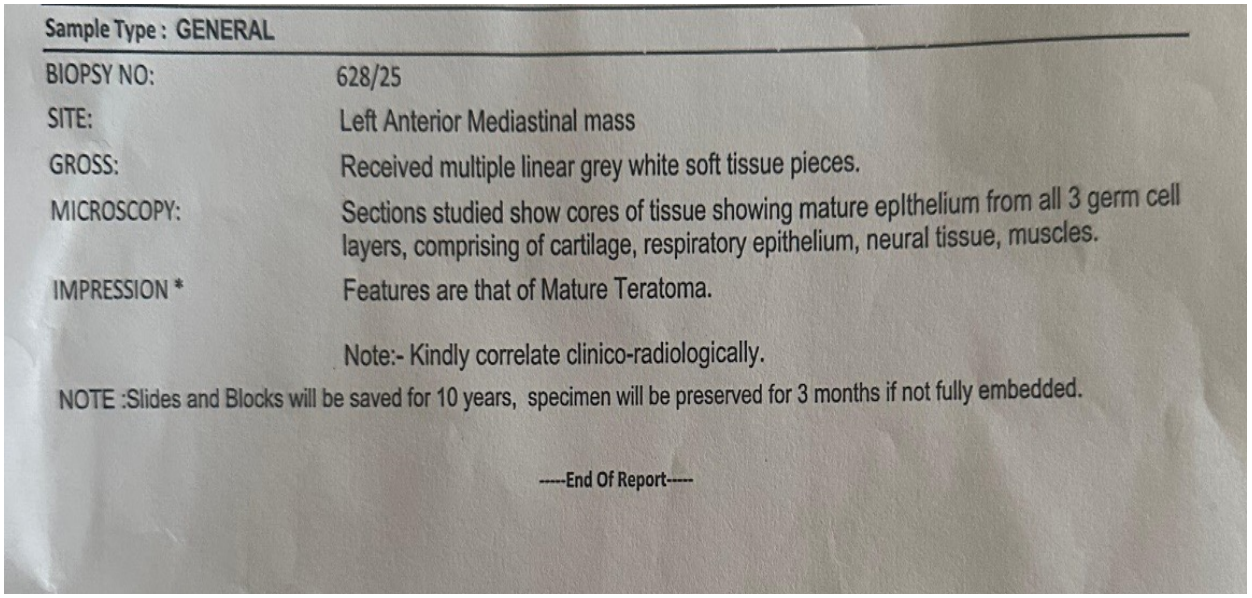
Sample Type : GENERAL

BIOPSY NO:	628/25
SITE:	Left Anterior Mediastinal mass
GROSS:	Received multiple linear grey white soft tissue pieces.
MICROSCOPY:	Sections studied show cores of tissue showing mature epIthelium from all 3 germ cell layers, comprising of cartilage, respiratory epithelium, neural tissue, muscles.
IMPRESSION *	Features are that of Mature Teratoma.
	Note:- Kindly correlate clinico-radiologically.

NOTE :Slides and Blocks will be saved for 10 years, specimen will be preserved for 3 months if not fully embedded.

-----End Of Report-----

Dr. ADARSH C .SANIKOP MD PD



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THANK YOU.