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ELDERLY SMOKER WITH LEFT SIDED CHEST PAIN

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ABSTRACT

Mediastinal tumors are rare tumors. Malignant mediastinal tumors are usually symptomatic and present with a variety of symptoms. Thymoma is a common anterior mediastinal tumor. Surgical resection is the mainstay of treatment in thymoma.

INTRODUCTION

A 69 year old male presented with history of non productive cough and left sided chest pain since one month. Chest pain was felt anteriorly & retrosternally, dull aching non pleuritic type, continuous and there was no radiation. No aggravating or reliving factors for chest pain. There was no hemoptysis, fever. No other respiratory symptoms. No cardiac symptoms. No GI symptoms. He was a chronic smoker. He was on amlodipin 5 mg once daily for hypertension. No other significant illness in past [1].

Question 1: What is the most likely cause for his symptoms? (More than one answer)

a) Pulmonary tuberculosis
b) Ischemic heart disease
c) Bronchogenic carcinoma
d) Massive pleural effusion
e) Aortic aneurysm

Answer: c and e

Above symptoms in an elderly male, chronic smoker is likely to be due to Bronchogenic carcinoma. A peripheral lung lesion usually presents with chest pain. Pulmonary tuberculosis usually presents with fever, productive sputum and sometimes with hemoptysis. Chest pain as predominant symptom with dry cough is unlikely in pulmonary tuberculosis. Patient had no symptoms of ischemic heart disease and the chest pain was not suggestive of cardiac pain. Small pleural effusion can present with similar symptom but in massive pleural effusion breathlessness is predominant symptom which this patient did not have. Aortic aneurysm is more common in elderly hypertensive males and smokers and can present with above symptoms due to pressure on adjacent structures [2].

Physical findings: General physical examination was unremarkable. His vitals signs were normal. Breath sounds were slightly reduced in intensity at the left lung base. No added sounds. Cardiac and GI examination did not reveal any abnormality [3].

Question 2: Which of the following is a wrong statement about bronchogenic carcinoma? (More than one answer)

a) Pleural effusion is more common in peripheral lung lesions
b) Cough and Hemoptysis are the common presenting symptoms in central lesions
c) Normal physical examination rules out the possibility of bronchogenic carcinoma
d) Normal chest x ray in a symptomatic patient rules out the possibility of bronchogenic carcinoma

e) Can present as pneumonia

Answer: c, d

When the lesion is small there may not be any physical findings and chest x-ray can be normal in especially in early stages of bronchogenic carcinoma. Pneumonia is one of the modes of presentation when the lesion obstructs a bronchus [4].

Question 3: What is the next investigation?

a) Chest X-ray
b) ECG
c) Sputum examination
d) USG abdomen
e) Cardiac stress test (tread mill)

Answer: In a suspected intra thoracic lesion next investigation is chest x-ray.

Question 4: Which of the following is highly suggestive of a malignant lesion in chest X-ray?

a) Total lung collapse
b) Parenchymal lesion with erosion of adjacent bone
c) Homogenous opacity without air-bronchogram
d) Parenchymal lesion with mediastinaladenopathy
e) Parenchymal lesion with pleural effusion

Answer: b

Parenchymal lesion with erosion of adjacent bone is highly suggestive of primary lung malignancy. This usually occurs in squamous cell carcinoma. Rarely bone erosion can occur in pulmonary tuberculosis and actinomycosis [5].

Other findings may also be present in chest X-ray in Bronchogenic carcinoma but can occur in other conditions also. Total lung collapse occurs when there is obstruction to a main bronchus due to any cause. Absence of air-bronchogram can occur when there is obstruction of a bronchus and in lesions outside the lung parenchyma (pleural and mediastinal lesions).Lung parenchymal lesion with mediastinal adenopathy and pleural effusion can occur in infective lesions like tuberculosis and pneumonia.

Chest X-ray shows homogenous opacity in left upper and mid zone. Borders are fairly well defined except in lower part. No air bronchogram. Surrounding lung parenchyma appears normal. No erosion of underlying bony structures.

Question 5: When to suspect a lesion as mediastinal in chest X-ray?

One or more of the following radiological findings are useful to suspect a mediastinal lesion in chest X-ray [6].

1) No air bronchogram in the opacity
2) Lesion forming obtuse margin with the lung
3) Associated spinal, costal& sternal abnormalities
4) Disruption of mediastinal lines (Azygos esophagus recess and anterior & posterior junction lines) by the opacity
5) Obliteration of cardiophrenic angle by the opacity
6) Obliteration of retrosternal clear space by the opacity
7) Hilum overlay sign

Mediastinal mass was suspected in this patient.

Question 6: What is the next investigation in this patient?

a) Sputum cytology for malignant cells
b) Thoracic ultrasound
c) Bronchoscopy
d) Contrast enhanced CT scan of Thorax
e) Percutaneous Fine needle aspiration cytology

Answer: d

In a suspected mediastinal lesion, next investigation of choice is contrast enhanced CT scan of Thorax. Thoracic CT scan in a mediastinal lesion is useful to know the exact location, extent and other finer details and gives a presumptive diagnosis [7].

CT report: Well defined heterogeneously enhancing isodense lesion (11 x 9.6 x 8.7cm) in anterior mediastinum on the left side, anteriorly abutting the anterior chest wall, posteriorly abutting the left main pulmonary artery [8].

Question 7: Which is not a content of anterior mediastinum?

a) Thymus gland
b) Lymph nodes
c) Descending aorta
d) Substernal thyroid
e) Superior vena cava

Answer: c

Descending aorta is in posterior mediastinum

Question 8: Which is a wrong statement?

a) More than 50% of mediastinal masses are incidentally discovered.
b) Thymoma can lead to gynecomastia
c) Majority of asymptomatic mediastinal masses are benign.
d) Most of the symptoms in mediastinal masses are due to compression of adjacent structures.
e) Neuroblastoma can present with diarrhea

Answer: b.

Thymoma can present with a variety of paraneoplastic manifestations. Gynecomastia may occur in germ cell tumors, not in Thymoma. This patient had no obvious symptoms suggestive of paraneoplastic manifestations.

Question 9: Name the techniques used for obtaining tissue sampling in mediastinal tumors?

1) Thoracoscopy
2) Mediastinoscopy
3) Transbronchial needle aspiration
4) Percutaneous needle aspiration
5) Open biopsy (sternotomy)

Question 10:What are the serum (tumor) markers useful in mediastinal tumors?

1) α-Fetoprotein
2) β-HCG
3) Serum calcium

Serum Markers mediastinal tumors

α-Fetoprotein and β-HCG are elevated in most patients with non-seminomatous germ cell tumors.A minority of patients with seminomas have increased β-HCG. In them α-Fetoprotein levels are never elevated. Serum calcium may be elevated in parathyroid adenoma.

Hence elevated levels of these tumor markers gives presumptive diagnosis [9].

Question 11: What are the situations when biopsy is not needed in mediastinal lesions?

Cystic lesion

1) Probable benign solid tumor
2) Highly elevated levels of α-FP and β-HCG

In cystic mediastinal lesion biopsy or aspiration should not be attempted as leak from the lesion can lead to complications like secondary infection and mediastinitis which can be fatal. Most of the cystic mediastinal lesions are benign and hence should be removed by surgery. If the imaging modality is suggestive of benign solid tumor, surgical removal should be done.

CT guided core biopsy was done.

Spindled epithelial cells arranged in fascicular storiform, diffuse and hemangiopericytomatous pattern .

Diagnosis: Thymoma

Question 12: Which of the following is not seen in Thymoma?

a) Cushing's syndrome
b) Red cell aplasia
c) Alcohol induced pain
d) Myocarditis
e) Hypogammaglobuliemia

Answer – c

Alcohol induced pain occurs in Hodgkin's lymphoma

Question 13: Which is a correct statement regarding Thymus in patients with Myasthenia gravis?

a) Thymic tumors are more common than Thymic hyperplasia in patients with Myasthenia gravis
b) Thymectomy should be done all patients with Myasthenia gravis with enlarged thymus
c) Emergency thymectomy should be done in myasthenic crisis
d) Thymectomy improves symptoms in all patients
e) Thymectomy gives immediate relief to symptoms

Answer: b

Thymic hyperplasia is more common than thymic tumors in patients with Myasthenia gravis. In patients with myasthenic crisis thymectomy should be done only after proper treatment and control of symptoms. Emergency thymectomy should not be done in myasthenic crisis as it carries high risk of mortality. Thymectomy improves symptoms in majority of patients but some patient may not improve or may have progressive symptoms.

Fig 1. In a suspected intra thoracic lesion next investigation is chest x-ray

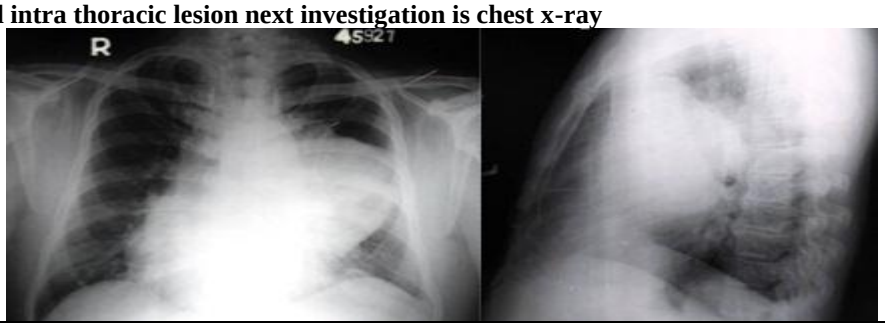
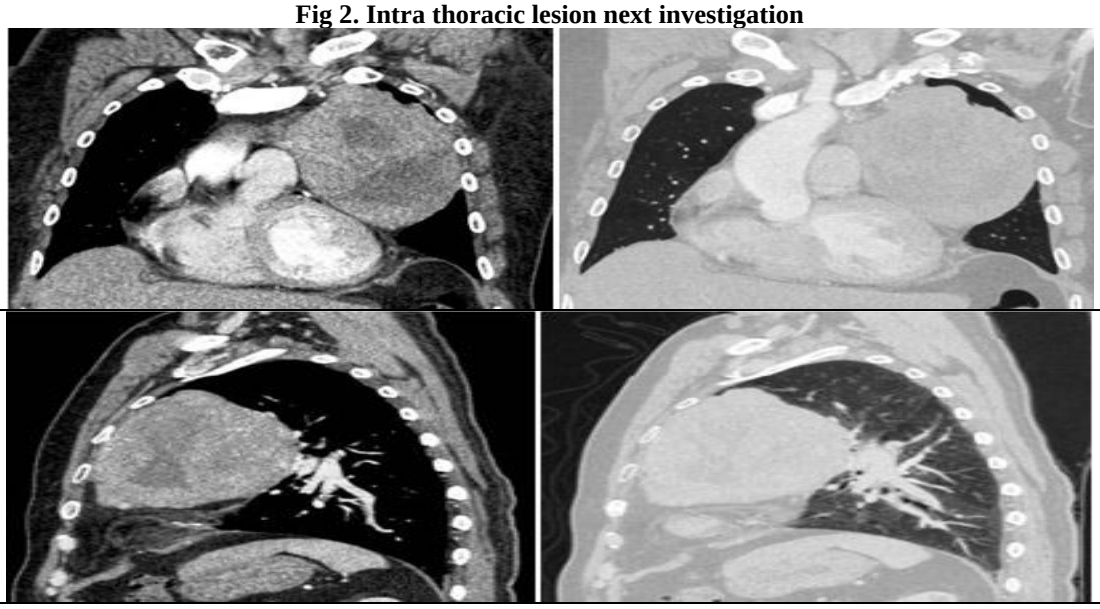


Fig 2. Intra thoracic lesion next investigation



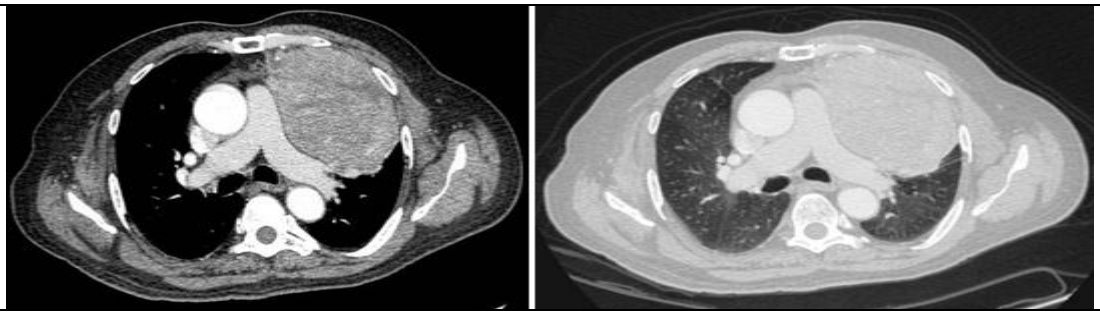


Fig 3. Histopathology

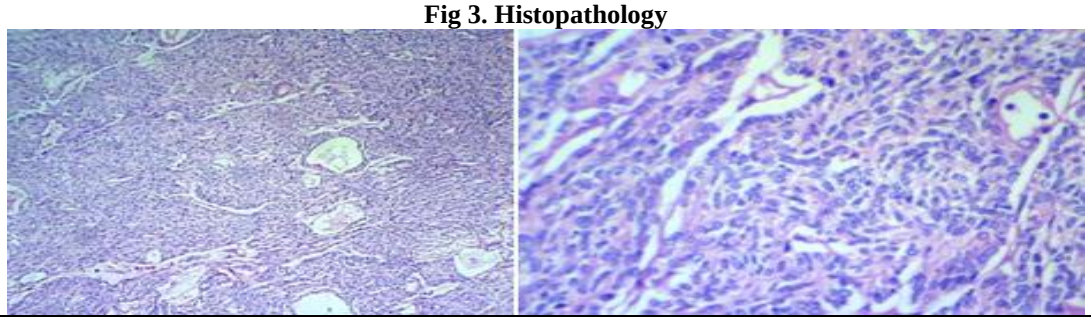


Table 1. Common mediastinal tumors according to location

Anterior compartment	Central compartment	Posterior compartment
Thymoma	Lymphoma	Neurogenic lesions
Thyroid lesions	LN-metastases	Gastroenterogenic cysts
Lymphoma	Paraganglioma	
LN-metastases	Bronchogenic cysts	
Germ cell tumours	Oesophageal diverticula	
Paraganglioma		
Pleuro-pericardial cysts		

Question 14: What are the paraneoplastic syndromes associated with Thymoma?
Myasthenia gravis
Pure red cell aplasia
Acquired hypogammaglobulinemia
Non thymic cancers
Pancytopenia
Lambert Eaton syndrome
Peripheral neuropathies
Multiple endocrine defects
Multiple rheumatologic disorders
Nephrotic syndrome
This patient did not have any paraneoplastic syndromes.
This patient was treated with surgical resection and had uneventful recovery.

Mediastinal tumors

These are rare tumors (1% of all neoplasms).Occur at all ages (1 to 90 years, mean age 35 years). About 40-50% are malignant.Upto 40% of mediastinal tumors are sympromatic at the time of diagnosis.Main symptoms are cough, chest pain, dyspnea, dysphagia, SVC syndrome,hoarsness of voice.Paraneoplastic manifestations can occur in some mediastinal tumors

Thymoma: Thymoma is the most common neoplasm of the anterior mediastinum. It originates within the epithelial cells of the thymus. Thymomas are slightly more common in men than in women and are most frequently seen in persons between the ages of 40 and 60 years. There are no known risk factors that predispose a person to develop thymoma.Up to 50% of thymomas are asymptomatic and are diagnosed when an imaging study of the chest is performed for another reason. In Thymoma chest pain, shortness of breath and cough are the common symptoms. Up to 50% to 60% of patients with thymoma may have paraneoplastic syndrome. The most commonly associated paraneoplastic syndrome with thymoma is myasthenia gravis. Thymoma is a slow-growing tumor and the prognosis is excellent when discovered in early stages. Surgical removal is the mainstay of treatment.

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CONFLICT OF INTEREST

The authors declare that they have no conflicts of interest.

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