Interactive case Discussion

Opacity in left hemithorax

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A 34 year old male, who was working as a civil engineer for the last 8 years presented with history of rhinitis for 5 days followed by cough with scanty mucoid sputum. There was no history of fever, chest pain, hemoptysis or dyspnea. He did not have any history of throat pain, change in voice or headache. He does not give history of post nasal drip or upper GI symptoms.

He never smoked. No addictions. No past history of lung disease. He has no history of recurrent upper respiratory tract infections or allergic rhinitis.

Question 1: What is the most likely diagnosis?

a) Pneumonia

b) Acute bronchitis

c) Acute laryngitis

d) Acute sinusitis

e) Upper airway cough syndrome

Answer – b

Rhinitis followed by cough, scanty mucoid sputum without any other symptoms is highly suggestive of acute bronchitis. He had no symptoms of pneumonia like high fever, mucopurulent sputum or chest pain. In acute laryngitis change in voice is very characteristic which this patient did not have. There was no headache or post nasal drip to suspect sinusitis/upper airway cough syndrome.

Physical findings

General physical examination was unremarkable. Upper respiratory tract examination was normal. Decreased intensity of breath sounds with dull note on percussion was noted in left upper lobe area. No added sounds. There were no signs of volume loss. Cardiac examination was normal.

Question 2: What is the most likely diagnosis?

a) Lung abscess left upper lobe

b) Collapse left upper lobe

c) Encysted pneumothorax left side

d) Consolidation left upper lobe

e) Mass in left upper lobe

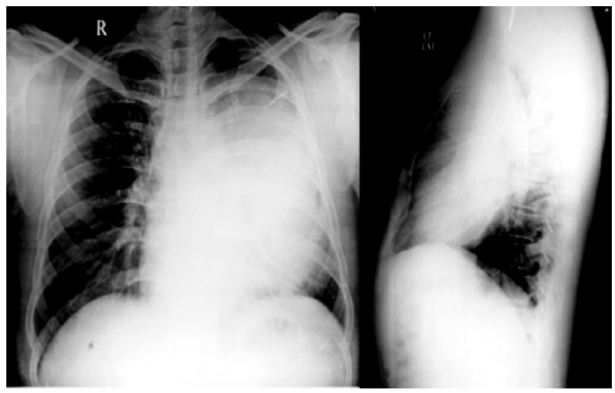
Answer – e

Decreased intensity of breath sounds with dull note on percussion in left upper lobe area without any added sounds and mediastinum in normal position is suggestive of mass in left upper lobe. The clinical history and absence of added sounds exclude lung abscess. There was no shift of medistinum, hence collapse is excluded. Dull note on percussion excludes diagnosis of encysted Pneumothorax. There were no signs of consolidation like bronchial breathing or crepitations.

Question 3: What is the next investigation?

Chest X-ray PA and left lateral view

In a suspected intrathoracic abnormality the first investigation is chest X-ray which will help to identify and localize the lesion and to arrive at a probable diagnosis.



Question 4: What is the most likely diagnosis with the history, physical findings and CXR?

a) Consolidation left side

b) Pleural effusion left side

c) Obstructive pneumonia left side

d) Aortic aneurysm

e) Atypical pneumonia

Answer – c

The Chest X-ray finding of slight loss of volume of left lung with an opacity which is more dense at the hilum along with the history and clinical findings is suggestive of obstructive pneumonia left lung. The physical examination findings exclude possibility of consolidation. Sharp costo-phrenic angles with ill-defined borders of the opacity exclude pleural effusion. The aortic shadow appears normal. Atypical pneumonia usually presents as interstitial pneumonia radiologically and such a huge area of opacity is less likely.

Question 5 : What is the next investigation?

a) Thoracoscopy

b) Contrast enhanced CT scan of thorax (CECT)

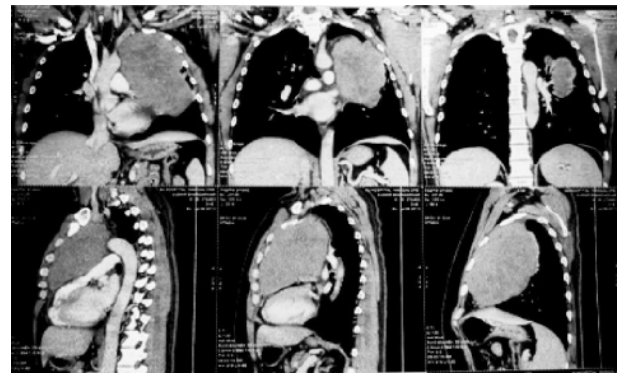
c) Ultrasound of thorax

d) Percutaneous needle aspiration

e) Bronchoscopy

Answer – b

The next investigation in a suspected mass is CECT thorax which will help to delineate the details of the lesion to arrive at a possible diagnosis and differential diagnosis and to plan for next diagnostic investigation.



CECT Thorax

CT report: Well defined large lobulated lesion 7.6x13x13.4 cm in antero superior mediastinum extendinding to left hemithorax almost up to the dome of diaphragm. The tumor abuts the great vessels, arch of aorta and pulmonary artery, left hilum and cardia. The left lung is partially collapsed. Mild enhancement is seen with contrast. A few mediastinal lymph nodes are seen, the largest measuring 30 mm.

Question 6: Which of the following is a wrong statement?

a) More than 50% of mediastinal masses are incidentally discovered.

b) Majority of asymptomatic mediastinal masses are benign.

c) Most of the symptoms in mediastinal masses are due to compression of adjacent structures.

d) Neuroblastoma can present with diarrhoea

e) Thymoma can lead to gynaecomastia

Answer – e

Germ cell tumor produces gynaecomastia (not Thymoma)

Question 7: Which of the following is NOT SEEN in Thymoma?

a) Cushing's syndrome

b) Red cell aplasia

c) Alcohol induced pain

d) Myocarditis

e) Hypogammaglobulinemia

Answer – c

Alcohol induced pain occurs in Hodgkin's lymphoma.

Question 8: Name some intra thoracic tumors producing hypoglycemia.

1) Pleural tumors

2) Teratoma

3) Fibro sarcoma

4) Neurosarcoma

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

1) Thoracoscopy

2) Mediastinoscopy

3) Trans bronchial needle aspiration

4) Percutaneous needle aspiration

5) Open biopsy (sternotomy)

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

1) α-Fetoprotein

2) β-HCG

3) Serum calcium

The serum markers were normal in this patient.

Serum Markers of 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.

CT guided core biopsy was done

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

1) Cystic lesion

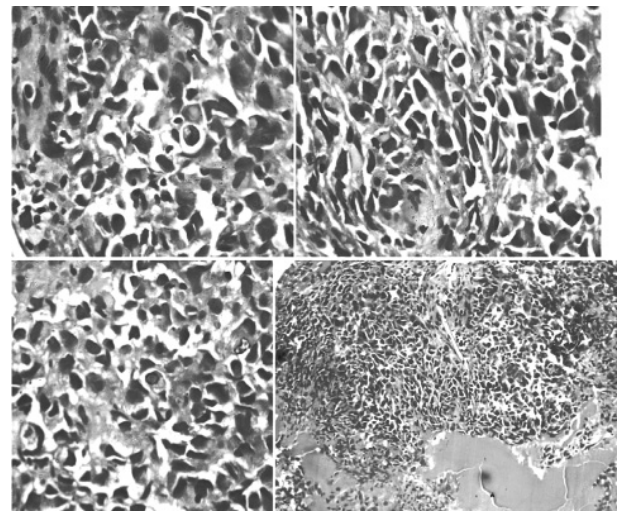
2) Probable benign solid tumor

3) Highly elevated levels of α-fetopro tein and β-HCG

In cystic lesions 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.

Elevated levels of tumor markers gives presumptive diagnosis.

Histopathology



Histopathology report:

Tumor composed of loosely cohesive, diffusely arranged sheets of large cells with well defined ample pink cytoplasm and eccentrically placed hyper chromatic nuclei. Mild to moderate degree of pleomorphism is seen. Occasional cells show cytoplasmic vaculole.Thin vascular septae are seen with lymphocytic infiltrates. Karyorrhectic debris and apoptotic bodies are seen. Mitosis present. Nucleoli are not discernible.

Impression: Undifferentiated malignant tumor.

Tumor marker CD117 was positive confirming diagnosis of seminoma.

Final diagnosis: Mediastinal tumor-Seminoma.

Mediastinal tumors

These are rare tumors (1% of all neoplasms). They occur at all ages (1 to 90 years, mean age 35 years). Around 40-50% are malignant. About 40% are symptomatic at the time

of diagnosis. The main symptoms are cough, pain, dyspnea, dysphagia, SVC syndrome and hoarseness of voice.

Paraneoplastic manifestations can occur in some mediastinal tumors. Upto 95% show abnormality in chest-X-ray.

Mediastinal Germ cell tumours

These are histologically similar to their gonadal counterparts, but the biology is different and the prognosis is worse.

Mediastinal Seminoma

Seminomas account for 40% of malignant germ cell tumors of the mediastinum. These are more common in men, especially in the third and fourth decades of life.

In up to 10% beta HCG is positive or slightly elevated (<1000 U/l). Alpha Feto Protein is never elevated. Majority are limited tumours; 10-15 % present with metastases at the time of diagnosis.

They are highly sensitive to chemotherapy (Cisplatin based) and radiotherapy. Chemotherapy is curative in most patients with survival rates of 60-80%. The role of surgery is controversial and is usually not indicated, unless in small, encapsulated forms or in residual mass after primary chemotherapy/radiotherapy.

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