Plueral Effusion

Presented By:

Khaled Alenazi
## Case study

<table>
<thead>
<tr>
<th>MR</th>
<th>2299580</th>
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<tbody>
<tr>
<td>Patient name</td>
<td>Ghazzay Almotairi</td>
</tr>
<tr>
<td>Age</td>
<td>56 YEARS</td>
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<tr>
<td>Date of birth</td>
<td>01-MAY-1965</td>
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<tr>
<td>Procedure</td>
<td>Chest X-ray PA &amp; LAT</td>
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<tr>
<td></td>
<td>Catheter draining</td>
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<tr>
<td>Medical question</td>
<td>R/O pleural effusion</td>
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## Reports:

There is a moderate right sided pleural effusion with adjacent to atelectasis / consolidation. Pleural based opacity overlying the left hemi thorax could Represented loculated to pleural effusion.
Lung Anatomy
There are 2 lungs:

- No. of lobes: 
- No. of Fissures: 

- No. of lobes: 
- No. of Fissures: 
Lung Anatomy

- Layers of lungs
  A) Partial pleura
  B) Visceral pleura

- Blood supply

- Anatomic relation of Lungs
Lung Anatomy

Normal Lt Lateral CXR

Normal PA CXR
Pleureral effusion
**Definition**

- **Pleural effusion**

  Abnormal Collection of fluid in pleural cavity.

- **The most important calcification of PE**

  1 - Transudate
  2 – Exudate

- How can we differentiate between them?
We can differentiate between transudate and exudate pleural effusion by laboratory studies:

- Ratio of pleural fluid to serum protein greater than 0.5
- Ratio of pleural fluid to serum lactate dehydrogenase (LDH) greater than 0.6
- Pleural fluid LDH greater than two thirds of the upper limits of normal serum value

<table>
<thead>
<tr>
<th></th>
<th>Transudate</th>
<th>Exudate</th>
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<tbody>
<tr>
<td>Protein content</td>
<td>( \leq 2 \text{ g/dL} )</td>
<td>( \geq 2.9 \text{ g/dL} )</td>
</tr>
<tr>
<td>fluid protein</td>
<td>( &gt; 0.5 )</td>
<td>( &gt; 0.5 )</td>
</tr>
<tr>
<td>serum protein</td>
<td></td>
<td></td>
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</table>
Types

- Types of pleural effusion:

According to Location and distribution of fluid, it divides to:

1. Free P.E.
2. Encysted P.E.
3. Lamellar P.E.
4. Subpulmonary P.E.

Note!!

Pleural effusions are a very common phenomena, since they can be caused by any of a number of lung and heart disorders.
Types

SO,

There are other calcification of P.E.:

1 – Cardiogenic PE
2 – Non-Cardiogenic P.E.

- Types of fluids:
  - Haemorrhax
  - Chylothorax
  - Empyema
  - Hydropnemothorax
Risk factors

- Heart, Renal, and Hepatic failure
- Bacterial pneumonia
- Lung cancer and other tumours with lung metastases
- Pulmonary embolism
- Radiation therapy to the chest
Sign and Symptoms

- SOB
- Chest pain
- Cough
- Fever
- Sputum
- Haemoptysis
- In some cases, the nature of the pleural effusion may affect the course of the underlying disease.

But in general, the causes are:

- Inflammation
- Trauma
- Tumours
- T.B
- Viral
Diagnosis

- X-ray

  - PA ERECT CHEST X-RAY
  - LAT ERECT CHEST X-RAY
  - DECUBETUS CHEST X-RAY
Diagnosis

- In X-ray, we use high KV technique for chest x-ray

- **U.S.**
  - Fluid appear anechoic
  - Best modalities to detect it
  - Safe
  - Cheep

- **C.T.** Is not considered as best modality to detect this disease
Radiological appearance of pleural effusion

- fluid appear radiopaque
- The fluid accumulate in the pleural space
- It collect at costophernic angle at first
- It will be obliterete if the fluid keep collecting
- after that , It will collect also in Ant. Costophernic angle and it will disappear as well .
- If the effusion keep increasing , it goes up and make a cresent shape .
Radiological appearance of pleural effusion

- Bronchial marking disappears
- Homogeneous opacification
- Loss of diaphragm outline
Treatment:

- Large pleural effusions, causing severe breathlessness, are drained, by needle in an acute emergency, or otherwise by chest drain inserted under local anaesthetic.

- This is done under X-ray or US guidance.

- Malignant pleural effusions may be recurrent. They are treated by drainage, followed by the instillation of certain chemicals into the pleural space which help stick the two layers of pleura together.

- Other effusions are treated by treating the underlying cause.
The role of Interventional Radiology in treating pleural effusion

- This disease can be treated in *interventional radiology* under US guidance by inserting a catheter into the lung cavity at the lower level of the lung. (draining)

- Types of catheter used:

  (Pigtail draining catheter)

Technologist!!
The role of Interventional Radiology in treating pleural effusion
References

http://www.nlhep.org/books/pul_Pre/pleural-effusion.html


http://www.nlhep.org/books/pul_Pre/pleural-effusion.html

Chest X-Ray Atlas

http://www.medicinenet.com/pleural_effusion/article.htm
(I am glade for every one helping me to make this presentation as well, thank you For Dr Fares for explain nature of types, thank you Fayez very very very very much Thank you khaled Thank you Mohammad, thank you Reem for help me,)
Thank you