Respiratory system pathology

By

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Objective

Case presentation-1

Definition of edema -2

Definition of pulmonary edema -3

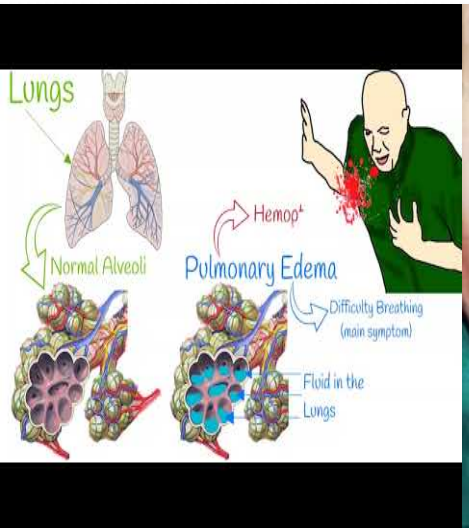
Pathogenesis of pulmonary edema -4

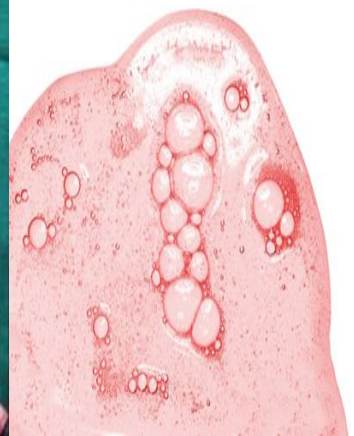
Morphological features of pulmonary edema-5

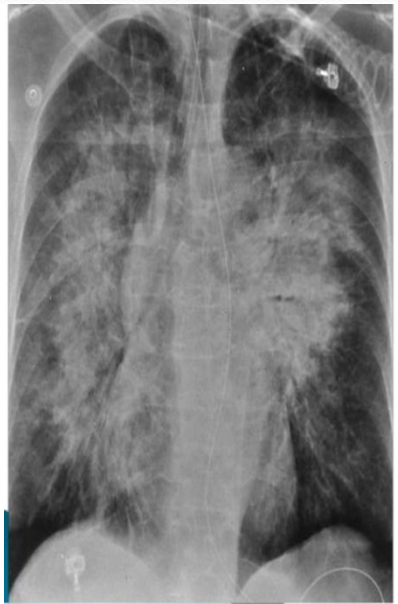
Clinical presentation -6

Case presentation

, y old man , a known case of heart failure 71 he rushed to the emergency room , and now pres with difficult breathing , Tachypnea , tachycardia , cyanosis , Pink or blood tinged ,frothy sputum. on examination , Peripheral edema (pitting) , pulmanary cripetation by auscultation , Hypoxemia,on CXR showed butterfly pattern (pulmonary edema) indicative of bilateral diffuse alveolar disease







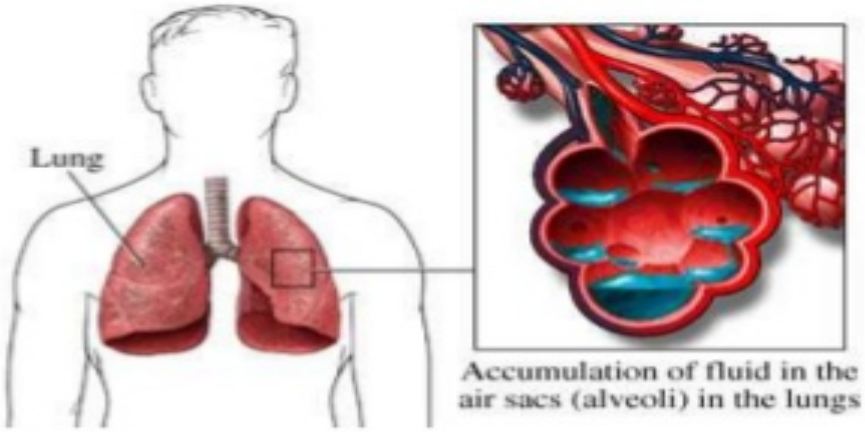
Bat wing edema in a 71-year-old woman with fluid overload and cardiac failure.

Oedema

- Extravascular fluid collections can be classified as follows:
  - Exudate: rich in protein and/or cells (grossly cloudy)
  - Transudate: an ultrafiltrate of plasma with little protein and few or no cells (grossly clear)
- Oedema = increased volume of fluid in interstitial space

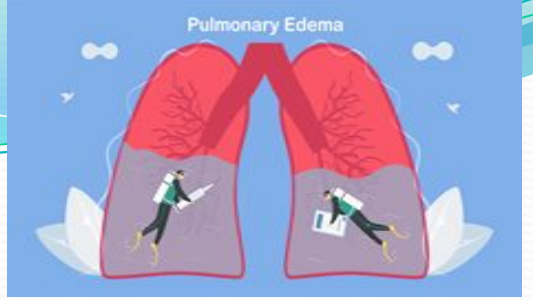
DEFINITION

Pulmonary edema is a condition characterized by fluid accumulation in the lungs caused by extravasations of fluid from pulmonary vasculature into the alveoli and interstitial spaces of the lungs



Pulmonary edema usually due to imbalance of Starling forces or .endothelial injury

Pathogenesis



A-Hemodynamic edema

1- Pulmonary edema due to increased hydrostatic pressure can be seen in left-sided heart failure, mitral valve stenosis, and fluid overload.

2- Pulmonary edema due to decreased oncotic pressure can be seen in nephrotic syndrome (urinary loss of protein results in hypoalbuminemia and decreased plasma oncotic pressure) and liver disease.

B-Micro -vascular injury

Pulmonary edema due to increased capillary permeability can be due to infections, drugs (bleomycin, heroin), shock, and radiation.

Sign and Symptoms

1-Dyspnea and difficult breathing
2-Pink or blood tinged ,frothy sputum
3-Tachypnea(abnormally rapid breathing and tachycardia.
4-Peripheral edema (pitting)
5-Hypoxemia and cyanosis
6-by auscultation (crackles) i.e crepitation

Acute pulmonary edema is a true medical emergency ; it is life –threatening condition
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Pink or blood tinged ,frothy sputum

Bat wing edema in a 71-year-old woman with fluid overload and cardiac failure.

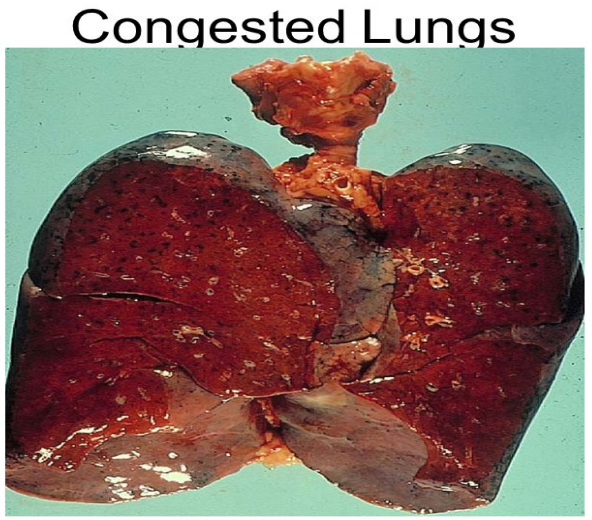
A- Normal CXR

B-CXR :-showed butterfly pattern indicative of bilateral diffuse alveolar disease (also called Bat wing appearance)

Morphology of pulmonary edema

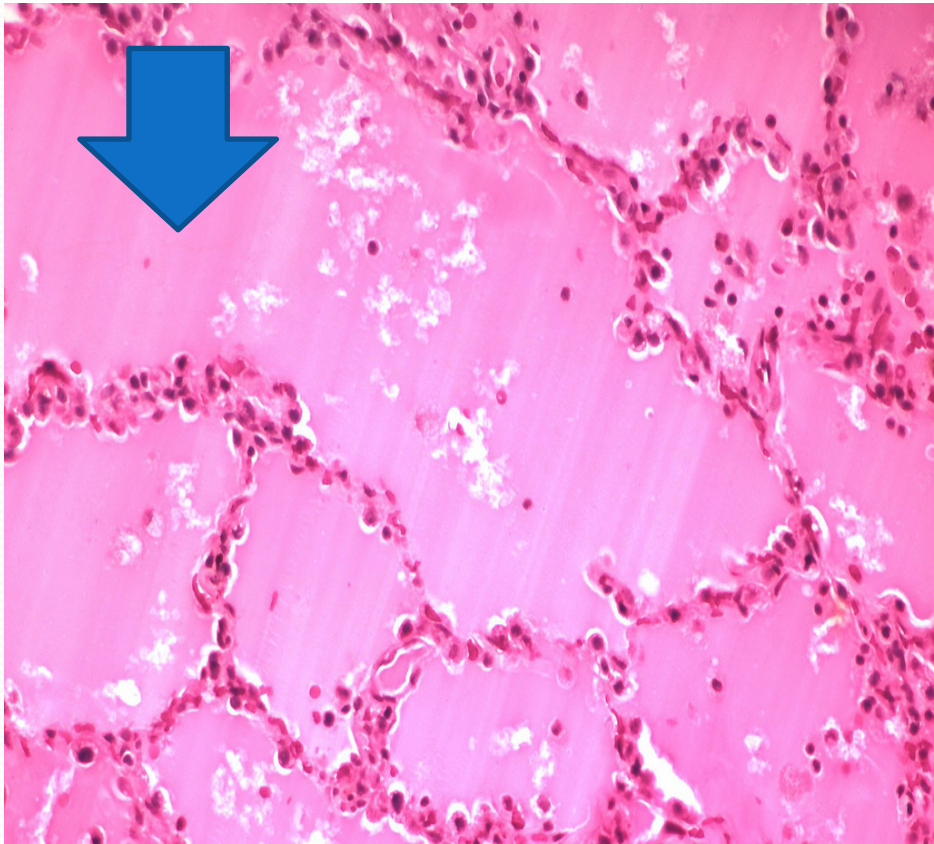
1-Grossly :-

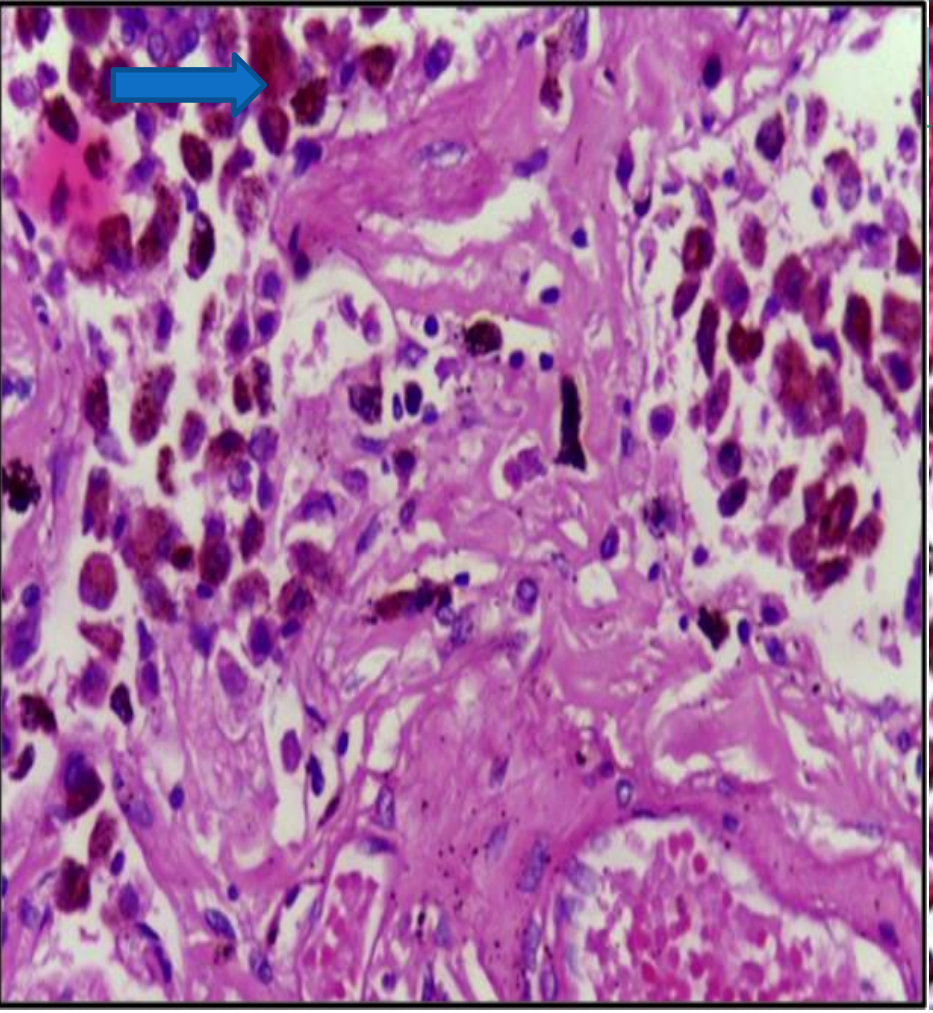
shows wet, heavy lungs (usually worse in lower lobes)

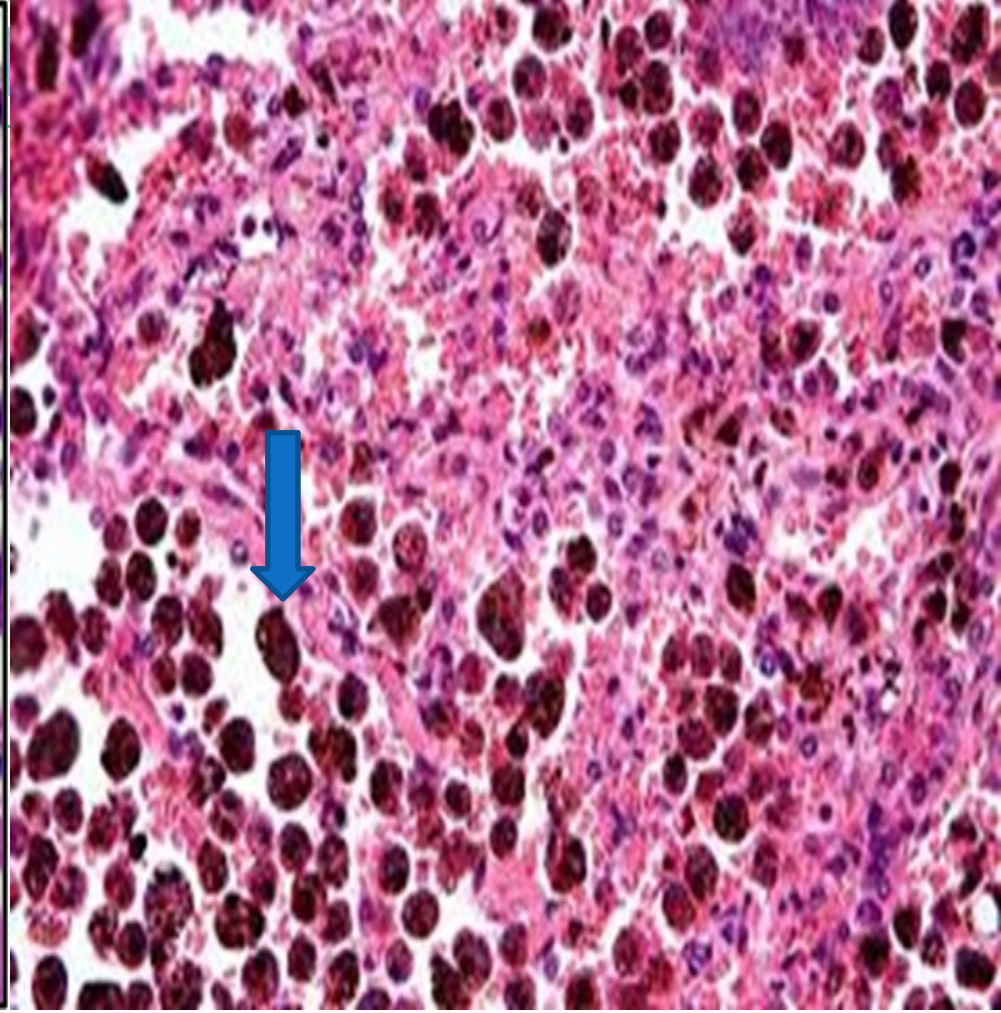


2- Microscopic examination :-

Pink staining material in the alveoli and interstitial spaces







-:Pulmonary edema caused by LHF show intra-alveolar fluid, engorged capillaries, and macrophage contained brown granules which called hemosiderin-laden macrophages (heart-failure cells) which considers as pathgnomic feature of LHF

Thank you for taking my lecture . I hope you learned something new.