

Short Note: Pneumothorax



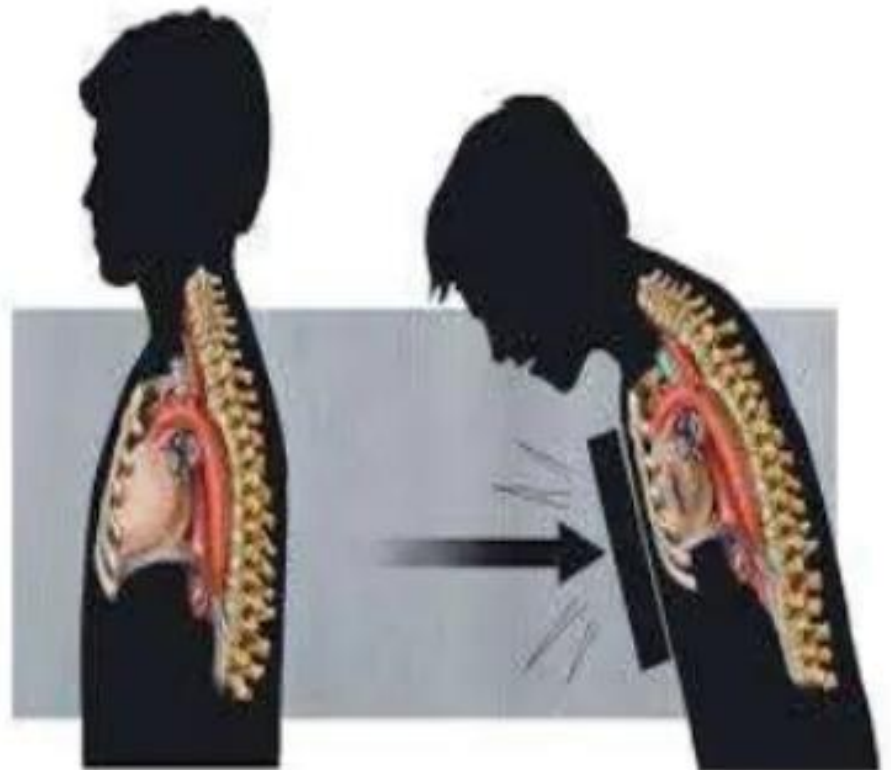
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DEFINITION:

- A pneumothorax is the presence of air in the pleural space.
- As a result of the air in the pleural space, there is partial or complete collapse of the lung.
- Pneumothorax associated with trauma may be accompanied by haemothorax, a condition called hemopneumothorax.

CAUSES:

- Blunt trauma.
- Crush injury.
- Penetrating trauma.

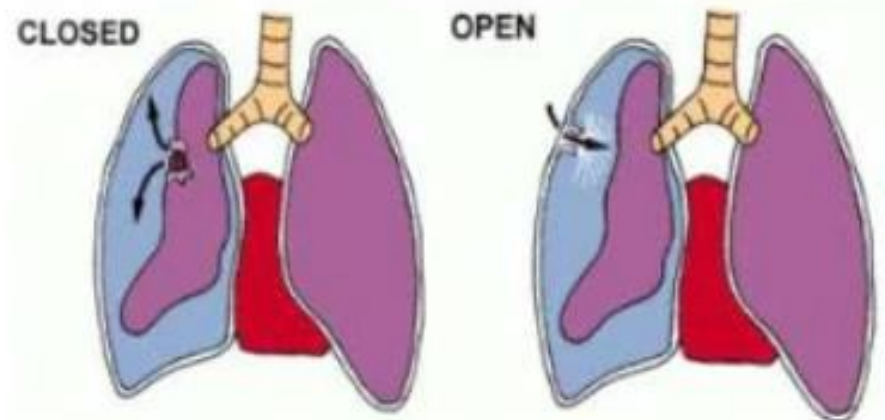


TYPES OF PNEUMOTHORAX:

- Closed pneumothorax
- Open pneumothorax
- Tension pneumothorax

CLOSED PNEUMOTHORAX:

- Closed pneumothorax is not associated with external wound.
- It is caused by rupture of small blebs on the visceral pleural space.
- The causes of the blebs are unknown.



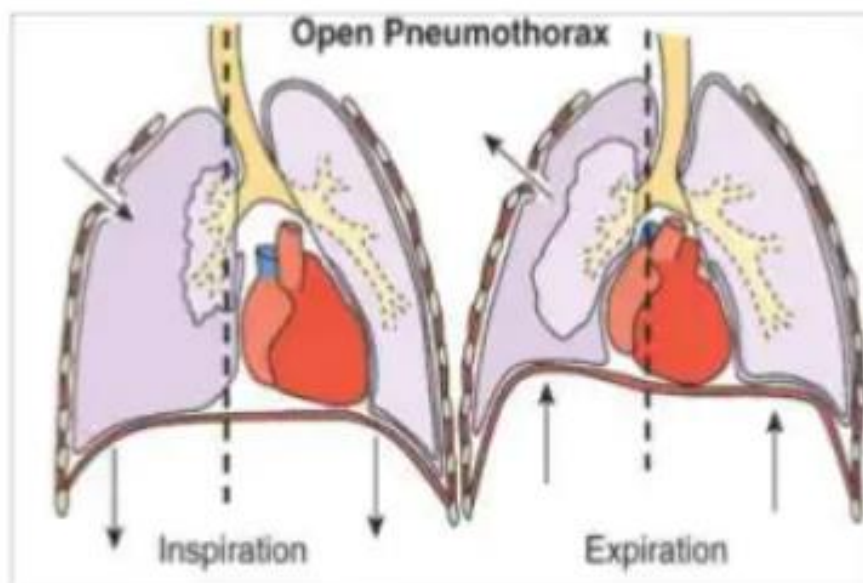
INCIDENCE

- This condition occurs most commonly in underweight male cigarette smokers between 20 and 40 years of age .

CAUSES:

- Injury to the lungs from mechanical ventilation.
- Injury to the lungs from the insertion of a subclavian catheter.
- Perforation of oesophagus
- Injury to the lungs from broken ribs.
- Ruptured blebs or emphysema in a patient with COPD.

OPEN PNEUMOTHORAX:



- Open pneumothorax occurs when air enters the pleural space through an opening in the chest wall.
- Examples include stab, or gunshot wounds and surgical thoracotomy.

Conti...

- An open pneumothorax should be covered with a vented dressing.
- A vented dressing is one secured on 3 sides with the fourth side left untapped
- This allows air to escape from the vent and decreases the likelihood of tension pneumothorax developing.

Conti...

- If the object that caused the open chest wound is still in place, it should not be removed until a physician is present.
- The impaled object should be stabilized with a bulky dressing.



TENSION PNEUMOTHORAX:

- TP is a pneumothorax with rapid accumulation of air in the pleural space, causing severely high intrapleural pressures with resultant tension on the heart and great vessels.
- It may result from either an open or a closed pneumothorax.

Bulging muscle in supraclavicular area

Wound sites

Pleural space filled with air

Collapsed lung

Bulging intercostal muscles

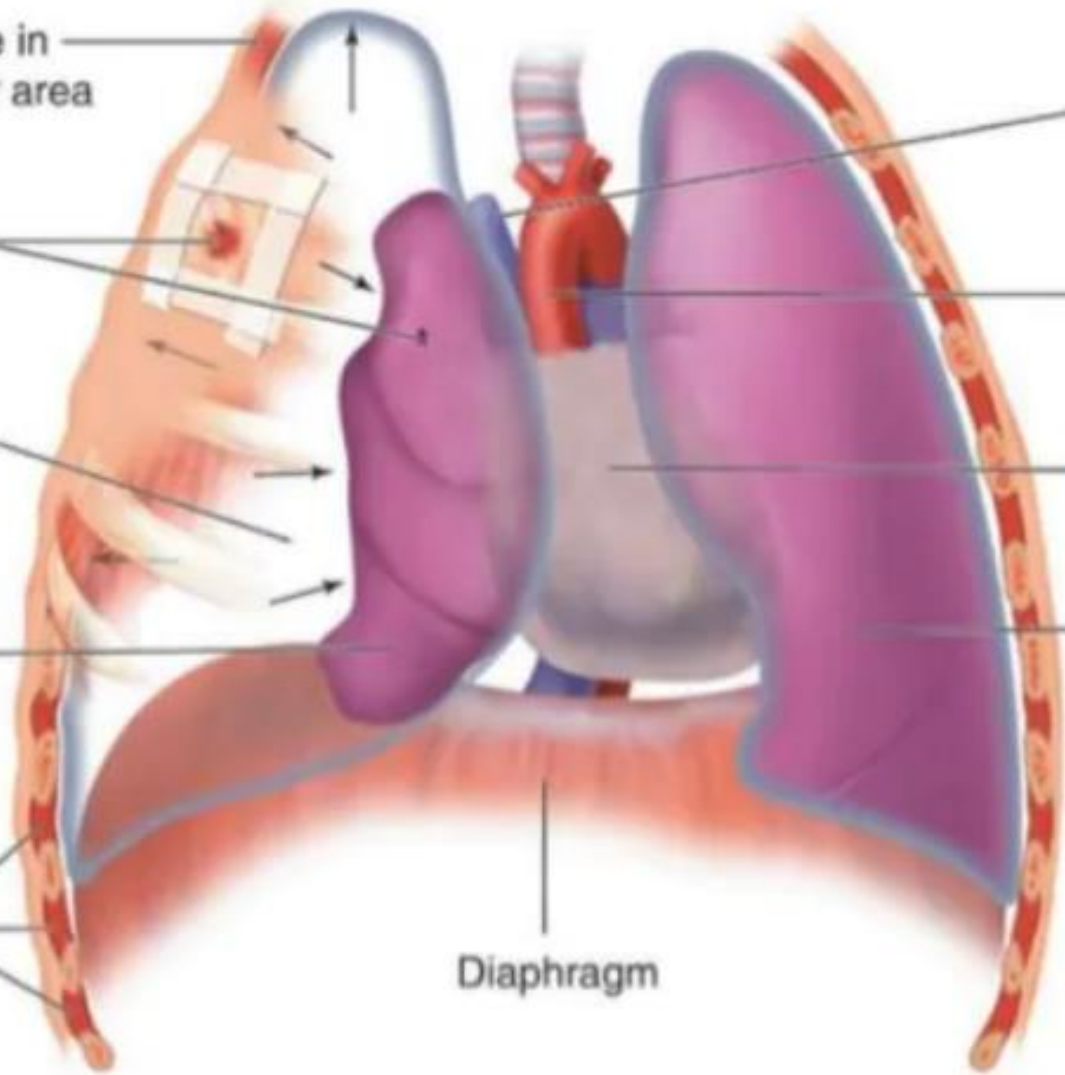
Diaphragm

Compressed venae cavae

Compressed aorta

Compressed heart

Compressed lung



Conti..

- In an open chest wound, a flap may act as a one way valve, thus air can enter during inspiration but can not escape.
- The intrathoracic pressure increases, lung collapses, and the mediastinum shifts towards the unaffected side which is subsequently compressed.
- As the pressure increases CO is altered because of decreased venous return and compression of the venacava and aorta.

Conti...

- TP can also occur with mechanical ventilation and resuscitative efforts.
- It can occur if chest tubes are clamped or become blocked in patients with pneumothorax. Unclamping or relief of the obstruction will remedy this situation.

Conti...

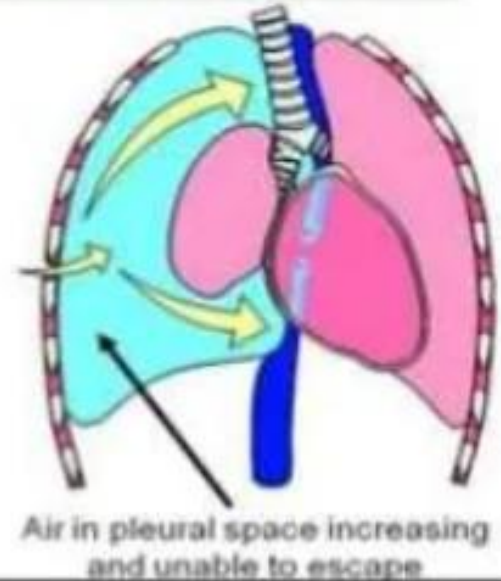
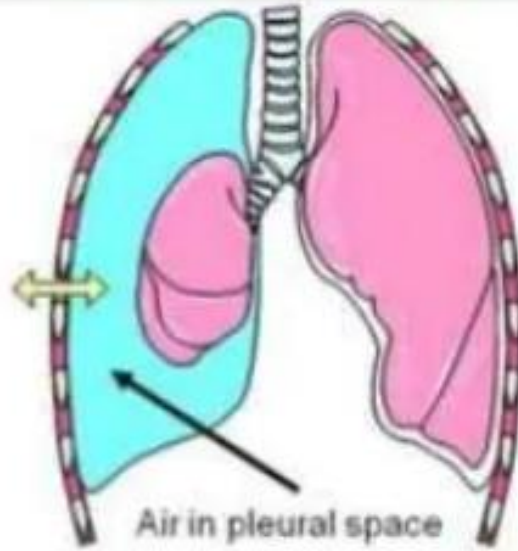
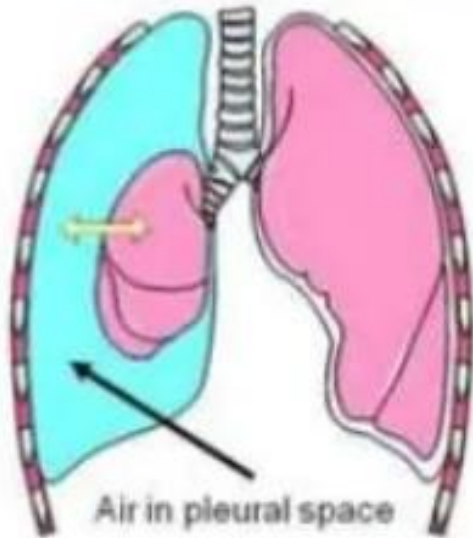
- Tension pneumothorax is a medical emergency with both the respiratory and circulatory system affected.
- If the tension in the pleural space is not relieved, the patient is likely to die from inadequate CO or severe hypoxemia.
- The emergency management is to insert a large bore needle into the chest wall to release the trapped air.

Pneumothorax

Closed pneumothorax

Open pneumothorax

Tension pneumothorax



The pleural cavity pressure is $<$ the atmospheric pressure

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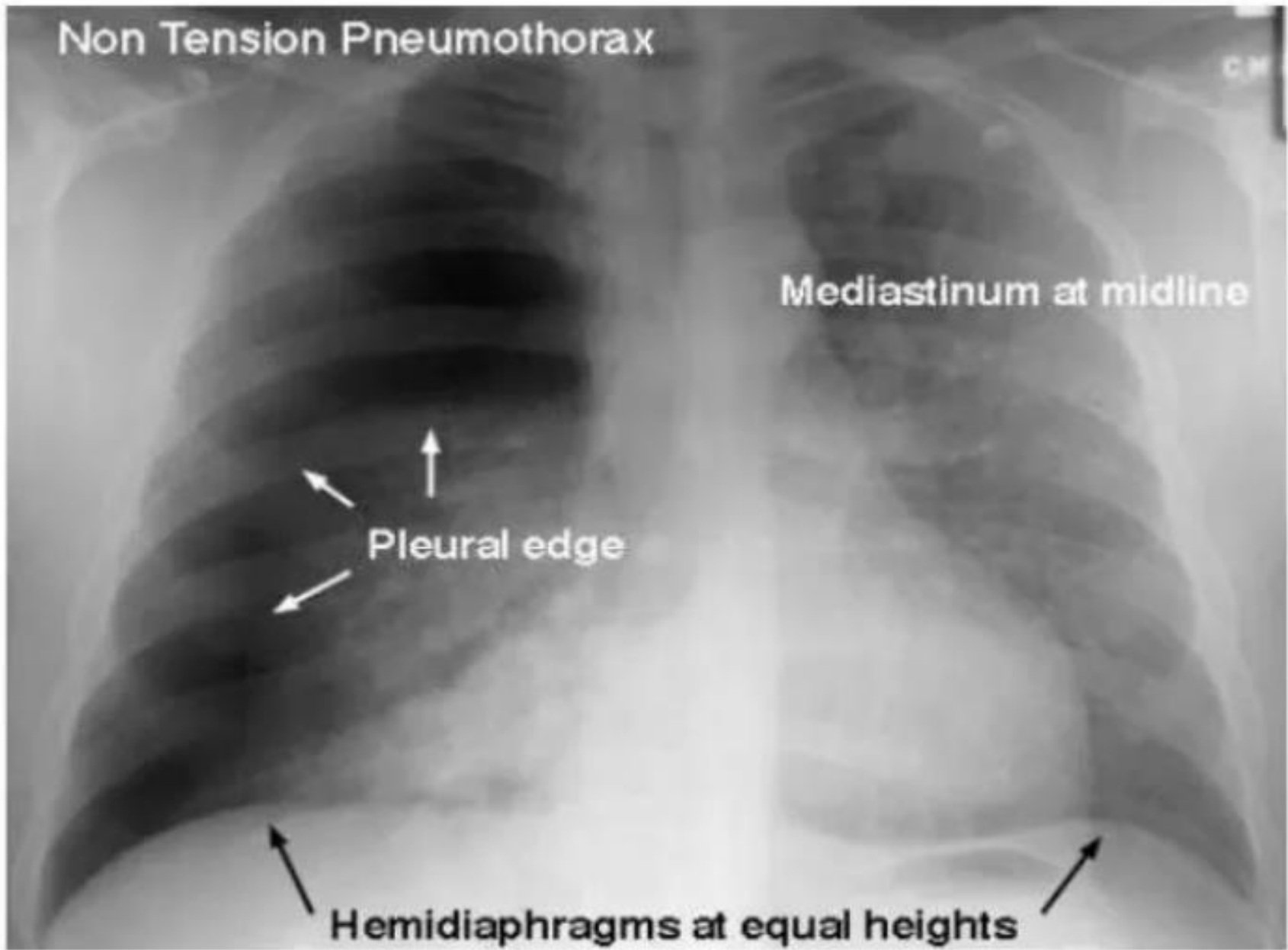
Non Tension Pneumothorax

C.M.

Mediastinum at midline

Pleural edge

Hemidiaphragms at equal heights

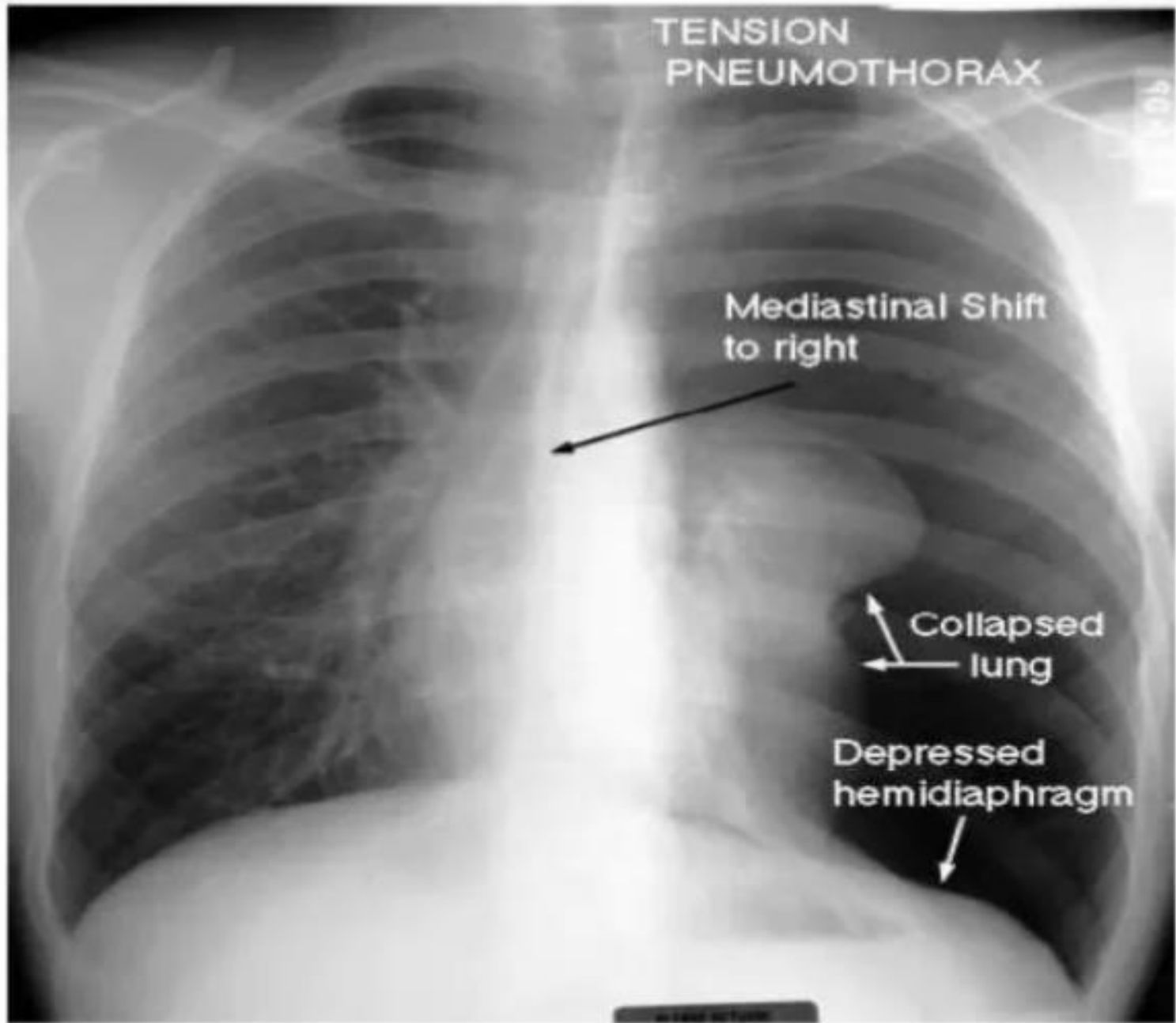


TENSION
PNEUMOTHORAX

Mediastinal Shift
to right

Collapsed
lung

Depressed
hemidiaphragm





CLINICAL MANIFESTATIONS:

- If the pneumothorax is small –
 - Mild tachycardia.
 - Mild dyspnoea.
- If the pneumothorax is large –
 - Respiratory distress.
 - Shallow or rapid respirations.
 - Air hunger.
 - Oxygen desaturation



Conti..

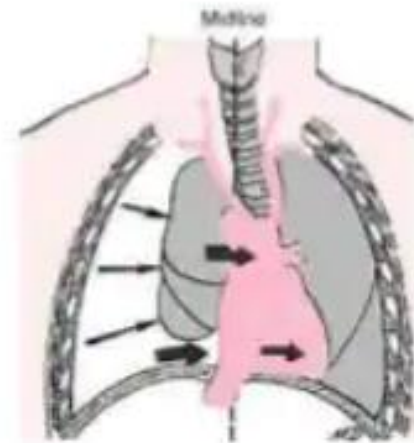
- Chest pain.
- Haemoptysis

- On auscultation –
- No breath sound over the affected area.

- In tension pneumothorax –
- Severe respiratory distress.

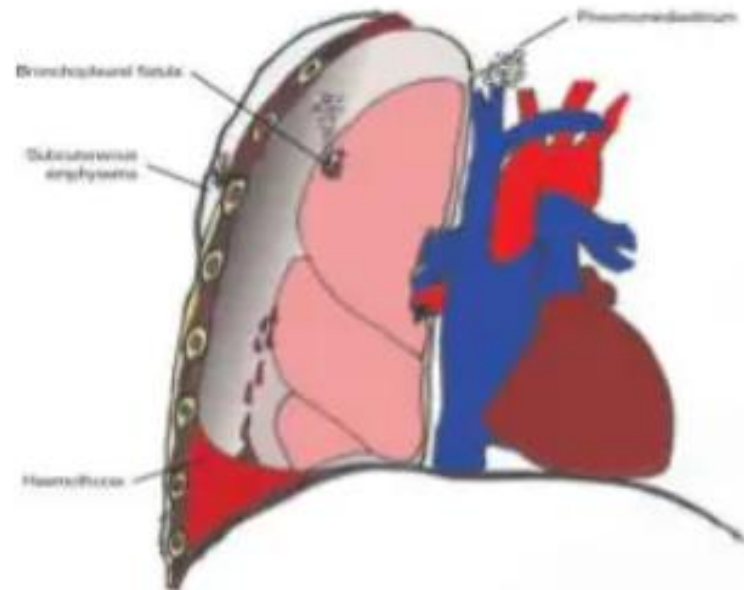
Conti..

- Tachycardia.
- Hypotension.
- Mediastinal displacement with tracheal shift to the unaffected side.



HEMOTHORAX:

- Haemothorax is an accumulation of blood in the intrapleural space.
- It is frequently found in association with open pneumothorax and is then called hemopneumothorax.



CAUSES:

- Chest trauma.
- Lung malignancy
- Complications of anticoagulant therapy
- Pulmonary embolus
- Tearing of pleural adhesions

DIAGNOSTIC EVALUATION

- History.
- Physical examination.
- PFT.
- Chest X-ray.
- ABG or oximetry

COLLABORATIVE CARE:

- Treatment of the disease depends on the severity of the disease and the underlying cause.
- If the amount of air or fluid is minimal, aspiration can be done from the pleural space with a large bore needle.
- It is a portable, light weight, one way flutter valve device similar to water seal drain.

NURSING MANAGEMENT:

- Ineffective breathing pattern related to pressure on the lungs as manifested by decreased SpO₂, use of accessory muscles during inspiration.
- Potential for complications related to hypoxemia.
- Imbalanced nutrition less than body requirement related to poor appetite, SOB as evidenced by weight loss.
- Insomnia related to anxiety, dyspnoea, depression as evidenced by frequent awakening , prolonged onset of sleep, lethargy, fatigue, irritability.



Thank
you!!