Tension Pneumothorax

Tension pneumothorax is characterized by intrapleural pressure that is greater than the atmospheric pressure. It presents with sudden deterioration, hypotension, jugular venous distention and no breath sounds. It is most commonly due to positive pressure mechanical ventilation.



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Mechanism

Air Enters Pleural Space, but Can't Exit
Air Enters Space between Lungs and Chest-wall, but can't escape Black-hole
There must be a one-way valve mechanism causing more air to enter the pleural space on inspiration than exits on expiration. This collapses the ipsilateral lung and shifts the mediastinum away from the side of the pneumothorax.

Trauma or Infection
Trauma-spike and Bacteria-guy
Tension pneumothorax can be caused by trauma or infection, which perforates the lung, leading to a one-way flap.

Signs and Symptoms

Decreased Breath Sounds
Down-arrow Muffled Lungs
Decreased breath sounds are heard due to presence of air in the pleural space.

Trachea Deviates Away from Affected Side
Trachea Deviating Away
Due to buildup of pressure on the ipsilateral side of the tension pneumothorax, it may cause the mediastinum and trachea to deviate away from the affected side.

Chest Pain
Chest Pain-bolt
Chest pain is present in tension pneumothorax.

Tachycardia
Tac-heart-card
Marked tachycardia is present in tension pneumothorax.

Tachypnea
Tac-P-lungs
Rapid labored respirations are present in tension pneumothorax.

Hypotension
Hippo-BP
Tension pneumothorax can cause increased pressure within the chest vacuity and thus reduce systemic venous return to the heart leading to reduced cardiac output and hypotension.

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Hypoxemia

Hippo-blood-O2

Ventilation-perfusion mismatch can lead to decreased PaO2.

Hyperresonance

Hiker-resonating

Increased intrapleural pressure can lead to hyperresonance on percussion.

Emergency

Emergency-light

Tension pneumothorax presents with a sudden deterioration of the patient and is a medical emergency.

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