Procedure 702: Pleural Decompression

Revision 7/9/20
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- Indications:
  - When clinical findings reveal a tension pneumothorax (severe respiratory distress, diminished breath sounds on the affected side, tracheal deviation) with rapidly deteriorating vital signs.
  - Situations that raise suspicion for a tension pneumothorax are penetrating trauma, particularly to the chest or upper abdomen.
  - Respiratory and cardiovascular findings may include the following:
    - Respiratory distress (considered a universal finding) or respiratory arrest.
    - Tachypnea (or bradypnea as a preterminal event).
    - Asymmetric lung expansion - A mediastinal and tracheal shift to the contralateral side can occur with a large tension pneumothorax.
    - Distant or absent breath sounds - Unilaterally decreased or absent lung sounds is a common finding, but decreased air entry may be absent even in an advanced state of the disease.
    - Tachycardia - This is the most common finding. If the heart rate is faster than 135 beats/min, tension pneumothorax is likely.
    - Hypotension - This should be considered as an inconsistently present finding; although hypotension is typically considered a key sign of a tension pneumothorax, studies suggest that hypotension can be delayed until its appearance immediately precedes cardiovascular collapse.
    - Jugular venous distention - This is generally seen in tension pneumothorax, although it may be absent if hypotension is severe
- Equipment:
  - Pleural decompression kit.
  - Chlorhexidine swab.
  - 3 1/4-inch, 10 -14 gauge angiocath.
- Procedure:
  - Approved Sites:
    - 2nd to 3rd intercostal space, mid-clavicular line.
  - Prep site with chlorhexidine.
  - Firmly but carefully insert the needle at a 90-degree angle just over the superior aspect (superior border) of the rib, through the skin and pleura until air escapes or a distinct "give" is felt.
    - The undersurface of the rib should be avoided to limit injury to the neurovascular bundle.
    - Air should be freely aspirated (if not, you are not in the pleural space).
  - Remove the needle.
  - Attach a one-way valve. Secure with tape.
  - Recheck breath sounds and continuously monitor cardio-respiratory status.
- Complications:
  - lung laceration.
  - pneumothorax.

- hemorrhage secondary to damage to the intercostal artery or vein

- All patients with needle thoracostomy are considered *in extremis* and will be transported to the time closest receiving hospital.