Pneumothorax Management in 2016

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Objectives

• Classify pneumothorax
• Who needs re-expansion?
• What hardware to use
• Who needs admission to hospital
Types of Pneumothorax

• Primary Spontaneous Pneumothorax (no overt underlying lung disease)
• Secondary Spontaneous Pneumothorax (Co-existing COPD)
• Iatrogenic Pneumothorax (post central line or lung biopsy)
• Traumatic Pneumothorax
Typical Bullae
Who Needs Re-Expansion?

• Small pneumothorax (less than 3cm from apex to top of lung) can usually be managed conservatively. Resolve by 1 to 2% per day, so can take up to 2 weeks to resolve. Suggest weekly Xray until resolved.

• Large pneumothorax (more than 3 cm) usually require treatment
Hardware

• Large bore chest tubes are > than 20F up to 40 French size and are rarely used now for PSP in Europe and Canada but are still standard in the USA

• Large bore chest tubes are still needed for most traumatic pneumothorax and for patients undergoing positive pressure ventilation (intubation, BIPAP etc.)
Small Bore Chest Tubes

• Also called pleural catheters or “Pig Tail” catheter
• Several manufacturers of kits all with their own advantages and disadvantages
• The “Pig Tail” in Cook’s Wayne Pneumothorax kit has a guidewire for insertion, curls up like a pig tail and can drain small amounts of pleural fluid along with air.
• Cook and Arrow also make guidewire-free kits which are simpler to use and less expensive.
Small Bore Chest Tubes or Pleural Catheters

- Can be easily inserted by ED docs
- Successful re-expansion for PSP and iatrogenic pneumothorax about 80% of the time
- Can be used for secondary pneumothorax (underlying COPD) but have a lower threshold to admit for observation
- Use with caution in trauma or in ventilated patient
Advantages of "Pig Tail" and Heimlich Valve

• 80% require no admission
• Less pain
• NO serious complications in published studies
• Traditional Chest Tube and Admission is 4 day admission with wall suction.
• No difference in recurrence rates (25%)
Location of Tube?

• 55% of British Housestaff would place tube in an unsafe location, usually in an inferior spot.
• Have patient place their hand behind their head, to increase intercostal space
“Triangle of Safety”
Link to Video Showing Insertion Technique

- http://www.youtube.com/watch?v=xkB9MkuCQE4
Once the tube is in, what next?

• Aspiration with a 50 ml syringe (takes about 20 aspirations)
  or
• Attach to underwater seal (Pleurovac, Thoraclex, Sahara are a few brand names)
  or
• Attach to Heimlich or Flutter valve
Heimlich or Flutter Valve
Underwater Seal Device

• Can apply wall suction (rarely needed for PSP)

• Can collect fluid/blood along with air

• Reduces patient mobility and usually requires admission to hospital
Patient Education

• Smoking cessation dramatically reduces recurrence rate.
• No flying until 100% resolution
• Scuba divers should be referred for consultation and consideration of video assisted thorascopic surgery (VATS)
• VATS should be considered for certain high risk groups and multiple recurrences.
Who Needs Admission?

- Unreliable patient
- Needing wall suction to stay inflated (<10% of patients)
- Consider for secondary spont pneumothorax (COPD etc.)
- Too much pleural fluid/blood (need Pleurovac)
- Hypoxic patients
- Patients who have a persistent air leak after 4 days of Rx
Small size (< 3 cm) and asymptomatic

- Observation, repeat CXR in 4 – 6 hours
  - No change
  - Increase in size
    - (1) Discharge
    - (2) Follow up CXR in 24 hours

Largersize (> 3 cm) or symptomatic

- Pleural catheter and attach to Heimlich valve x 1 hour or aspiration, repeat CXR
  - Re-Expanded
  - Close valve x 4-6 hours, repeat CXR
  - Remains expanded
    - (1) Discharge after removing tube
    - (2) Follow up CXR
  - Recurrent collapse
    - Open valve, repeat CXR
  - Re-Expanded
  - Minimal Improvement
    - Attach to underwater seal & suction x 1 hour, repeat CXR (Remove Heimlich)
    - (1) Admission
    - (2) Continue with
      - (3)布拉干达
References

