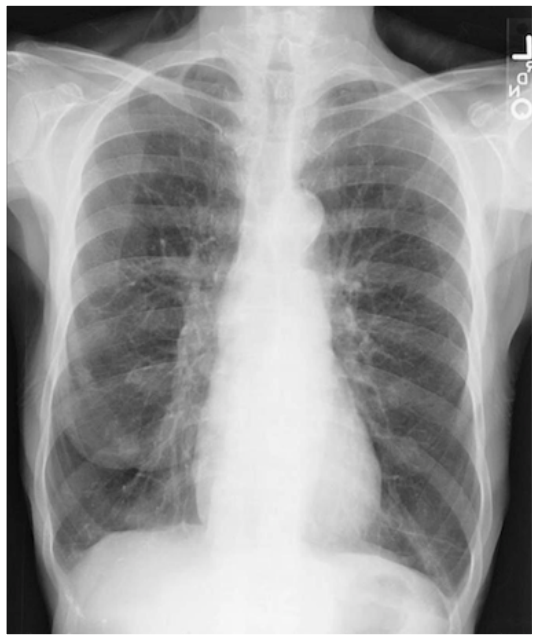


EMERGENCY MEDICINE CASES



SUMMARY OF EPISODE 24 PART 2:
RESPIRATORY EMERGENCIES,
WITH DR. ANIL CHOPRA AND
DR. JOHN FOOTE

COPD Initial Assessment

PREPARED BY ANTON HELMAN

Signs of Impending Resp Failure

- Accessory muscle use
- Sitting up and leaning forward
- Altered mental status
- Diaphoresis ('if the pt is sweating, so should you')
- Poor air entry ('quiet chest')

Can Venous Blood Gas replace Arterial Blood Gas?

While VBG is accurate enough to guide Rx in DKA, in COPD the PCO₂ does not correlate well enough, so our experts recommend using ABG initially to help guide difficult intubation decisions and a VBG to monitor therapy after that

Criteria for COPD exacerbation -and who requires antibiotics

- 2 of 3 cardinal symptoms
1. Increased dyspnea
 2. Increased sputum volume
 3. Increased sputum purulence

Abx: 77% decreased mortality!

COPD OXYGEN SATURATION TARGET = 88-92% OR PATIENT'S BASELINE IF KNOWN

CO₂ retention occurs when administering high flow oxygen to maintain a saturation above this target, increasing the risk of altered mental status, decreased respiratory drive and impending respiratory failure.

A recent prehospital RCT showed that oxygen treatment titrated by paramedics to achieve arterial oxygen saturations between 88% and 92%, for patients with SOB and COPD history, **reduced the risk of death** from respiratory failure by **58% for all patients and 78% for patients with confirmed COPD**, compared with **high flow oxygen**. For high flow oxygen treatment in patients with COPD, the number need to harm (**NNH**) = 14.(1)

COPD Management, Hemoptysis & Pneumonia

COPD MEDICATION PEARLS

Oral steroids have been shown to be as effective as IV steroids with similar time to onset of action and trend to shorter hospital stay (a 5 day course, no taper)

2.5mg Salbutamol is as effective as 5mg

MgSO₄ 2g IV has been shown in small studies to improve FEV₁ & Peak flow, but no mortality benefit

No role for aminophylline or heliox

Antibiotic duration of 5 days is all that is necessary (no evidence that longer duration of therapy is efficacious)

BIPAP IS VERY EFFECTIVE

BIPAP significantly decreases mortality, morbidity, length of hospital stay & need for intubation in COPD, and pneumonia in this setting is **not** a contraindication

INTUBATING THE COPDer

- try to **avoid** intubation as COPDer have a high risk of barotrauma after intubation
- keep patient upright as long as possible prior to intubation
- give NS bolus to help avoid post intubation hypotension
- attenuate bronchospasm by spraying the airway well and considering Ketamine as the induction agent of choice
- use a large ETT (8+) to decrease airflow resistance & for suctioning
- use low tidal volumes (5-7ml/kg) & low vent rates to avoid barotrauma

***FOR COPD, CONSIDER A 'WALK TEST' WITH R.T. TO DETERMINE ELIGIBILITY FOR DISCHARGE**

APPROACH TO HEMOPTYSIS

1. Degree of hemoptysis: streaked sputum vs gross <1 tsp vs massive

2. Rule out ENT or GI source

3. Consider causes:

- Cancer
- Infectious (pneumonia, TB etc)
- Interstitial (eg: bronchiectasis)
- Vascluar (PE, CHF, valvular heart dz, aortobronchial fistula)

HEMOPTYSIS WORK-UP

90% of pts with cancer as a cause for hemoptysis will have an abnormal CXR

Bronchoscopy and/or CT

MANAGEMENT OF MASSIVE HEMOPTYSIS

Traditional pt position of 'bleeding lung down' may worsen ventilation, so some experts recommend prone head down

Use 2+ suction catheters & a large ETT

When airway is obscured by blood, some experts advocate using a 'bougie' which obviates the need to visualize the chords and/or intubating the esophagus first so as to facilitate blind intubation of the airway

Advance the ETT into mainstem bronchus of the nonbleeding lung if bleeding continues, with help from anesthetist

PNEUMONIA ASSESSMENT

- History and physical have poor sensitivity and specificity for pneumonia
- Up to 30% of pts with pneumonia will have negative initial CXR in the ED, more likely with elderly, dehydration, immunocompromised state
- RR of 35+ predicts respiratory failure
- Suspect TB pneumonia in immigrants from high prevalence countries, HIV,

prisons/shelters, prolonged weight loss and constitutional symptoms, hemoptysis, apical CXR infiltrate

•Avoid respiratory fluoroquinolones in pts suspected of TB pneumonia as it may partially treat TB and make the Dx more difficult during their hospital stay

•Blood cultures are recommended only for pts sick enough to be admitted who have any of: cavitary infiltrates, pleural effusion, leukopenia, active alcohol abuse, chronic severe liver disease & asplenia, ICU admit

•Sputum cultures only necessary for suspected TB or MRSA pneumonia

PNEUMONIA & ANTIBIOTICS (IDSA GUIDELINES) (2)

The '4 hours to antibiotics' rule is no longer recommended and rather antibiotics should be given in a timely manner while the patient is in the ED

Outpatient, previously healthy, no abx use in past 3 months: Macrolide or Doxycycline

Outpatient, co-morbidities or abx use in past 3 months and Non-ICU inpatients: Respiratory Fluoroquinolone **or** B-lactam + Macrolide

ICU: Respiratory fluoroquinolone **or** B-lactam + Macrolide, and

Cover *pseudomonas* (imipenem or piperacillin plus cipro or levofloxacin or azithromycin in combination with aminoglycoside) for patients who: steroid dependent, prolonged hospitalization, from nursing home or ICU, structural lung disease

Cover MRSA for at risk patients (vancomycin or linezolid)

***THERE IS UP TO 35% PNEUMOCOCCUS RESISTANCE TO MACROLIDES IN CANADA**

What is HCAP? Which patients with pneumonia need admission? ICU?.....and what's new with pneumothorax?

HEALTHCARE ASSOCIATED PNEUMONIA (HCAP)

Pneumonia that occurs in non-hospitalized patient with extensive health care contact (ie: IV therapy, wound care, IV chemotherapy in prior 30 days, resident in nursing home, hospitalization for 2+ days within prior 90d, attendance at hemodialysis clinic within prior 30d)

At higher risk for *staph aureus*, *klebsiella*, *pseudomonas* so need to cover for these according to local patterns

PNEUMONIA DISPOSITION

'CURB-65' RULE

1 pt each for:

Confusion

Uremia (BUN>19)

RR>30

BP<90

65+ age

2+ points = admit

0-1 points = d/c

Modified CURB-65 rule leaves out Uremia and is as predictive without the need for lab testing

A study in 2011 showed an association between an $O_2\text{sat}<92\%$ and major adverse events and can be used as a criteria for admission (3)

'SMART COP' RULE FOR ICU ADMISSION

SBP<90

Multilobar

Albumin<3.5mg/dL

RR>30

Tachy>125

Confusion

O 2sat <90

PH<7.35

3+point = ICU admit

2 points or less = low risk

NEEDLE DECOMPRESSION FOR PNEUMOTHORAX

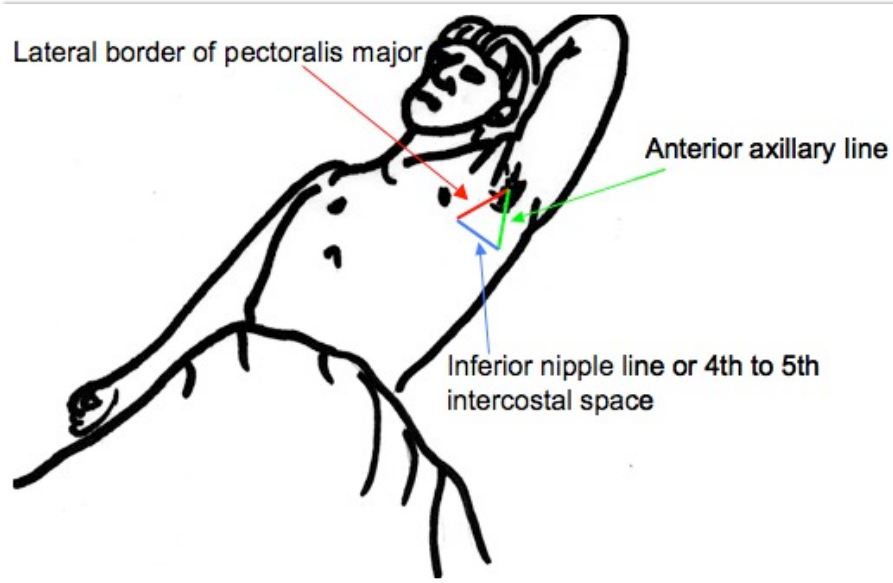
In patients with pneumothorax requiring immediate needle decompression, the lateral approach that we use for tube thoracostomy, should be considered as an alternative to the traditional anterior approach (2nd intercostal space, mid-clavicular line) (4)

WHY?

- wall thickness for lateral approach is less than that for anterior
- there are more vital structures that can be damaged by the needle with anterior approach
- the lateral approach allows chest compressions to be continued in the case of cardiac arrest

WHERE?

The landmarks for the lateral approach are the same as those for tube thoracostomy and can be identified by the 'Triangle of Safety' as in the diagram below



References:

- 1) Austin et al. BMJ. 2010;341:c5462.
- 2) Mandell et al. Clin Inf Dis; 2007;44:S27-72
- 3) Sumit et al. Clin Inf Dis. 2011;52(3), 325-331
- 4) Sanchez et al. Acad Emerg Med. 2011;18(10), 1022-6



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