HEMOPTYSIS
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Triage
Who needs....
• Immediate undivided attention
• Urgent evaluation
• Safe to go home

Differential Diagnoses
• What is the most common for our patients?
  ➢ Bronchitis
  • What are some others?
    ➢ Cancer
    ➢ Pneumonia - TB++, Aspergillosis, abscess
    ➢ Pulmonary Embolism
    ➢ Pulmonary HTN - assoc w/ mitral stenosis, CHF
    ➢ Bronchiectasis - COPD, Cystic Fibrosis
    ➢ Autoimmune - lupus, granulomatosis w/ polyangiitis, Goodpasture's syndrome
    ➢ Tox - cocaine, heroin inhalation
    ➢ Trauma - pulmonary contusions, injury to the airway
    ➢ Structural - associated with tracheostomy, aortobronchial fistula
    ➢ Iatrogenic - bronchoscopy, biopsy

Mild vs Massive
>500-600cc in 24 hours

Anatomy

Quick History!
• Was it even hemoptysis? (as opposed to hematemesis)
• How much blood was there?
• How many times did this happen?
• When was the last episode?
• Previous medical diagnoses
• Rx for anticoagulation
The patient that needs you NOW

- Unable to protect airway
- Asphyxiation kills them because there is no O2 exchange, not exsanguination
- Only takes 150-300cc blood to fill bronchial tree
- Respiratory distress, hypoxic, hemodynamically unstable

What do I do for the sickest patient?

- **Outpatient**
  - Get to an ER NOW
  - Supplemental O2
  - If you know the source (which lung), lay them on the side of where you think the bleeding might be coming from. Gravity can help you!

- **ER or inpatient**
  - Airway, Breathing, Circulation
  - Consult depending on source to control bleeding
  - OR vs ICU

ABC’s

Rapid sequence intubation

- Use as large an ET tube as you can (ideally 8mm)
- Have suction ready!
- Have patient sitting up, not supine.
- If the bleeding is coming from the L side, you could advance the tube farther than you normally would. It will enter the R bronchus and ventilate the R lung specifically.
- If coming from R side, you could try to intubate the L side w/ a bougie or bronchoscope.
- Lay the patient on the culprit side so that gravity keeps the blood from crossing the carina.

ABC’s continued

**Circulation**

- 2L crystalloid -> blood PRN
- Treat coagulopathy PRN
- CT scan only if stable enough
- Stop the bleeding
  - Call Surgeon or IR
  - Fogarty catheter
  - Possible bronchoscopy in ER
What if bronch doesn’t stop the bleeding?

CALL ENT EARLY!
- You can orally intubate most of these patients. Not if they’ve had a laryngectomy.
- Consider a tracheo innominate fistula - pressure from the tracheostomy tube causes erosion of the trachea or innominate artery
- If that’s the case, place your finger into the site, hold pressure anteriorly from inside the trachea to place pressure and stop the bleeding.
- Don’t forget the other differential diagnoses.

Red Flags
- Is the patient a smoker?
- Any recent travel?
- Is there purulent sputum in the blood?
- Any lower extremity swelling?
- Diagnosis of cancer
- Previous surgeries - abdominal, throat
- Trauma

Therapeutic Bronch

Hemoptysis w/ a Tracheostomy

Switching gears...
What about the patients that need urgent evaluation, but not necessarily intubation?
-CXR
-CT
-Bronchoscopy
Physical Exam- Assuming ABC’s are controlled

• HEENT- evaluate posterior pharynx for epistaxis
• Lungs
  • wheezing could demonstrate chronic inflammation
  • reduced breath sounds that could be an effusion— hemothorax
  • Crackles could be from heart failure or diffuse alveolar hemorrhage
• Cardiac- murmurs are revealing for acute heart failure, causing pulmonary HTN
• Skin- telangiectasia or petechiae clue you in to a bleeding disorder

Workup… depends

• Tailored to risk factors
• CXR is a good place to start
• Increase threshold of basic workup w/ anticoagulation
• CBC, CMP, coags, U/A, ABG

Chest X-rays

Pneumonia

TB
When do I order a CT?

- Massive hemoptysis
- Stable for imaging
- Depends on history and exam
- Clinician preference
What about the children?

- Foreign body
- Infection- TB, influenza
- Congenital heart disease
- Bronchiectasis (CF)
- Coagulopathy
- Minor trauma from cough
- Trauma- pulmonary contusion

Diff Dx
Echo- Pulmonary HTN

TBH... it’s probably acute bronchitis
- Clinical diagnosis- often have chest pain & dyspnea
- Physical exam sometimes impressive- wheezing, horrible cough
- Workup reassuring
- Usually viral
- You’ve determined that bacterial PNA, asthma are likely not contributory
- Consider Bordetella pertussis! Suspect if >2 weeks symptoms &/or exposure
- Cough- average 18 days
- Supportive care & reassurance

Dispo?
- Most people can go home... because it’s bronchitis
- Caution with cancer patient- sentinel bleed
- Caution with those on anticoagulation
- Think worst first
- Everyone will need at least follow up with PCP, ENT, or Pulm

Now for some cases....

Case 1
53F PMH HTN presenting with chest pain, dyspnea, hemoptysis.
- Flew in from Colorado this morning
- Subjective fever
- Painful cough
- No lower extremity swelling
- Multiple sick contacts at home
- Vaccines UTD, including flu
- Nonsmoker
- No past medical history of cancer, no recent unexplained weight loss
- No previous cardiac history, no previous stress tests

Physical Exam
- HR 109, RR 26, O2 95%, BP 146/57
- Clearly uncomfortable, but breathing nonlabored
- Loud, dry, hacking cough
- Normal heart sounds, peripheral pulses equal and palpable
- Severe bilateral wheezing, inspiratory and expiratory
- Abdomen soft and nontender
- Pretibial edema 1+
What do you do?

Treatment

- Hour long albuterol w/ minineb ipratropium
- Steroids
- Anti-tussive agents

She maintained her saturations. No mass found on CXR. She was still very uncomfortable. No episodes of hemothysis in department. Deemed safe for discharge.

Case 2

64M PMH cancer, unknown primary presenting with 2 large episodes of hemothysis at home, then with another episode en route with EMS. After the third episode of large volume hemothysis, O2 sats dropped to 82%.

You try to ask the patient what's wrong and he's unable to tell you.

Physical Exam

- HR 107, BP 102/66, O2 80%, RR 40, Temp 99.8
- Eyes open, unable to talk, appears drowsy
- Diaphoretic, pale
- Blood coating the oropharynx
- Moderate retractions, leaning forward, diminished breath sounds bilaterally worse on the L side
- Diffuse blood all over torso
- Abdomen soft and nontender, nondistended

Next step...

And then...

- O2 sats increase from 80% to 87%
- He continues to be tachycardic 110’s
- His blood pressure drops to 80 systolic
- You appreciate a lot of blood coming out of the endotracheal tube.
So you...

Case 3
68M PMH laryngeal cancer status post G tube placement for associated dysphagia presenting with 1 small episode of hemoptysis within the hour.

- No fevers, lightheadedness, dizziness
- No chest pain, dyspnea, or cough prior to this occurrence
- No abdominal pain, nausea, vomiting, a little bit of blood seen in G tube around the same time as the hemoptysis
- No lower extremity edema
- Former smoker
- No sick contacts
- No anticoagulation
- Follows with ENT and Radiation Oncology for tumor management

Physical Exam

- HR 86, RR 16, O2 95%, BP 136/80
- No acute distress, chronically ill, cachectic
- Dry mucosa
- Normal heart sounds, skin well-perfused
- CTAB, nonlabored breathing, no evidence of bleeding
- Abdomen soft and nontender, some dry blood in G tube
- No lower extremity edema

Plan?

unchanged from previous scan last month.

Dispo?

The patient looks well, no acute distress.... BUT...

- He is at risk for a sentinel bleed. This is a small bleed that will occur before a massive, life-threatening bleed that could compromise the airway. ENT should evaluate him BEFORE DISCHARGE.
- If this was someone in clinic, I'd send to the ED or ENT clinic for urgent evaluation.
- A recent patient I saw with this was admitted promptly.

References