Update in Pulmonary

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Disclosures:

- Galapagos  Research Support
- Abionic    Research Support
Case 1

35 year old female with 3mos history of cough.
Chronic Cough

• Cough that does not resolve in 3 weeks
• “The big 3” Asthma, Upper Airway Cough Syndrome, GERD
• Useful tests: Methacholine Challenge, Bravo probe, Therapeutic trials
• Etiology can be identified in > 90% of cases but workup may be prolonged
• Careful history is important
• Always exclude ACEI
Location of cough receptors:
- Larynx and supralaryngeal area
- Trachea and bronchi
- Ear canals and eardrums
- Pleura, pericardium and diaphragm
- Esophagus and stomach

Nerve:
- Vagus
- Spinal motor
- Phrenic

CNS cortical modulation

Effector:
- Expiratory muscles, including pelvic sphincters
- Diaphragm
- Larynx
- Trachea
- Bronchi
Cough 2-3 weeks

History, physical exam suggest post-nasal drip, asthma or EBRA

- Treat accordingly

Cough resolved

Cough persist

History, physical exam do not strongly suggest cause or do suggest pulmonary parenchymal disease

- Purulent sputum OR
- Smoker OR
- ACE inhibitor treatment OR
- Immunocompromised host

- Evaluate and treat accordingly (eg. antibiotics smoking cessation stop ACE inhibitors)

Cough resolved

Cough persist

Chest radiograph

Normal (or old unrelated abnormality)

- Evaluate based on the nature of the radiographic abnormality

Cough resolved

Cough persist

Abnormal

Sequentially treat (or evaluate) for the most common causes of cough*:
- Upper airway cough syndrome (allergy skin testing, sinus CT)
- Asthma (PFTs)
- Non-atrophic eosinophilic bronchitis (sputum eosinophilia)
- GERD (esophageal pH monitoring)

- Treat accordingly

Cough resolved

Cough persist

Evaluate for less common conditions (eg. sputum tests, HRCT scan, esophageal pH probe monitoring, esophagoscopy, flexible bronchoscopy, cardiac studies)

- Treat accordingly

Cough resolved

Cough persist

Always reconsider adequacy of treatment regimens before considering cough to be psychogenic
A graph showing the relationship between FEV₁ (percent of control) and Methacholine concentration (mg/mL). The graph compares asthmatic and normal responses:

- Asthmatic: PC₂₀ = 0.8
- Normal: PC₂₀ = 20

The baseline is indicated at 100%, with a decrease observed as Methacholine concentration increases.
Upper Airway Cough Syndrome

- Sensation of drainage or drippage.
- Localizes symptoms to base of neck
- Throat clearing
- May be irritative, allergic or vasomotor
- Clinical diagnosis. Imaging not helpful
- May see secretions in posterior pharynx or cobble-stoning
- Variably responsive to decongestants, antihistamines, nasal steroids or saline irrigation
- High dose gabapentin (up to 1800mg/day)
Non-asthmatic eosinophilic Bronchitis (NAEB)

• Similar to Eosinophilic esophagitis
• History of atopy, airways inflammation and sputum eosinophils
• Typically not hyper-reactive (negative methacholine challenge)
• Definitive diagnosis requires bronchial mucosal biopsy
• Most respond to inhaled steroids: Therapeutic trial
Case 2

• 28 year old female with history of multiple admissions to MICU for near fatal asthma.
Paradoxical Vocal Cord Dysfunction (ILO)

- Episodic symptoms: Wheezing, stridor, SOB, typically occur suddenly and refractory to treatment. “rapid on and off”
- Many triggers but frequently emotional component
- “breathy voice”
- May co-exist with asthma
- Rarely requires intubation
- High risk for iatrogenic illness
- Speech therapy can be effective.
Case 3

• 18 year old male with 2 week history of cough and worsening SOB
Outbreak of Lung Injury Associated with E-Cigarette Use or Vaping (EVALI)

• 1,604 cases have been reported to CDC
• 29 deaths have been confirmed
• All patients reported history of e-cigarette use
• Most patients report using THC containing products, particularly obtained through informal sources
• Some cases only used nicotine-containing, others both
• Only 20% of cases occur >35 years old
• Treatment is supportive
• Steroids are recommended. Most improve.
EVALI Symptoms

• Cough, SOB, or Chest pain
• Nausea, Vomiting, or diarrhea
• Fatigue, fever, or weight loss
• Vaping with last 3 mos
Case 4

• 62 year old male, former football lineman, comes in for surgical clearance for knee replacement surgery
Suspected OSA*

Known OSA

Is the patient able to comply with postoperative PAP?

Yes

No

Does surgery require a primarily opioid postoperative analgesic regimen?

Yes

No

Ambulatory surgery inappropriate

Ambulatory surgery inappropriate

Are OSA-related comorbidities well controlled?

- Hypertension
- Arrhythmias
- Heart failure
- Cerebrovascular disease
- Metabolic syndrome

Tiredness during the day
- Observed stopped breathing or choking/gasping during sleep
- High blood pressure

**Bang:**
- BMI >35 kg/m²
- Age >50 years
- Neck circumference ≥17 inches in males, ≥16 inches in females
- Gender male

**Scoring:**
- OSA low risk:
  - Yes to 0 to 2 questions
- OSA intermediate risk:
  - Yes to 3 or 4 questions
- OSA high risk:
  - Yes to ≥5 questions
  - OR Yes to ≥2 STOP + gender male
  - OR yes to ≥2 STOP + BMI >35 kg/m²
  - OR yes to ≥2 STOP + neck circumference ≥17 inches in males, ≥16 inches in females