Chronic Cough

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The Larynx

- Biological valve necessary because of shared digestive & respiratory tract
- Respiration
- Airway protection during swallowing
- Phonation
- System exacts a high price for phonation

Airway Protection

- Spectrum of laryngeal closure responses
- Voluntary/mild ➔ Reflex/severe
- Throat clear
- Cough
- Laryngospasm

Airway Protection

- Increased laryngeal closure responses = irritation
- Extrinsic (to larynx)
- Intrinsic – neurogenic cough

Reflux in Otolaryngology

- 1968 – Jerrie Cherrie – nonhealing contact ulcer, granuloma
- 1972 – Delahunty - “Posterior laryngitis”/”pachydermia”
- 1977 – Chodosh, Ward – multiple
- 1977-88 - carcinoma
- 1980s - stenosis
The Current Era

- Reflux in a high proportion of 225 patients c/o Laryngeal carcinoma, Stenosis, Cough, Globus, Dysphagia, Hoarseness
- Dx by MBS, pH probe testing, esophagoscopy

The Seeds of Misunderstanding

- Correlation is not causation
- Other pathology not excluded (or even evaluated)
- “Laryngopharyngeal reflux” shields concept from criticism

The Current Situation

- Wide array of complaints attributed
- Clinical (subjective, qualitative) diagnosis
  - Based on suggestive hx & laryngoscopy
  - Neither specific nor sensitive
  - Rarely confirmed by testing
- Prolonged empiric treatment encouraged
- Reflux discourse does not allow patient NOT to have LPR

Moving the Goalposts 1

- PROBLEM: No symptoms
- ANSWER: “Silent” reflux

Moving the Goalposts 2

- PROBLEM: No improvement with PPI QD?
- ANSWER: Have to treat for 3 months

Moving the Goalposts 3

- PROBLEM: No improvement with PPI QD for 3 months?
- ANSWER: Have to treat BID
Moving the Goalposts 4
- PROBLEM: Still not better
- ANSWER: Add H2 blocker at bedtime

Moving the Goalposts 5
- PROBLEM: Still not better
- ANSWER: Need esophagoscopy

Moving the Goalposts 6
- PROBLEM: Esophagoscopy WNL
- ANSWER: Need pH probe

Moving the Goalposts 7
- PROBLEM: pH probe normal
- ANSWER: upper probe not correctly placed

Moving the Goalposts 8
- PROBLEM: pH probe still WNL
- ANSWER: normal threshold (pH4) too low

Moving the Goalposts 9
- PROBLEM: pH probe with threshold of 5 is still WNL
- ANSWER: Non-acid reflux. Need impedance probe
Moving the Goalposts 10

- PROBLEM: impedance WNL. Still have globus/hoarseness/cough.
- ANSWER: Don’t know yet. Must continue to evaluate reflux...

The Result

- Reflux is the default diagnosis for variety of complains (globus/cough/throat clearing, etc) of obscure cause
- Hoarse patients are more likely to be referred for esophagoscopy than further laryngeal evaluation
- Delays in diagnosis, Expense

Strategy

- Role for empiric treatment
  - Behavioral precautions
  - QD PPI x 6 weeks
- Failure to respond triggers further investigation
  - GI: pH or impedance testing
  - Investigation for alternate diagnoses

Intrinsic Irritation – Neurogenic Cough

- Chronic cough in the absence of typical external stimuli
- Diagnosis of exclusion
- Some suggestive characteristics
- Involves sensory neuropathy or hyper-excitability

Evidence for Post-Viral Neuropathy

- Facial palsy
- Sudden sensorineural hearing loss
- Vestibular neuronitis
- Idiopathic vocal paresis/paralysis
  - Association with HSV, varicella-zoster, EBV, CMV/HIV
  - Influenza epidemic 1969-1970

Post Viral Neuropathy

- Hepatitis B virus - Guillain-Barré syndrome and systemic vasculitis-related mononeuritis multiplex
- Hepatitis C virus — viral infection in diffuse tissues
- HIV peripheral neuropathy — viral RNA in spinal cord
- Diagnosis is challenging
  - pattern of deficits, length of time from infection to the development of neuropathy, and variable mechanism of nerve injury.
Neurogenic Cough Mechanisms

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<td>TRP family of ion channels</td>
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<td>Cough receptor</td>
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<td>Brainstem reflexes</td>
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<td>Behavioral mal-adaptation</td>
<td>Tic, habit, secondary gain</td>
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<td>Different nerve overstimulation</td>
<td>Muscular spasm</td>
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Chronic Cough

- Laryngeal Irritation
- Extrinsic (to larynx)
  - Sinusitis/rhinitis
  - Reflux/aspiration
  - Pulmonary infection/reactive airway
- Intrinsic – neurogenic cough

Thank You

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