When a Cough Isn't COVID: Interdisciplinary Management of Irritable Larynx Syndrome

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Learning Outcomes

- Identify the spectrum of disorders that is classified as irritable larynx syndrome
- Understand the role of the laryngologist in diagnosing and treating irritable larynx syndrome
- Understand the role of the speech-language pathologist in treating irritable larynx syndrome
- Demonstrate various respiratory retraining strategies

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Role of SLP in Irritable Larynx Syndrome

"Our background in working with voice and motor speech disorder patients uniquely prepares us to detect abnormalities in laryngeal and respiratory functions and to teach laryngeal and respiratory control techniques."

Mathers-Schmidt, 2001

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Overview

- Basics of laryngeal function
- Definition of irritable larynx syndrome
- Example case & approach to the patient
- Assessment
  - Laryngologist
  - Speech Language Pathologist
- Treatment
  - Medical/surgical (MD)
  - Behavioral (SLP)
- Additional case examples

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Laryngeal Respiratory function

- First: airway protection – laryngeal adductor reflex
- Direct stimulation
  - Particles of food
  - Severe reflux
- Minor stimulation
  - Cigarette smoke (sometimes not so minor…)
  - Scents (perfumes, cleaning products)

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Definitions

- Vocal cord dysfunction: ?
- Paradoxical vocal fold motion: inappropriate adduction of the vocal folds during inspiration
- Globus pharyngeus: sensation of something stuck in throat
- Chronic refractory cough: non-productive cough beyond 8 weeks
- Laryngospasm: laryngeal adductor reflex (in this context, in response to minor stimuli)
- Irritable larynx syndrome: one or more of the above
  - AKA laryngeal hypersensitivity syndrome

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Terminology

- Irritable Larynx Syndrome spectrum
  - Chronic cough
  - Globus
  - That thing when there are episodes in which the vocal folds adduct when they should abduct
    - Paradoxical vocal fold motion
    - Exercise-induced laryngeal obstruction
    - Inducible laryngeal dysfunction
    - "vocal cord dysfunction" – try to avoid this term
  - Laryngospasm
  - ?muscle tension dysphonia?

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Irritable larynx syndrome

- Hyperkinetic laryngeal dysfunction resulting from an assorted collection of causes in response to a definitive triggering stimulus
  - Inclusion criteria:
    - Symptoms attributable to laryngeal tension
      - Dysphonia and/or laryngospasm
      - With or without globus and/or chronic cough
    - Visible and palpable evidence of tension
      - Laryngoscopic lateral and AP contraction
      - Palpation: sternohyoid, thyrohyoid, cricothyroid, pharynx
    - Presense of a sensory trigger
      - Airborne substance, esophageal irritant, odor

Morrison, 1999

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Why is this important?

- Common
  - Globus
    - up to 5% of new patient visits to otolaryngology
  - Cough
    - 3% of ambulatory medical visits (more than all otolaryngology visits)
    - $3.6 billion in OTC treatments
- Major quality of life impact

Deary & Wilson, 1994
Altman & Irwin, 2011

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Evaluation of the Upper Aerodigestive Tract

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Specifics in Evaluation – History

- Chief complaint
- Onset
  - Sudden?
    - Inciting event?
      - Trauma, travel, change in lifestyle, change in medication, etc.
      - Illness or infection?
  - Gradual?
- Duration
  - Constant or episodic?
- Location
  - Unilateral vs. bilateral, central?

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Specifics in Evaluation – History

- Associated symptoms
  - Difficulty breathing?
  - Voice changes?
  - Difficulty swallowing?
  - Cough? Throat clear? Both?
- Exacerbating/ameliorating factors
  - Environmental triggers (hypersensitivity)
  - Globus improves with swallow (possible CP dysfunction)
  - Home remedies? Over-the-counter medications? Supplements?

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Specifics in Evaluation – History

- Medical history
  - High risk features (hemoptysis, weight loss, smoking hx, etc.
  - Allergies? Asthma? Reflux?
  - Prior intubation?
  - Neurologic disease?
  - Previous neck or chest surgery?
  - Autoimmune disease?
- Social history
  - Fluid intake (water, EtOH, caffeine)
  - Diet
  - Smoking

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Specifics in Evaluation – History

- Triggers/irritants
  - Odors, temperature changes, stress/anxiety, exercise
- Environment at home/work
  - People, pets, exposure to toxins/chemicals
- Stress levels and methods of stress relief

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Specifics in Evaluation – History

- Significant impact on life?
- Goals for appointment?
- Questions?

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Specifics in Evaluation – Exam

- Self-assessments
  - VHI-10, EAT-10, DI, RSI, Modified Leicester Cough Questionnaire
- Obvious causes in nose and oropharynx
- Oral mechanism exam
  - Oral mucosa
  - Lingual/labial strength, ROM, coordination

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Specifics in Evaluation – Exam

- Breathing pattern
  - In isolation, during quiet breathing, during speech tasks
  - Inhale/exhale from nose and mouth
  - Check for stridor
- Vocal quality
  - Auditory-perceptual evaluation, basic voice measurements
- Neck exam
  - Ask pt to point to most sensitive spot
  - Palpate thyrohyoid space, thyrohyoid muscle, hyoid and thyroid cornua, sternocleidomastoid

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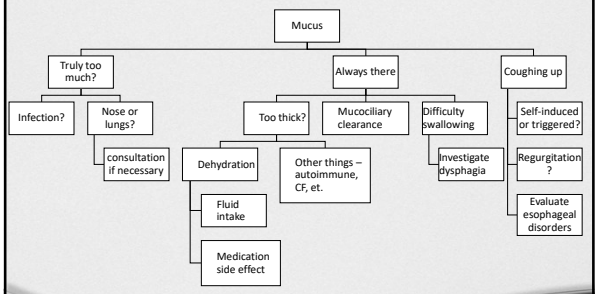
Clarifying the Complaint "mucus"



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Specifics in Evaluation – Stroboscopy

- Mucosa
  - Inflammatory signs
    - Cobblestoning, interarytenoid edema, pachydermia, pseudosulcus, erythema, thick mucus
  - Pooling of secretions, suggestive of swallow dysfunction
  - Signs of phonotrauma
- Motion
  - asymmetry/paresis
  - Hyperfunction or "twitchiness"

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Workup and Diagnosis

- Physician component – evaluate for surgical and medically treated conditions
  - Stenosis
  - Vocal fold paresis/paralysis
  - Neurogenic cough/hypersensitivity (usually by exclusion)
  - Reflux
  - Allergy and asthma

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Differential Diagnosis

- Laryngotracheal stenosis
- Upper aerodigestive tract neoplasm
- Lower airway disease (most commonly asthma)
- Tracheobronchomalacia
- Chronic aspiration
- Respiratory dystonia
- Bilateral vocal fold paralysis/paresis
- **Somebody can have more than one of the above!!!**

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Presentation of PVFM

- Tightness in neck rather than chest
- More difficulty getting air in than out
- Symptoms brought on by:
  - exertion
  - stress or strong emotions
  - Environmental triggers (odors, chemicals, smoke)
- Noisy breathing (esp. inspiration)
- Asthma workup and treatment questionable
- Episodic rather than constant
- Often seen in high level athletes

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Cough

- May be associated with other irritable larynx concerns
- Often spans multiple disciplines
  - Allergy
  - Otolaryngology
    - Laryngology
    - Rhinology
  - Pulmonology
  - Speech Pathology
  - Gastroenterology
  - Neurology
  - Behavioral health
  - Probably others rarely

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Laryngology role in cough

- Targeted history
  - Including sinonasal disease
- Endoscopy
  - Laryngoscopy +/- stroboscopy
  - Nasal endoscopy
  - Esophagoscopy
  - Bronchoscopy
- SLP collaboration

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"Ideal" Cough Patient for Voice Team

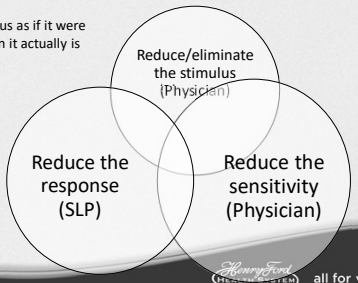
"Ideal"
- Dry cough
- > 2 months (often years!)
- Triggers such as:
  - Scents
  - Anxiety
  - Laughing
  - Talking
  - Eating/drinking
- Associated with hoarseness

Less likely to benefit
- Acute cough
- Productive cough
- Steroid responsive

Treatment of Irritable Larynx Syndrome

Conceptual Framework for Treatment

ILS involves a normal function gone awry
- Reaction to a stimulus as if it were a greater threat than it actually is



Medical/Interventional Therapy

- Neuromodulators
  - TCAs or gabapentin
    - Gabapentin preferred in guideline (Gibson, 2016)
  - Tramadol -- prefer to avoid, but can help
  - Benzonatate – might work; usually more for acute
  - Avoid opiates beyond acute cough
- Superior laryngeal nerve block
- Botox
  - Limit adduction ability
  - Allow healing of mucosa irritated from coughing

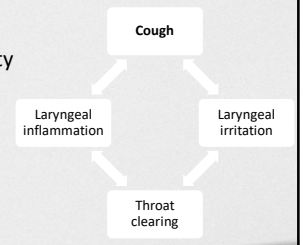
Behavioral Intervention/Therapy for Irritable Larynx Syndrome

- Education
- Behavioral management/instruction
  - Reducing and eliminating triggers
  - Providing pts w/ tools to increase control
    - Throat relaxation
    - Cough suppression
    - Throat clearing suppression
    - Circumlaryngeal massage/manual therapy
- Determine need for referral to psychologist/counselor

Murry, 2010
Kenn & Balkissoon, 2011

Role of SLP in Cough

- Break the cycle
- May affect neuroplasticity
- Evaluate swallowing



Vertigan et al., 2013

Respiratory Retraining

- Establish an open airway
- Relaxed throat breathing
  - Practice in isolation and during quiet breathing tasks
- Abdominal-diaphragmatic breathing
  - Engage diaphragm on inhalation, abdomen on exhalation
- Respiratory muscle strength training
  - Inspiratory muscle strength training (IMST) for PVFM

Murry, 2010
Reitz et al., 2014

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Respiratory Retraining

- Quiet rhythmic breathing
  - Exhale with shoulders relaxed and abdominal movement in and out
  - Remain consistent with continuous exhalation and inhalation

Murry, 2010

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Respiratory Retraining

- Abdominal focus at rest
  - Lie flat and put a small book or cell phone on stomach
  - Focus on elevating the object on inhalation and lowering the object on exhalation
  - Replicate this with a straw to increase resistance
  - Practice this in various positions, including sitting and standing

Murry, 2010

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Respiratory Retraining

- Breathing with vocal resistance
  - Exhale while sustaining one of several sounds (SH, F, S, Z)
  - Sustain the sound for increasing time lengths

Murry, 2010

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Respiratory Retraining

- Pulsed exhalation
  - Produce a pulse of air using “HA” or “SHA”
  - Sniff in through the nose with mouth closed

Murry, 2010

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Treatment for PVFM in Clinic

- Stress-induced
  - Recreate the stressor
- Exercise-induced
  - Break maladaptive breathing patterns
  - Practice breathing during physical exertion
  - Involve family, coaches, and teammates
- Odor-induced
  - Practice breathing techniques with various scents present

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When to refer to a laryngologist

- Hoarseness greater than 2-4 weeks
  - Especially if not concurrent with URI or in a smoker
- Stridor
- Recurrent pneumonia (concern for aspiration)
- Less than expected improvement from asthma treatment
- Dyspnea out of proportion to PFTs
- Chronic cough > 2-3 months, not responding to allergy/asthma therapy

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When to refer to [oto]laryngology

- Red flags – urgent referral
  - PERSISTENT stridor/shortness of breath
  - Progressive voice change that doesn't improve with rest
  - hemoptysis

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