

Identification and management of cough-induced laryngotracheitis

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Abstract:

Chronic cough is associated with repetitive injury to the upper airway and trachea, which can lead to an underdiagnosed pathology known as “cough-induced” laryngotracheitis (CILT). In this report, we describe a case of CILT that responded well to dual therapy.

Keywords:

Chronic cough, dual therapy, laryngotracheitis, postviral cough

Cough is one of the most common symptoms that lead to outpatient visits. When assessing a cough it is helpful to define the duration, as there are three general time frames on presentation: acute (≤ 3 weeks), subacute (3–8 weeks), and chronic (≥ 8 weeks).^[1] The latter presentations may be related to a lingering etiology that is either not treated or partially treated. However, complications of chronic/repetitive cough should also be considered, which includes trauma to the upper airway and trachea. In this case report we describe a young man who had a persistent cough, which was due to “cough-induced” laryngotracheitis (CILT).

Case Report

A 23-year-old man with no medical history presented to the clinic with a persistent cough of 3-month duration. It was described as a loud vigorous “barking” cough that was exacerbated at night and with colder temperature. The cough had progressively worsened over the past month and was refractory to over-the-counter and narcotic cough suppressants. The only other complaints were mild hoarseness and a constant irritating sensation at the

upper airway/trachea. He referred that 3 months prior, he had flu-like symptoms that included an aggressive cough. The symptoms resolved within days, but the cough lingered and changed in caliber over weeks. He referred that the cough was now negatively impacting all daily activities. He had no other symptoms to suggest an upper airway cough syndrome (postnasal drip), gastroesophageal reflux, or asthma as potential etiologies. Upper and lower respiratory examinations were within normal limits. Pulse oximetry was normal at rest and walking. Chest X-ray was negative for atelectasis, interstitial disease, pneumatic processes, or a nodule/mass. At this point we suspected an upper airway irritation related to CILT, and a respiratory inhalant combo with powdered salmeterol/fluticasone ([50 mcg/250 mcg]/ actuation) every 12 hours for 3 days was prescribed with special instructions to inhale at the trachea and hold for 15–20 seconds (i.e. tracheal hold technique). Within 48 hours, the patient had complete resolution of the cough and associated complaints.

Discussion

The complications related to a chronic cough are broad (respiratory, musculoskeletal, neurological, psychiatric, etc.) and ultimately

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reduce quality of life for the patient. During vigorous coughing, intrathoracic pressures may reach 300 mmHg and expiratory velocities approach 500 miles/hour (85% of the speed of sound), which are essential to dislodge and expel secretions or foreign bodies.^[2] However, these same pressures and velocities can become pathologic if not controlled and can lead to complications such as exhaustion, self-consciousness, insomnia, headache, dizziness, musculoskeletal pain, and hoarseness. The latter is related to repetitive insults to the laryngotracheal domain (LT), which takes a downstream insult with each cough.

Acute inflammation is usually self-limited, particularly during an infectious challenge; however, with extended insult, a chronic inflammatory response may persist that can lead to tissue damage via direct (i.e. mechanical trauma) and/or indirect (i.e. cellular and immune) pathways.^[3,4] We believe that the natural history/mechanism of CILT includes the following: (1) an acute airway illness induces an aggressive cough; (2) the patient's prodrome improves, but a residual cough remains that causes recurrent trauma to the upper airway/trachea, which causes a chronic inflammatory response at the LT domain; (3) the locoregional inflammation induces further propagation of cough in a feedback mechanism; and (4) the patient seeks relief from their cough at a subacute or chronic time frame [Figure 1]. Patients usually respond well to an inhalant combo with counseling on the technique to inhale and hold the medication at the trachea. This technique ensures maximum local effects of the corticosteroid at the LT domain, while avoiding the systemic effects of corticosteroids. Furthermore, studies have shown that in the setting of reactive airway disease, a dual therapeutic approach has a synergistic anti-inflammatory effect, which improves clinical efficacy.^[5,6] As was observed in

this patient, and others we have treated with a similar presentation, the response to therapy is usually rapid with most patients having a complete response within 24–48 hours. We recommend at least a 3–5-day course of treatment to ensure resolution. If the patient's symptoms do not resolve, another pathology should be suspected and a bronchoscopic evaluation with biopsy may be considered.

In closing, CILT is a benign and relatively common complication of chronic cough that can significantly impact a patient's quality of life. It must be considered in a patient with a subacute or chronic cough, when other common etiologies have been ruled out. CILT has a characteristic presentation, which includes coughing bouts with a vigorous barking quality that is refractory to cough suppressants and no other signs of systemic disease. If suspected, a short-term treatment with respiratory inhalant combo via the tracheal hold technique is an effective treatment and a reasonable step before a more invasive workup is considered.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

References

1. Irwin RS. Complications of cough: ACCP evidence-based clinical practice guidelines. *Chest* 2006;129:54S-8S.
2. Comroe JH Jr. Special acts involving breathing. *Physiology of Respiration: An Introductory Text*. 2nd ed. Chicago, IL: Yearbook Medical Publishers; 1974.
3. Gabay C. Interleukin-6 and chronic inflammation. *Arthritis Res Ther* 2006;8 Suppl 2:S3.
4. Tabas I, Glass CK. Anti-inflammatory therapy in chronic disease: Challenges and opportunities. *Science* 2013;339:166-72.
5. Nelson HS, Chapman KR, Pyke SD, Johnson M, Pritchard JN. Enhanced synergy between fluticasone propionate and salmeterol inhaled from a single inhaler versus separate inhalers. *J Allergy Clin Immunol* 2003;112:29-36.
6. Barnes NC, Qiu YS, Pavord ID, Parker D, Davis PA, Zhu J, *et al*. Antiinflammatory effects of salmeterol/fluticasone propionate in chronic obstructive lung disease. *Am J Respir Crit Care Med* 2006;173:736-43.

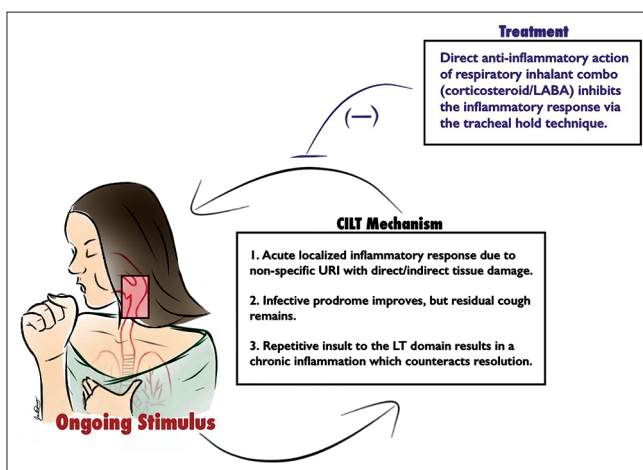


Figure 1: Proposed pathophysiologic mechanism of cough-induced laryngotracheitis (CILT). Image courtesy of Joel Rodriguez, MD