CASE IN...

Chronic Cough

How to Approach
Patients with Chronic Cough

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Cough is the most common symptomatic complaint in the outpatient setting. Most are self-limited, but some are persistent. Published cough guidelines define chronic cough as being present for more than eight weeks duration.[1] Amongst referrals to our chronic cough clinic, the median cough duration is 18 months (average 5.5 years). Those not improving after a month warrant a chest x-ray to rule out sinister causes. Patients with an abnormal chest x-ray, systemic symptoms, such as fever, sweats, chills, or weight loss, other sinister symptoms, such as hemoptysis or shortness of breath, or concerning physical findings should be promptly assessed to rule out potentially life-threatening conditions. Patients with lung disease, other significant comorbid conditions, such as heart failure or a history of cancer, need to be assessed and possibly referred.

Meet Elaine

A 37-year-old woman presents with four years of productive cough. Sputum has generally been clear but occasionally yellow. Several antibiotic trials have provided partial and/or temporary relief. Trials of various inhalers, nasal steroids, omeprazole, and ranitidine have been unsuccessful. She complains of cough-associated retching, stress incontinence, and headaches. Her husband sleeps in another room. She has never smoked and denies a personal or family history of allergy, asthma, or other lung diseases. She does not have hypertension or other health problems. Her only medication is codeine syrup. She denies second-hand smoke exposure. Nasal mucosal erythema, swelling, and secretions are present. Physical examination is otherwise normal. A chest x-ray and pulmonary function test results appear normal. Vasomotor rhinitis is the diagnosis. The patient responds to night-time diphenhydramine and decongestant and nasal saline rinses b.i.d.

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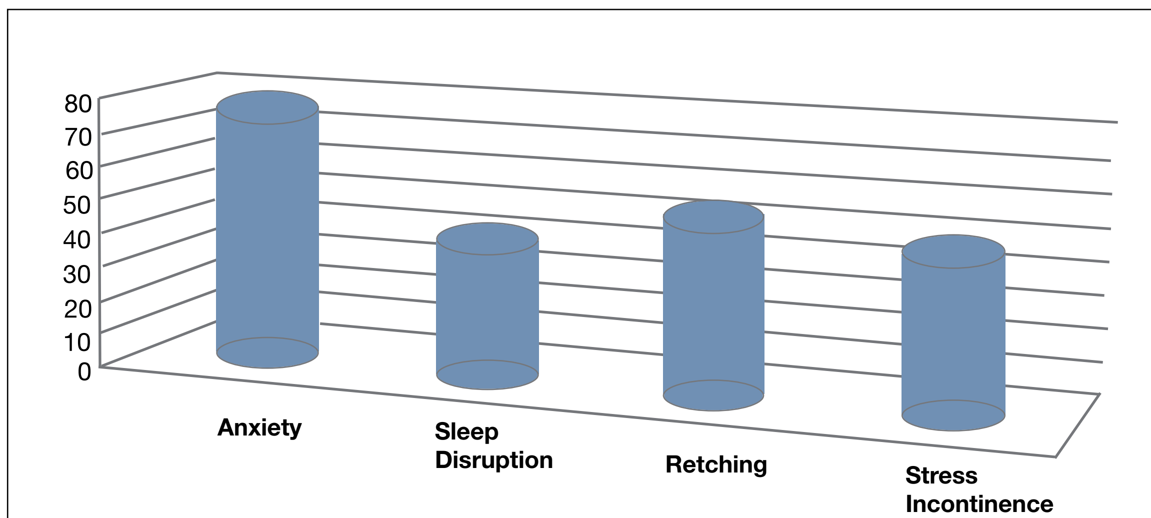

Figure 1: Percentage of Patients with Symptoms

Table 1 **Differential Diagnosis**
Differential diagnosis of chronic cough with a normal chest x-ray and pulmonary function • Upper airway; vasomotor or allergic rhinitis • Lower airway-smoker's cough; reactive airway disease, eosinophilic bronchitis • Gastroesophageal reflux • Irritable larynx syndrome • Drug induced cough; approximately 10% treated with an angiotensin converting enzyme inhibitor

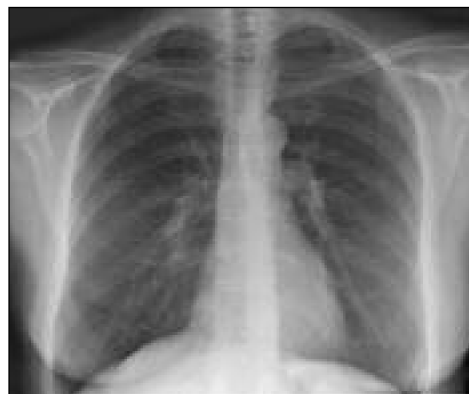
Figure 2: Elaine's Normal Chest x-ray

Impact on Quality of Life

Although most chronic coughs are benign, patients are often concerned that they may have a serious condition, especially if they are, or have been, smokers. In the absence of sinister symptoms and abnormal physical examination or chest x-ray findings, one can reassure the patient that the cough is not dangerous but still requires evaluation. Potential medical consequences include rib fractures, hernias, and cough syncope. Associated symptoms, such as chest pain, sleep disruption, retching and vomiting, and stress incontinence, can interfere with quality of life (see Figure 1). Sufferers often avoid attending plays, concerts, or religious services, resulting in social isolation and depression. Medical expenses and time off work have direct and indirect financial consequences that disrupt personal and professional life.

Differential Diagnosis in a Patient with a Normal Chest x-ray and Pulmonary Function

The most common causes of chronic cough in patients with a normal chest x-ray (see Figure 2) are mild asthma, (some prefer the term reactive airway disease, since patients may not experience wheezing or shortness of breath, typical asthma symptoms), rhinitis, and gastroesophageal reflux (see Table 1). Prevalence of the different causes of chronic cough varies by locale. Most reports are from specialty clinics and reflect local referral patterns. Asthma is the most common etiology in the USA. In Calgary, most referrals have already had empiric trials of inhalers. The local climate is very dry and many have rhinitis. Reports from the UK suggest that gastroesophageal reflux (GERD) is the most common cause. Smokers will often improve after smoking cessation (see Figure 3). Approximately 10% of patients treated with an angiotensin converting enzyme inhibitor (ACEI) will develop cough. Most improve within four weeks of stopping the medication. Eosinophilic bronchitis describes the typical bronchial mucosal changes of asthma but with normal pulmonary function and without bronchospasm. It improves with inhaled

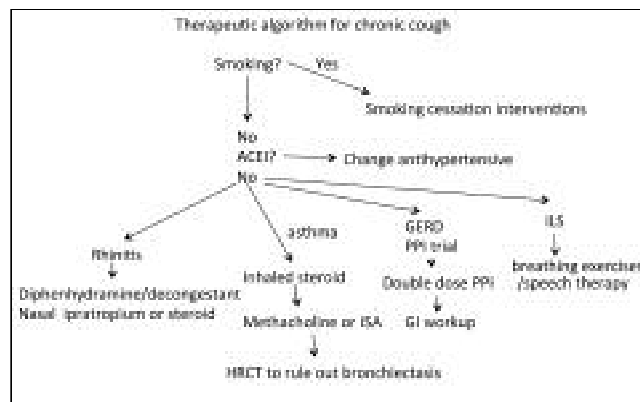

Figure 3: Therapeutic Algorithm for Chronic Cough

corticosteroids. Patients with irritable larynx syndrome (ILS) often complain that hoarseness and throat clearing are common. ILS responds to breathing exercises and speech therapy.

Treatment and Pitfalls in Therapy

Treatment will depend on the suspected cause. The patient needs to understand his or her condition, how to take medication properly, and the necessary treatment duration to achieve the intended effect. Patients may balk at the cost of medication and not fill their prescription. They need to understand the rationale for the prescription (*e.g.*, ranitidine being prescribed for suspected GERD even in the absence of typical symptoms like heartburn). Patients need to be instructed on proper inhaler technique, since improper actuation may not be effective. Patients may not take medication long enough to achieve the intended effect (*e.g.*, patients familiar with decongestant sprays may expect immediate results from a nasal steroid and not continue treatment long enough to benefit).

When to Refer?

Patients should be referred if there is any concern about a sinister underlying cause, such as cancer. Patients who do not respond to several therapeutic interventions may benefit from consultation with a specialist.

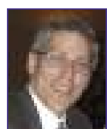

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Table 2
Frequently Asked Questions

1) What conditions commonly cause chronic cough?

The most common causes of chronic cough in patients with normal chest x-rays are rhinosinusitis, mild asthma, gastroesophageal reflux, and smoking.

2) Which chronic cough patients should be referred?

Patients with abnormal chest x-rays, systemic symptoms, or hemoptysis should be referred.

Take Home Message

- Chronic cough patients with normal chest x-rays, who have never smoked, are unlikely to have a sinister underlying cause for their cough
- Common causes include rhinitis, reactive airway disease, and gastroesophageal reflux
- Chronic cough patients with normal x-rays need to be reassured that they do not have a serious condition
- Cough-associated symptoms can seriously affect quality of life
- Patients need to understand the rationale for a particular treatment to ensure compliance

Reference
1. Irwin RS, Baumann MH, Bolser DC, *et al*: Diagnosis and Management of Cough Executive Summary: ACCP Evidence-based Clinical Practice Guidelines. Chest 2006; 129(1 Suppl):1S–23S.

Resource
2. Field SK, Conley DP, Thawer AM, *et al*: Effect of the Management of Chronic Cough Patients by Pulmonologists and Certified Respiratory Educators on Quality of Life: A Randomized Trial. Chest 2009;136(4):1021–1028.