What to Do with the Patient with Chronic Cough? *A Simple Approach to a Difficult Problem*

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Introduction

Chronic cough, defined by some authors as lasting longer than eight weeks,[1] is a problem frequently seen by primary care providers as well as specialists.[2] Although elucidating the cause of a chronic cough can be difficult and frustrating—both for the patient and for the physician—systematic examination leads to successful diagnosis and treatment in nearly 100% of cases.[1] In an estimated 95% of patients with a chronic cough and negative results of chest x-ray examination, the cough is caused by postnasal drip, asthma, gastroesophageal reflux, cigarette smoking, chronic bronchitis, eosinophilic bronchitis, or use of an angiotensin-converting enzyme (ACE) inhibitor.[1] More than one of these diagnoses is responsible for cough in 18% to 93% of cases.[1]

Case Report

A 48-year-old male nonsmoker was seen for four months of intermittent, nonproductive cough that was worse in the evenings after he ate dinner. He denied having any associated symptoms of dyspnea, wheezing, nasal congestion, fever, or chills. The cough was not related to exertion. The patient stated that the cough had become bothersome, often creating embarrassing situations for him at dinner parties. He noted that the cough was worse when standing and seemed to improve when he lay down at night. He tried different over-the-counter cough medications without any relief of symptoms. Results of physical examination were normal except for mild soreness around the ribs with deep palpation. Chest x-ray examination results were normal. The patient's occupational history was noncontributory.

Table 1: Causes of chronic cough

Common causes	Other causes
Postnasal drip	Environmental irritants
Asthma	Infection
Gastroesophageal reflux	Mycoplasma, pertussis, bordetella
Medication	Neoplasm
ACE inhibitor, beta blocker, NSAID, aspirin	Bronchogenic carcinoma Carcinoid tumor
Smoking	Granulomatous infiltration
	Tuberculosis, sarcoidosis
	Interstitial lung disease
	Vasculitis
	Congestive heart failure
	Tourette syndrome
	Microaspirations
	Bronchiectasis
	Habit cough

ACE = angiotensin-converting enzyme
NSAID = nonsteroidal antiinflammatory drug

Initial Evaluation

The clinician should first obtain a thorough medical history and perform a complete physical examination while keeping in mind that the character, quality, and timing of the cough are of little help for determining the diagnosis.[1,3] Chest x-ray examination should follow, and a trial of empirical therapy should be begun.[1] Because chronic cough often has multiple causes, addition of new empirical therapy while continuing previous treatment is often necessary. Postnasal drip syndrome, asthma, and gastroesophageal reflux are the most common causes of chronic cough and are usually accompanied by normal results of chest x-ray examination (Table 1). An abnormal result of chest x-ray examination should prompt the clinician to evaluate less-common causes, including tuberculosis, sarcoidosis, interstitial lung disease, and bronchogenic carcinoma.[4] Any of several symptoms—weight loss, hemoptysis, purulent sputum, or night sweats—and risk factors for immunosuppression are indications for additional evaluation, including referral to a specialist.[4] An ACE-inhibitor-induced cough should resolve within four

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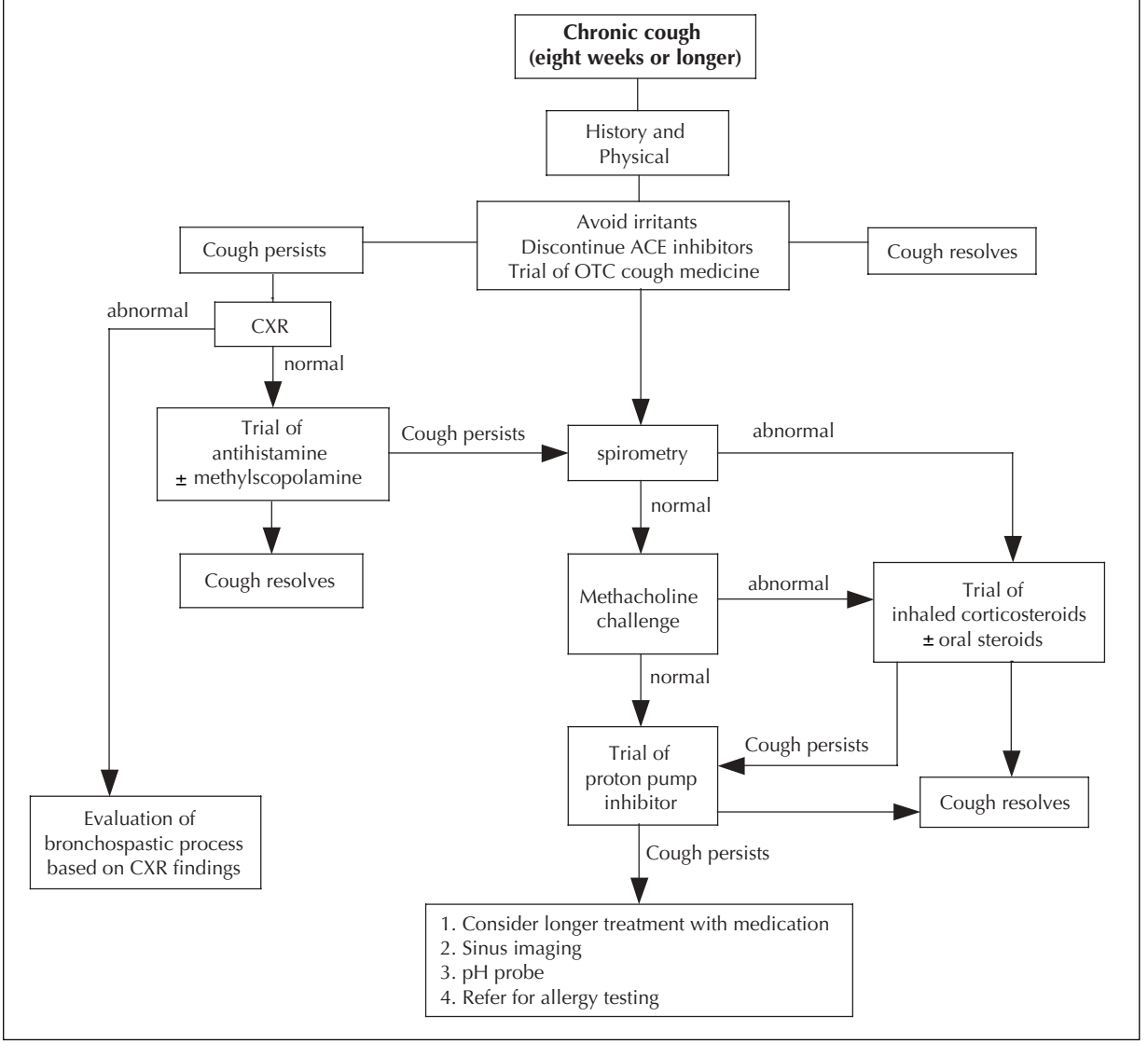
weeks after discontinuing the medication.[1] Although tobacco use may be the cause of chronic cough in smokers, evaluation of other causes is often necessary in these patients.

Postnasal Drip Syndrome

Postnasal drip syndrome, the most common cause of chronic cough, presents a diagnostic dilemma. Lacking any objective criteria for diagnosis, evaluation is based entirely on medical history, results of physical examination, and a trial of empirical therapy.[1] A history of frequent throat clearing, nasal congestion, "dripping in the throat," or cobblestoning (oropharyngeal lymphoid hyperplasia) seen at examination is helpful as a clue for diagnosis, but many patients present with cough as the only symptom.[2,5] Postnasal drip syndrome can be caused by sinusitis or rhinitis (including allergic rhinitis), vasomotor irregularity, environmental irritants, recent upper respiratory infection, medication (rhinitis medicamentosa caused by oxymetazoline hydrochloride or cocaine), and pregnancy.[1,2] Sinus imaging and allergy testing are of limited help, because a positive test result does not prove that allergy or sinusitis (even if present) is causing the cough.

Figure 1. Flow diagram for evaluation of chronic cough. Previous treatment should be continued when new medication is added



ACE: angiotensin-converting enzyme; CXR: chest x-ray film; OTC: over-the-counter

For most patients with cough resulting from postnasal drip syndrome, the cough improves within days or weeks after beginning an empirical trial of antihistamine medication.[1,2,5] Antihistamine medication alone or in combination with scopolamine should help resolve watery postnasal drip, whereas mucolytic agents are more effective for patients with thicker mucus. Although some patients may not show clinically significant response to this therapeutic approach, postnasal drip may nonetheless be causing the cough. Addition of other useful treatments (eg, ipratropium nasal spray for nonallergic rhinitis; decongestants; nasal steroid agents; and high-volume sinus rinsing) should be considered.[4]

Asthma

Classic symptoms of asthma—chest tightness, dyspnea, and wheezing—do not always accompany that condition.[2] Asthmatic patients seen for cough as the only symptom are defined as having "cough-variant asthma."[2] Unlike postnasal drip syndrome, asthma can be objectively evaluated. Asthma can often be diagnosed by using a beta-agonist to reverse abnormal spirometry results. However, because of the intermittent nature of asthma, many asthmatic patients have normal results of routine spirometry. In some patients with cough-variant asthma, an empirical trial with an inhaled beta-agonist may be beneficial. For patients with normal results of spirometry, a methacholine challenge may be used to help rule out asthma. For patients with a suspected diagnosis of asthma, inhaled corticosteroid agents are indicated as part of an abnormal methacholine challenge or spirometry as well as a possible course of oral corticosteroid agents, depending on severity of symptoms.[1] The leukotriene receptor antagonist zafirlukast may be beneficial in cough-variant asthma.[6,7]

Gastroesophageal Reflux

In 10% to 20% of patients with gastroesophageal reflux, this condition causes respiratory symptoms (cough, wheezing, dyspnea, sputum production),[2] eustachian tube dysfunction, or nasal congestion; and in nearly 75% of patients with cough induced by gastroesophageal reflux, coughing is the only presenting sign of the gastroesophageal condition.[5] The coughing may be associated with eating and may worsen when the patient is in an upright position (ie, when the lower esophageal sphincter relaxes) and improve when the patient is asleep (ie, when transient relaxation of the lower esophageal sphincter is inhibited).[3,5] The clinician should elicit the patient's history of taking medications that lower esophageal sphincter pressure, including theophylline, oral (not inhaled) beta-agonist agents, nonsteroidal antiinflammatory drugs, and ascorbic acid.[3] Cough induced by gastroesophageal reflux may be diagnosed indirectly by using a trial of empirical therapy. A proton pump inhibitor taken for at least two months along with appropriate lifestyle changes will successfully treat most cases of cough secondary to gastroesophageal reflux.[1,3,5] Conventional antacids and H2 antagonists have little role for these patients. If no difference is seen in symptoms, a higher dose of medication, longer course of treatment (sometimes more than six months), or surgery may be necessary to control symptoms.[1] Monitoring of pH should be done only after a failed therapeutic trial of a proton pump inhibitor.

Conclusion

The patient described here typifies many patients who are seen for chronic cough: A detailed medical history showed no specific triggers (eg, ACE inhibitors, environmental irritants, cigarette smoke), no family history of asthma, and no allergies; and results of physical examination and chest x-ray examination were normal. The patient began receiving a trial of antihistamine medication; and after a few weeks without improvement of the cough, a proton pump inhibitor was added. Gastroesophageal reflux-induced cough was diagnosed after symptoms began to improve (within a few weeks after treatment began). The patient successfully discontinued therapy after two months, by which time his cough had completely resolved. ❖

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