Treatment of Cough

The treatment of cough can be characterized as confusing and haphazard when it is directed at the symptom rather than at the underlying disease or mechanism. We believe that this characterization is a result of four major factors: 1) there is a large number of different disease entities which may cause cough; 2) the pathophysiologic mechanism of cough is often different depending upon the specific etiology involved; 3) a bewildering array of medications are currently available that make the choice of the appropriate therapeutic agent difficult; and 4) scores of subjective, poorly controlled studies have made inappropriate and/or conflicting conclusions about the usefulness of several drugs. We believe that the treatment of cough does not have to be confusing or haphazard and will present our reasons by posing and answering four questions.

**How Can Cough Be Treated?**

Cough can be treated specifically, symptomatically, or if it is acute, self-limited and not troublesome, it can be ignored. Specific treatment is directed either at the specific etiology or the operant pathophysiologic mechanism responsible for cough. Symptomatic or nonspecific treatment is directed at the symptom rather than the underlying etiology or mechanism and includes drugs that may ameliorate cough by antitussive, expectorant or mucolytic actions.

**What Is the Optimal Approach to the Treatment of Cough?**

It is a generally accepted concept in medicine that the optimal approach to the treatment of any symptom (such as cough) is first to determine, if possible, the specific etiology and the operant pathophysiologic mechanism responsible for the symptom. Theoretically, specific therapy directed at either eliminating the etiologic agent or counteracting the pathophysiologic mechanism should be the optimal way of eliminating the symptom.

**What Are the Relative Roles for the Specific and Symptomatic Treatments of Cough?**

**Chronic Persistent Cough**

Since extensive and often conflicting reports had accumulated on symptomatic cough therapy and since there was a paucity of data on the success rate of specific therapy, we prospectively evaluated 49 consecutive and unselected adult patients with chronic persistent cough of at least three weeks' duration to determine the outcome of specific therapy.\(^1\) Utilizing a diagnostic protocol based upon the anatomy and distribution of cough receptors and afferent nerves, the cause of cough was consistently determined and the outcome of specific therapy, almost without exception, was successful and sustained. The specific therapy for cough depended upon its etiology or mechanism: 1) asthma was treated with a bronchodilator alone or with corticosteroid; 2) postnasal drip due to sinusitis was treated with an antibiotic, oxytetracycline hydrochloride nasal spray, and an antihistamine-decongestant combination; 3) postnasal drip due to allergic or perennial nonallergic rhinitis was treated with avoidance of environmental precipitating factors and an antihistamine-decongestant combination; gastroesophageal reflux was treated with bed elevation, diet modification, antacids and cimetidine; chronic bronchitis was treated solely with cessation of cigarette smoking, sarcoidosis with corticosteroids, and congestive heart failure with digoxin and furosemide. Symptomatic treatment (codeine) was given to only one patient, a woman with breast carcinoma metastatic to lung and refractory to chemotherapy. In a recent retrospective study of 109 patients with chronic persistent cough, Poe et al\(^2\) also demonstrated that a specific etiology for cough could almost always be determined and that specific therapy was almost always successful. From these studies we conclude that specific treatment is optimal treatment and that there is no more than a limited role for symptomatic therapy in the treatment of chronic persistent cough in the adult. Although a similar study of chronic persistent cough in children has not been reported, we predict the same conclusions. The key to choosing successful specific therapy is to determine precisely the cause or mechanism of cough and that can be consistently done.\(^1\)

**Acute Transient Cough**

Few prospective studies have been reported on this problem. However, in this issue, Kuhn et al (see page 713) have clearly defined the role of large doses of the commonly used expectorant, guaifenesin (previously named glyceryl guaiacolate) in the treatment of the cough due to the common cold. There is none. Unlike numerous other studies on the symptomatic treatment of cough, their study cannot be criticized for not being clinically applicable or subjective.\(^3\) It is a double-blind, randomized, placebo-controlled study that utilizes an objective cough-counting technique to evaluate the effect of a drug on cough from a pathologic condition rather than an experimentally-induced cough in normal subjects.
We were not surprised that guaifenesin had no effect on the cough due to the common cold for the following reasons: 1) guaifenesin or glyceryl guaiacolate has previously been found to be ineffective as an expectorant in patients with chronic bronchitis, a group of patients most likely to benefit from its use; 2) our personal experience and a recent article showing that an antihistamine is effective in lessening the symptoms of the common cold suggest that the cough originates from the upper respiratory tract and that postnasal drip is frequently the causative mechanism; and 3) there is no evidence or theoretic reason that an expectorant could be of value in relieving cough due to irritation of the upper respiratory tract since an expectorant is defined pharmacologically as a drug that increases the output of demulcent lower respiratory tract fluids.

WHEN IS SYMPTOMATIC TREATMENT INDICATED?

Because of its nonspecificity, it is only indicated: 1) when the precise cause of cough is unknown so that specific and definitive therapy cannot be given, and/or 2) when cough performs no useful function and its complications represent real or potential hazards to the patient. A critical discussion of symptomatic therapies was presented in a comprehensive review of cough in 1977.


References

1 Irwin RS, Corrao WM, Pratter MR. Chronic persistent cough in the adult: the spectrum and frequency of causes and successful outcome of specific therapy. Am Rev Respir Dis 1981; 123:413-17

Pulmonary Education and Educators
Progress and Implications

Our data base about pulmonary pathophysiology has markedly increased during the past decade and has improved the diagnosis and management of many respiratory disorders. However, one essential link in the translation of research discoveries to clinical practice has not been emphasized: the role of pulmonary education and educators who synthesize, integrate and disseminate new, as well as established, knowledge and technology to "students" at all levels of training. This editorial provides a perspective about some noteworthy pulmonary educational activities, the role of pulmonary educators, and future implications.

Projected changes in our health care system have implications for pulmonary education. Some relevant trends include a decreasing number of pulmonary fellows, a rising supply of primary care internists, and a growing interest in critical care medicine. These trends represent a new challenge for pulmonary educators; they must provide as much or even more effective pulmonary instruction to increasing numbers of physicians who have nonpulmonary professions and who will see the majority of patients with respiratory symptoms and disease.

Pulmonary curricula are needed that are flexible and contain pertinent objectives necessary for the "real world." Some attempts have already been made to define such priorities on a local scale. Each institution or community must have dedicated, effective pulmonary educators who adapt and organize their instruction to changing times and circumstances. These educators can benefit from using medical education literature and becoming aware of instructional concepts and methods, such as pulmonary learning resources centers, computer-assisted instruction, clerkship evaluation, pulmonary function interpretation, mechanical ventilation, intensive care objectives, and continuing medical education. The important concept of a postgraduate mini-fellowship or training course was first reported in 1968 and resulted in establishing both intensive and rehabilitative care services in many hospitals that did not offer these programs before. This course was the forerunner of the National Refresher Course later sponsored by the American College of Chest Physicians. Educators may also discover useful techniques from their colleagues, respiratory books, journals, audiovisual aids and symposia. These activities and modalities can indicate new methods of effectively imparting appropriate knowledge, skills, judgment and behavior related to pulmonary medicine.