

## A Cough that Won't Go Away

Cough is one of the most common reasons for office visit in pediatric practice. The majority of the cases are due to an acute respiratory infection such as URI and acute bronchitis, but there are some patients who have a chronic cough lasting longer than 3 wks. Many of these patients are generally well otherwise. The chronic cough of this type can be a challenge to the physicians.

The cough is a part of the respiratory defense mechanism and plays a major role in a broncho-pulmonary clearance, especially when the clearance mechanism is stressed by mucosal swelling, bronchospasm and increased secretion. Another significance of the cough is that the presence of it is a signal to clinicians that something is wrong with the respiratory tract. Physicians will work with the patient and family to determine how serious the cough is and take appropriate action. In various disease states such as viral respiratory infections and bronchial asthma, the removal of the secretion is adversely affected by two ways. First, ventilatory capacity is generally diminished in these diseases and the speed of airflow through the airways at the time of cough would be decreased, making the cough less effective. Secondly, the mucociliary apparatus does not function well.

It is clear now how important cough is for our health. However, when a child coughs daily for longer than 3-4 wks, something needs to be done, even if he or she is healthy otherwise. Thanks to the researchers like Drs. McFadden, Carro and Irwin, it was discovered 20-25 years ago that chronic cough can be a sole manifestation of asthma and asthma/sinusitis/postnasal drip account for more than half of all adult patients with chronic cough. It is believed by many pediatric pulmonologists that the same is true in children. Therefore, it is now a common medical practice to first try asthma medicines for chronic cough, without extensive diagnostic tests, especially if chest x-rays are negative. If they are not effective, then try medicines for sinusitis/postnasal drip.

If the child still coughs after the above-mentioned trial treatment for a few to several weeks, doctors begin a diagnostic work-up for other causes that are not as common. The differential diagnosis would include the following five categories. They are bronchitis, suppurative lung disease, focal lesions of the larynx and tracheal bronchial tree, psychogenic cough, and post-nasal drip. In bronchitis, there are infectious, allergic and chemical causes. Suppurative lung disease includes cystic fibrosis, bronchiectasis, chronic atelectasis, retained foreign body, and congenital malformation. In the focal lesions of the airways, there are foreign body aspiration, mediastinal or pulmonary tumors, cysts, and glands, bronchial and tracheal stenosis, cysts and hemangiomas. As in pneumonias, the patient's age can help us in arriving at the appropriate diagnosis. In infancy, the main causes are congenital malformations, congenital infections, aspiration and cystic fibrosis. In pre-school (age 1 to 5 years) children, inhaled foreign body, suppurative lung disease and bronchitis associated with chronic upper respiratory tract disease are seen. When we move up to the school age (5 to 15 years), cigarette smoking, M. pneumoniae infection and psychogenic cough are the main causes. Common to all age groups include recurrent viral bronchitis, asthma and pertussis.

History and physical examination are the most important parts of the diagnostic work-up. In fact, some cases can be diagnosed by detailed history and physical examination alone, and even in the cases where the diagnosis is not clear at first. When further diagnostic work-up is necessary, one or more of the following studies are done depending on the circumstances. They are: CBC, chest x-rays, serum immunoglobulins, serum IgE, RAST, sweat test, esophogogram, and bronchoscopy. In older patients, one can get sputum examination for bacterial study and eosinophils. Serum IgE, RAST and allergy skin test can be helpful when one suspects allergy as

the cause of the chronic cough. Esophogogram is done for mediastinal lesions, and UGI for gastro-esophageal reflux. When aspiration is suspected, a dysphagia study is used and a foreign body is suspected, rigid bronchoscopy is indicated. In some cases where no cause is found after extensive non-invasive work-up, bronchoscopy can be helpful.

After the diagnosis is established, of course, appropriate therapy is instituted. For example, antibiotics will be necessary for infections, and anti-reflux therapy GER if the reflux is causing the chronic cough. If the patient turns out to have cystic fibrosis, she or he should be on an appropriate program for cystic fibrosis. Chronic cough in children is generally due to non-life threatening diseases in more than half of the cases, but can be the beginning of a serious ailment. Children who cough longer than 3-4 wks should be seen by their physicians, especially if this occurs repeatedly.

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