Diagnostic Approach to Cough

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Introduction

Cough is a sudden and often repetitively occurring reflex which helps to clear the large breathing passages. It is a protective reflex against foreign material. It is the most common presenting complaint in outpatient department. Cough may represent a symptom of simple common cold as well as of fatal Lung carcinoma. The etiology can be classified into respiratory causes and non respiratory causes. Cough has been classified into acute (less than three weeks), subacute (three to eight weeks) and chronic (more than eight weeks). It is also classified into productive or dry cough depending on the presence or absence of expectoration respectively. Cough is only a symptom of some underlying disease and a diagnosis can be reached based on history, physical examination, simple investigations, history taking being most important step.

Etiology of Cough

The etiology of cough is very diverse and is classified according to duration of symptom. It is classified into acute, sub-acute and chronic cough. It is a real possibility that the underlying disease condition may progress in severity and lead to progression of acute/sub-acute cough to chronic cough.

Acute Cough

Acute cough generally lasts for less than three weeks. The causes for acute are common cold, Upper respiratory tract infections (URTI), exacerbation of asthma or Chronic Obstructive pulmonary disease (COPD), environmental pollution, toxic gas infections (URTI), exacerbation of asthma or Chronic Obstructive pulmonary disease (COPD), and chronic (more than eight weeks).

Sub-acute Cough

Cough lasting for three to eight weeks duration is termed sub-acute cough. The Respiratory causes include pneumonia (bacterial, viral, fungal), B. pertussis infection (whooping cough) leading to bronchial hyper-responsiveness, bronchiectasis. Non-respiratory causes include GERD and rarely Tourette’s syndrome with symptom of paroxysmal cough on presentation.

Chronic Cough

Any cough lasting for more than 8 weeks is termed chronic and must be evaluated thoroughly. Chronic cigarette smoking is the most common cause of chronic cough. The respiratory causes include COPD, asthma, tuberculosis, lung cancer, pneumoconiosis (asbestosis, siliosis, anthracosis etc.), mesothelioma of lung, drug induced cough (ACE inhibitors, beta blockers, NSAIDS), drugs causing pulmonary fibrosis as listed in Table 1.

Diagnostic Approach to Cough

An algorithm developed by De Blasio et al1 to diagnose acute cough is shown in Figure 1. At first, life threatening causes like pneumonia, asthma, COPD, pulmonary embolism, bronchiectasis, lung abscess, lung cancer, foreign body inhalation or congestive cardiac failure have to be ruled out by investigating symptoms, signs and laboratory investigations. Patients with pneumonia will be characterized by the presence of cough with productive sputum, fever with or without dyspnea. Dyspnea with wheeze may suggest asthma or COPD. In addition, hemoptysis may characterize the presence of bronchiectasis or lung cancer. Concurrent pedal edema with or without muffled heart sounds, decreased renal output suggests congestive cardiac failure. In case of foreign body inhalation, chest x-ray or bronchoscopy may give evidence on the size and site of the inhaled object. Having ruled these, cough associated with productive sputum may be a sign of acute bronchitis due to upper respiratory tract infections. If cough persists for 8 weeks and above, a diagnosis of chronic cough is made and causes to be investigated5. In all the cases of chronic cough and in those with acute atypical cough, a chest x-ray should be performed. Spirometry should be performed to assess whether and to what extent the airways are obstructed by measuring forced expiratory volume in first second (FEV1) when a case of bronchial asthma or COPD is suspected. Presence of low grade fever, productive cough, loss of weight and appetite with an acid fast bacilli being detected in sputum smear would give the diagnosis of tuberculosis. In case of absent/ atypical findings in the chest x-ray that does not correlate with clinical picture, a high resolution computed tomography of the chest may throw light on the underlying cause. History of having worked in a cotton industry or flour mill for many years would give a clue towards pneumoconiosis and a typical reticulo nodular pattern may be observed in chest x-ray or high resolution computed tomography (HRCT). Lastly, drug induced fibrosis should be suspected in presence of any of those agents as mentioned in Table 1.

Conclusion

This algorithmic approach is a useful diagnostic and therapeutic option for the treatment of cough.

References