An approach to cough in older people

Cough is one of the commonest symptoms presenting to the primary care clinician.[1] Many coughs are benign and self limiting. However the varied aetiologies of cough and the possibility of an underlying sinister diagnosis can make cough a challenging symptom to manage in primary and secondary care.

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Cough is a forceful expulsive manoeuvre against a closed glottis and associated with a characteristic sound.[1] Acute cough typically lasts for less than three weeks. Chronic cough lasts for more than eight weeks.

It is important for the clinician to actively look for clues suggesting a more serious cause for cough, especially whilst assessing an elderly patient. Lung cancer is rarely diagnosed in people younger than 40 years, but the incidence rises steeply thereafter, peaking in people aged 80–84 years. Most cases (87%) occur in people over the age of 60 years.[2]

Approach to a patient with cough

History

A good history is an essential first step in the approach to cough. Cough due to reflux may be aggravated by bending over or lying down. Asthma, infection or heart failure can cause nocturnal cough that may wake the patient. Viral infection enhances cough reflex sensitivity and may unmask subclinical bronchial hyper-responsiveness or reflux.[3] Significant sputum production suggests a primary pulmonary pathology. A "honking" or "barking" cough that disappears with sleep is typical of a psychogenic or habit cough.[1]

A relevant occupational history is important as work place sensitisers can lead to intermittent or chronic cough. With the increased public awareness regarding the hazards of asbestos exposure, patients are often aware of personal previous occupational risk. Risky occupations include ship building, plumbing, roofing, and work in the construction industry.

Angiotensin converting enzyme inhibitors also increase sensitivity to cough reflex and cause a dry irritating cough in 10–22% of patients.[4] The median time of resolution of cough on cessation of the drug is 26 days, although it can last longer (up to 40 weeks) in some patients.[5,6]

Cough associated with night sweats and weight loss may be due to tuberculosis, especially in the context of known exposure or travel to endemic areas. Breathlessness and associated cough can be one of the myriad of symptoms experienced by the patient with underlying lymphoma along with lymphadenopathy and systemic symptoms of sweating and fatigue.

Persistent hoarseness of the voice may be associated with a secondary cough. This may be due to laryngeal pathologies like vocal nodules, polyps or laryngeal carcinoma. Malignant invasion of either the vagus or recurrent laryngeal nerves can occur with cancers of the thyroid, lung and oesophagus leading to hoarseness of voice and secondary cough.

More than 90% of patients with lung cancer are symptomatic at the time of diagnosis.[7] According to one study, the frequency of initial symptoms in patients with bronchogenic carcinoma were: cough (75%), weight loss (64%), dyspnoea (55%), chest pain (43%) and hemoptysis (34%).[8] However, subsequent studies have shown different frequencies of the above symptoms.

Tobacco smoking is well established as the main cause of lung cancer and about 90% of

Box 1: Common causes of cough in the adult population

Post viral cough

History of preceding respiratory illness with a non-productive cough that lasts for up to eight weeks

GORD

Cough that occurs whilst eating and after food. It may also occur whilst bending down or when recumbent

Post nasal drip syndrome (PNDS)

Mucoid nasal secretions containing inflammatory mediators stimulate the pharynx inducing cough[11] that responds to decongestants, topical steroids and antihistamines[12]

Drugs (ACE inhibitors)

Drugs can cause cough in up to 20% of patients.[4] ACE inhibitor cough can occur as early as day two of therapy and can last for a few weeks after cessation

Smoking

Loss of motion of cilia that line the respiratory tree result in stagnation of sputum followed by cough

Chronic bronchitis

Productive cough for at least three months over two consecutive years. Co-existent smoking history

Cough variant asthma

Nocturnal non-productive cough in the absence of wheeze or dyspnoea. Often a history of atopy. Symptoms usually respond to corticosteroid trial.

cases are thought to be tobacco related. There is a clear dose-response relation between lung-cancer risk, the number of cigarettes smoked per day, degree of inhalation and age at initiation of smoking. Someone who has smoked all their life has a lung-cancer risk 20–30 times greater than a non-smoker.[9]

Physical examination

The physical examination of the patient with chronic cough may demonstrate clinical signs pointing towards a particular condition. For example, finger clubbing in a smoker with evidence of a pleural effusion or lobar collapse on examination strongly suggests a diagnosis of bronchogenic carcinoma. The clinician may be able to demonstrate signs of obstructive lung disease, pulmonary fibrosis, bronchiectasis or cardiac failure.

A good general examination is extremely important in dealing with an isolated symptom such as cough, but this can be challenging within the constraints of the general practice consultation. Findings like clubbing, pallor, lymphadenopathy, neck swellings, thenar wasting, and the classic but rare Horner's syndrome can provide vital clues to the underlying aetiology.

Investigation

A chest radiograph should be performed in patients with chronic cough and those with acute cough with atypical symptoms like haemoptysis, chest pain and weight loss.

The National Cancer Institute Early Lung Cancer Group (1984) demonstrated that the sensitivity of chest radiography (CXR) is 54% when "suspicious" CXRs are coded as positive with a corresponding specificity of 99%. When indeterminate CXRs are considered positive, the sensitivity of CXR increases to 84% with a specificity of 90%. However, false negative CXR results continue to be a significant problem[10] and therefore clinical judgment must prevail in a patient with a suspicious history and signs of lung cancer in the presence of a normal chest x-ray. Onward referral for diagnostic investigation such as bronchoscopy should take place in these patients.

Spirometry can help to classify patients with suspected lung disease into two broad categories. Those with an obstructive pattern on spirometry should have their FEV1 (forced expiratory volume in one second) measured before and after inhalation of a short acting b2-agonist such as salbutamol to demonstrate reversibility. Spirometry may also reveal a restrictive picture as in pulmonary fibrosis (an intrinsic lung parenchymal disease) or

Box 2: Serious conditions presenting with cough

Respiratory causes

Bronchogenic carcinoma
Mesothelioma
Laryngeal carcinoma
Tuberculosis
Pneumonia
Pulmonary embolism
Foreign body inhalation
Interstitial lung disease

Cardiac causes

Left ventricular failure
Mitral stenosis
Pericarditis with effusion

Other causes

Oesophageal carcinoma
Thoracic aortic aneurysm
Lymphoma

disease extrinsic to the lung parenchyma such as neuromuscular disorders.

Blood tests and sputum examination may reveal information such as pneumonia, tuberculosis or secondary polycythemia. Bronchoscopy enables tissue diagnosis while oesophageal pH studies can confirm reflux disease. High resolution CT scanning of the thorax can demonstrate lung parenchymal, interstitial or pleural disease.

Management

Early detection of any serious illness is crucial to improve chances of survival. It is therefore imperative to have a high index of clinical suspicion and a low threshold for investigation in at risk patients who present with nonspecific symptoms such as cough.

In most cases where lung cancer is suspected it is appropriate to arrange an urgent chest x-ray before urgent referral to a chest physician.[7]

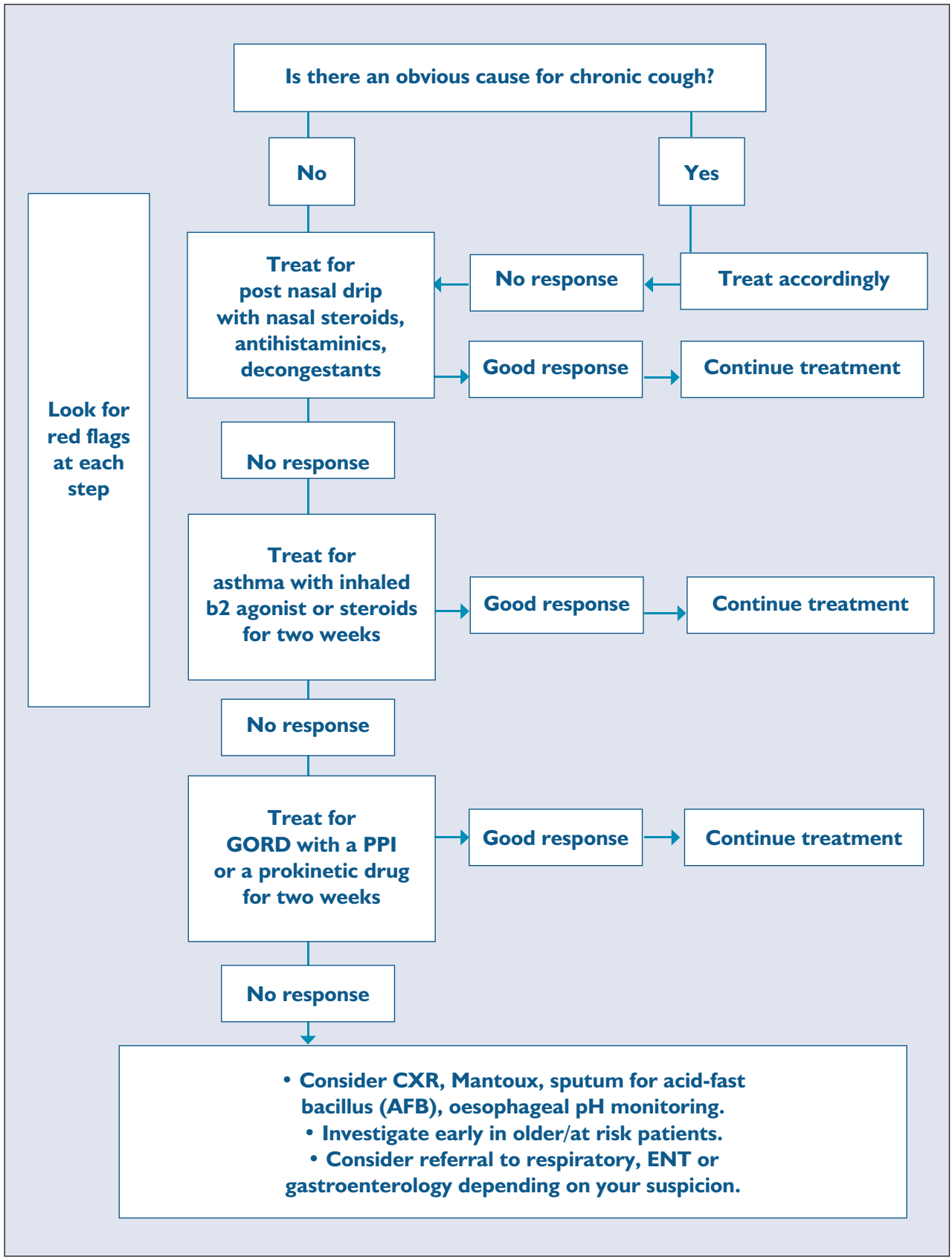

Figure 1. Treatment algorithm

Urgent referral for a chest x-ray should be conducted for:

- Haemoptysis
- Unexplained or persistent (more than three weeks) cough
- Chest/shoulder pain
- Dyspnoea
- Weight loss
- Chest signs
- Hoarseness
- Finger clubbing
- Features suggestive of metastasis from a lung cancer (eg. brain, bone, liver or skin)
- Persistent cervical/ supraclavicular lymphadenopathy
- Fatigue in a smoker over 50 years of age.[7]

Urgent referral to a chest physician should be for any of the following:

- Chest x-ray suggestive/ suspicious of lung cancer (including pleural effusion and slowly resolving consolidation)
- Persistent haemoptysis in smokers/ex-smokers over 40 years of age
- Signs of superior vena caval obstruction (swelling of face/ neck with fixed elevation of jugular venous pressure)
- Stridor (consider emergency referral)
- Any of the symptoms in the previous table persisting for longer than six weeks despite normal chest x-ray.[7]

In the presence of associated signs and symptoms or if the diagnosis is obvious, management of cough can be straightforward. However, once in a while we are left with a solitary cough with no supporting findings. In such a situation, it is reasonable to perform basic investigations and commence a trial of treatment simultaneously.

Bearing in mind that the common causes of chronic cough are post nasal drip, GORD and asthma, the following algorithm can be helpful in deciding to manage these patients. (Figure 1)

Conclusion

An experienced clinician would use pattern recognition in identifying the cause of cough. But when clinical findings do not fit into a particular pattern, most of us, consciously or subconsciously, use the hypothetico-deductive model for problem solving. We start with a hypothesis (working diagnosis) based on history and clinical findings that we attempt to prove (or disprove) with investigations or trial of a treatment. Lack of available information results in speculations (differential diagnoses), that we then attempt to work through. This speculative approach brings the concept of art into science.

Conflict of interest: none declared

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