

CHRONIC COUGH WITH MULTIPLE CAUSES

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ABSTRACT

This case reports a 57-year-old lady presented with cough of two months duration despite repeated treatments from multiple general practitioners. It took her another two months to know her diagnoses and a further couple of months to be relieved of her cough and became asymptomatic. Chronic cough management in primary care often needs an empiric integrative approach and requires good doctor-patient rapport with informed follow ups and continuity of care to be successful.

Keywords: Chronic cough diagnosis, chronic cough management, empiric integrative approach, doctor-patient relationship, continuity of care.

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INTRODUCTION

Cough is a common symptom for many respiratory and non-respiratory disorders. It has a substantial impact on health especially when it is chronic.¹ Significant morbidities of chronic cough include herniation, rib fracture, arrhythmias, syncope and stroke. Chronic cough of uncertain aetiology has been shown to be one of the most common reasons for referrals to chest physicians.^{2,3} Intractable chronic cough poses a great challenge to family physicians. It is not surprising that clinical management decisions with poor outcomes are often caused by a drift from clinical guidelines, lack of confidence on the part of physician, and made worse by increasing dissatisfaction of patients. This case report presents a patient with chronic cough and discussions on the American College of Chest Physicians (ACCP) evidence-based Clinical Practice Guidelines (CPG) that focus on the empirical integrative approach to the management of chronic cough.⁴

CASE REPORT

Madam S, a 57-year-old Iban lady, came to the clinic with complaint of cough of two months duration. She described it as a dry cough with throat irritation. It came in bouts at any time of the day. This was the first time her cough had lasted for so long and only partially relieved by medications prescribed by a few general practitioners (GP) prior to this consultation. She also had rhinorrhoea and post-nasal drip. She had associated anorexia but denied any weight loss. Effort tolerance was decreased at times but there were no complaints of fever, wheezing, haemoptysis, chest pain, orthopnoea, or paroxysmal nocturnal dyspnoea. There was no recollection of recent contact with anyone with pulmonary tuberculosis. She denies any experience of psychosocial stress, or feelings of anxiety depression; so far life has been rather peaceful for her.

She does not have hypertension, type 2 diabetes mellitus, heart disease or asthma. She is currently not on any medication except those for her present cough. She used to work as a farmer but has retired now. Although Madam S does not smoke, she lives together with her husband who is a chronic smoker, in a longhouse in Miri. Madam S is currently on a three months visit to her daughter's home at Damansara. There is no known allergy to any food or drugs. No family history of atopy could be elicited as Madam S was an adopted child.

Madam S walked into the consultation room and appeared comfortable without much cough throughout the consultation. She was afebrile, respiratory rate was 18 breaths/min, blood pressure was 160/90 mmHg, radial pulse was regular, normal in rhythm and with a rate of 84 beats/min. There were no positive physical findings on examination except for occasional coarse inspiratory crepitations over bilateral lung bases and mid zones that cleared up with voluntary coughing. Chest X rays and ECGs were

normal. She was initially diagnosed to have post-nasal drip secondary to recurrent rhinosinusitis. Madam S was prescribed some actifed tablets, was given sputum containers for acid fast bacilli (AFB) tests and advised to come back for review in a week's time.

On review consultation, Madam S's dry cough was less but nevertheless still persistently present. Results of sputum for AFBx3 came back as negative. Bromhexine, a mucolytic agent was added to the repeated actifed prescription. It was explained to her that this was an empirical treatment, so far tests had not shown any serious illnesses and Madam S was reminded to come back for follow up.

After two weeks of treatment with actifed and bromhexine that failed to relieve Madam S's cough, a tentative diagnosis of bronchial asthma (BA) was considered. Madam S was prescribed a trial of salbutamol metered dose inhalation (MDI) 200 mcg tds. When she started to complain of hoarseness of voice, she was urgently referred to an Otorhinolaryngologist (ORL) who made the diagnosis of laryngitis and probable gastro-oesophageal reflux disease (GORD). Madam S was then prescribed pantoprazole for a fortnight. When this treatment also did not relieve her chronic cough she was referred to a chest physician.

At the chest clinic, a diagnosis of occupational lung disease was suspected. Lung CT scan, bronchoalveolar lavage, oxygen saturation, full blood count, erythrocyte sedimentation rate, renal and liver profiles were all within normal range. Peak expiratory flow rate was 180 L/min due to poor technique. Lung spirometry that showed a 14% improvement in post-bronchodilator FEV1, supported the diagnosis of BA with concomitant allergic rhinitis. Madam S was prescribed MDI Inflammide 400 mcg bd, MDI Becotec 2 puffs when necessary, Cetirizine tablets and Beconase nasal spray 2 puffs per nostril bd.

Madam S finally recovered completely from her chronic cough after two months of treatment with above bronchodilator and corticosteroid inhalation.

DISCUSSION

The ACCP evidence-based CPG classify cough into the following 3 categories on the basis of its duration:⁴

1. acute, lasting <3 weeks
2. sub-acute, lasting between 3 and 8 weeks
3. chronic, lasting >8 weeks

The term "unexplained cough" is to replace the term "idiopathic cough", and likewise the term "upper airway cough syndrome (UACS)" will replace the term "post-nasal drip syndrome". The "gold standard" in the diagnosis is the positive response to the disease-specific therapy. It was shown and reported in ACCP guidelines that when empirical treatments are employed judiciously and systematically for common causes of cough, almost all chronic cough can be successfully managed.⁴

Madam S presented with persistent cough for two months. Although at the initial consultation there was rhinorrhoea and no obvious preceding respiratory infection that she could remember, a post-infectious cough could not be ruled out. The possible mechanism for post-infectious cough was persistent post-nasal drip, airway irritation, hyper-secretion and decreased clearance of mucus and transient airway hyper-responsiveness. However, post-infectious cough comes under the category of sub-acute cough as most of them should resolve within that period of time unless it has exacerbated or precipitated a BA.⁴

A thorough medical history and physical examination is required to diagnose a patient with chronic cough. It is important to note whether the patient is taking an ACE inhibitor, whether he / she is an active or passive smoker, and whether there are evidences of a serious life-threatening or systemic disease.⁴ However, it is said that the timing and characteristics of the cough are of doubtful diagnostic value. In the absence of "red-flag" symptoms and signs, systematically directed empirical treatments for common causes of cough (Table 1) was reported to have 99% success rate.⁵

Table 1: Aetiology of 99% of chronic cough cases found in healthy, non-smoking adults (Immunocompetent, non-smokers with normal chest x-ray not on ACE inhibitors)

1. Post-nasal dripping (allergic rhinitis/chronic sinusitis)
2. Cough-variant asthma
3. GORD/LPR (laryngopharyngeal reflux)

Figure 1 shows a simple and useful algorithm, as modified from ACCP guidelines, in the management of adult patient with chronic cough.⁴ The original sequence of algorithm is not applicable in countries with high incidence of pulmonary tuberculosis (PTB). In Malaysia, PTB is to be always evaluated before other possible differential diagnoses of chronic cough are considered.

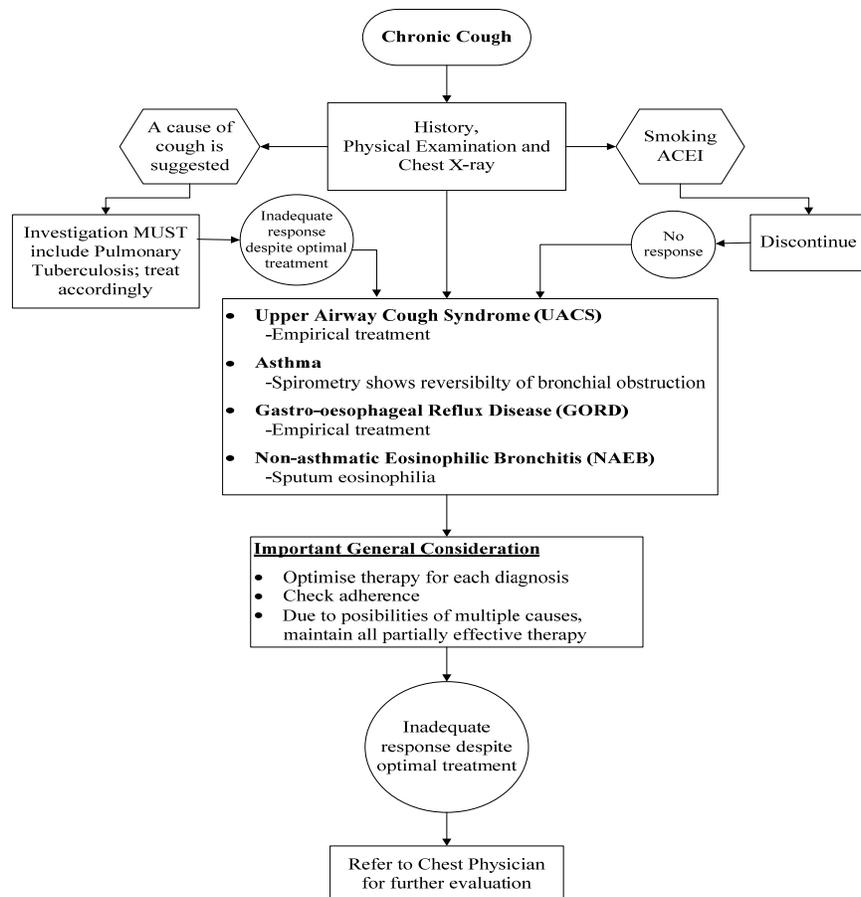


Figure 1: Adult chronic cough management algorithm.

Smokers with chronic cough that is not due to PTB should be counselled and assisted to stop smoking. If he / she is on ACE inhibitor, therapy with the drug should be stopped or replaced. Oral first generation anti-histamine / decongestants (A/D) can be used as an empirical treatment as they are more effective in the suppression of airway-induced cough due to their greater anticholinergic activity when compared to non-sedating H1-receptor antagonists.⁶ If the cough persists after treatment for UACS, the possibility that asthma is the cause of cough should be evaluated. One of the common pitfalls in the diagnostic approach to chronic cough is the failure to consider "silent" UACS at the initial stage.

Lack of expiratory wheezing, absence of prolonged expiratory time and hyperinflation of the chest wall do not rule out asthma. This is because in a subgroup of asthmatic patients, cough is the predominant or sole symptom and these cardinal signs are often absent. This condition, termed as cough-variant asthma, can be diagnosed by a lung function test via a spirometry at the physician office or through a broncho-provocation challenge (BPC) when spirometry results are equivocal.⁷

A spirometry data that shows a 15% increment with a β -agonist challenge from baseline forced expiratory volume in one second is highly suggestive of asthma.⁵ In the absence of the availability of BPC and spirometry, an empirical treatment with bronchodilators and corticosteroids could be considered. Partial improvement is often achieved after one week of inhaled bronchodilator therapy, but the complete resolution of cough is reported to take up to eight weeks of treatment with inhaled corticosteroids.⁷

When chronic cough persists in spite of correct treatments for UACS and asthma, a diagnosis of non-asthmatic eosinophilic bronchitis (NAEB) should be considered. Diagnosis of NAEB is confirmed when there are more than 3% of eosinophils in the induced-sputum sample.⁸ If this cannot be performed, an empirical trial of corticosteroids should be the next step. One study showed that bromhexine could decrease sputum volume or thickness in patients with chronic bronchitis and bronchiectasis but three other studies showed it had no effect in modifying the cough of these patients.⁶

In patients whose cough responds only partially or not at all to interventions for UACS and asthma or NAEB, treatment for GORD should be instituted next. In three prospective studies published by Irwin *et al.* over a period of 17 years, the prevalence of GORD presented as chronic cough had been increasing right from 1981 to 1998.⁹ Because coughing itself can induce more GOR events, it should be appreciated that less than optimal response from therapy may occur due to the cough-GOR self-perpetuating cycle unless all causes of cough are adequately treated. This explains the difficulty faced in treating Madam S's cough. On one hand physicians try to avoid poly-pharmacy and to institute a shorter course of therapeutic trials by targeting a single disease at a time; on the other hand this vicious cycle of coughing-GOR-coughing persists due to suboptimal control of other contributing factors of her cough.

For patients with chronic cough that remains undiagnosed after all the above tests and treatments have been carried out, referral to a chest physician is indicated.

CONCLUSIONS

Madam S finally stopped coughing after almost six months of diagnostic work up and trial of treatments. She could have been suffering from post-infectious cough, UACS, allergic rhinosinusitis probably precipitated by air pollutants, GORD and cough-variant asthma. This case illustrates the challenges of diagnosing and managing a chronic cough that can be effectively treated if this evidence-based empirical integrative approach is followed. In general practice, continuity of care, good doctor-patient relationship and consistent follow-up consultations are essential to maintain in contact with the patient long enough to witness the treatment outcome.

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