DIAGNOSING COPD

Prof Philip Eng

SUMMARY

Chronic Obstructive Pulmonary Disease (COPD) is one of the commonest diseases in developed countries including Singapore. It causes serious complications, usually resulting in repeated hospitalizations and often death. COPD is usually related to tobacco smoking and diagnosis of COPD in any patient must be accompanied by efforts at smoking cessation.

SFP2010; 36(3): 45-46

INTRODUCTION & DEFINITION

COPD is characterized by a) chronic airflow limitation that is generally not reversible and b) parenchymal destruction (emphysema), both of which are usually the result of exposure to noxious stimuli, eg cigarette smoke[1]. It is a generally progressive disease if the exposure to the noxious substance continues. Previous definitions of COPD included terms like "chronic bronchitis" and "emphysema". Chronic bronchitis is defined as the presence of cough and sputum for at least 3 months in consecutive years. Emphysema is a pathological description of the destruction of the alveoli. COPD is currently defined by spirometry which also provides an assessment of severity :

Mild	FEV1/FVC <70% + FEV1 > 80% pred
Moderate	FEV1/FVC <70% + FEV1 >50% but <80%
Severe	FEV1/FVC <70% + FEV1 >30% but < 50%
Very severe	FEV1/FVC <70% + FEV1 < 30% but < 50% + chronic respiratory failure

Patients can present at any degree of severity. However, mild cases do not usually present to the family practitioner unless as part of a health screening process. Unfortunately, most patients often present at the severe stage.

ETIOLOGY

Worldwide, cigarette smoking is the most commonly encountered risk factor for COPD. Diagnosis of COPD and management of COPD must be combined with helping the patient quit smoking to be of any meaning. Pipe and cigar smoking has also been associated with COPD. The risk of COPD among smokers is clearly dose related but not all smokers develop COPD. Passive smoking has also been associated with the development of COPD. In many developing countries, outdoor air pollution related to motor vehicle emissions in cities has also been suspected as causal of COPD.

Importance of COPD

COPD is a significant consumer of health care resources as severe disease is a chronic progressive disease resulting in repeated hospitalizations including ICU care. In Singapore[2] it is the 8th commonest cause of death and the 7th commonest cause for hospitalization.

Prevalence of COPD

The prevalence of COPD varies depending on the population studied but is generally related to the prevalence of smoking in the population. Different publications also use different criteria to study COPD prevalence. Lowest estimates of less than 6% are usually based on self reporting of doctor diagnosed COPD[3,4]. Prevalence studies using spiromery , estimate that about 25% of adults aged 40 and above may have COPD. A recent study in Japan[5] showed that COPD is much more common in smokers and ex-smokers than in non-smokers, those over 40 years than those less than 40 and in men than women. There is clearly a widespread under-recognition and under-diagnosis of COPD. The prevalence of COPD is expected to increase in the coming days due to the continued exposure to cigarette smoking and environmental pollution.

Diagnosing COPD

The cardinal symptoms of COPD are chronic cough, dyspnea and sputum production. In a patient who has chronic exposure to cigarette smoke, the diagnosis of COPD must be considered. This diagnosed should be confirmed on spirometry. The presence of a post bronchodilator FEV1/FVC < 70% predicted confirms the presence of airflow limitation that is not fully reversible.

Chronic cough

Chronic cough is often the first symptom of COPD. Many patients get used to it and quite correctly attribute it to the smoker's cough. The cough may or may not be productive but is usually not purulent, unless superimposed with infection. Hemoptysis is not a symptom of COPD. Common causes of chronic cough with a normal chest Xray include asthma, post nasal drip, refflux, smoking (and COPD) and ACE inhibitors.

PHILIP ENG, MBBS, MMed, FAMS, FCCP, FACP, FRCP (Lond), Senior Consultant Respiratory & ICU Physician, Mt Elizabeth Medical Centre

Sputum production

COPD patients typically produce sputum and this forms a source of concern for them. Sputum is described as thick and typically brought up during a bout of coughing. During exacerbations, they can become infected and the sputum turns purulent.

Breathlessness

Breathlessness on effort is a typical symptom of COPD and is often what brings the patient to see a doctor. Breathlesness is progressive and is initially on unusual effort eg climbing stairs. Some patients mistakenly attribute this dyspnea as part of ageing. Upon continued exposure to tobacco smoke, effort dyspnea becomes worse with deteriorating lung function. Activities of daily living (eg bathing and dressing) is affected late in the course of disease. Objective measurements of oxygen saturation are helpful so as to time interventions like long term oxygen therapy.

Wheezing

Wheezing is a common symptom of severe COPD esp during exacerbations. Inflammation of the airways is the likely etiology and contributes to the difficulty in differentiating COPD from asthma.

Other symptoms

Loss of appetite and weight are common symptoms in very severe cases of COPD. Depression and anxiety may also contribute to repeat hospitalizations, underlying the fact that shortness of breath is a very frightening patient for COPD patients. Complications like cor pulmonale may result in ankle swelling, again late in the course.

Other illnesses

It should be emphasized that patients with COPD are male and elderly. As such it is not uncommon for such patients to develop cancer and coronary artery disease. When following up such patients in the outpatient, one must be on the lookout for red flag symptoms like sudden weight loss, hemoptysis and chest pain.

Chest Xray for COPD

Chest Xrays are done to help rule out other differential diagnoses of COPD. Radiological signs suggestive of the diagnosis of COPD include an increase in lung volume, hyperlucency of the lungs, horizontality of the ribs, long tubular heart and flatteing of the diagphragm.

Differential diagnosis of COPD

Diagnosis	Features
COPD	Onset > 40 Slowly progressive symptoms Long history of tobacco smoking Effort dyspnea Irreversible airflow obstruction
Asthma	Onset earlier in life (eg childhood) Symptoms at night or early morning Good days and bad days Other features of atopy eg allergic rhinitis or eczema Positive family history Reversible airflow obstruction
Congestive Heart Faiilure	Onset > 40 years old Chest auscultation shows bilateral basal crepitations Jugular venous pressure elevated or ankle edema Cardiomegaly or abnormal cardiac signs Spirometry shows restriction rather than obstruction
Bronchiectasis	Large volumes of purulent sputum Crackles on chest auscultation Clubbing
Tubverculosis	Onset anytime Systemic symptoms eg loss of weight, fever Hemoptysis

CONCLUSIONS

It is important for family practitioners to be aware of the symptoms of COPD. Spirometry is the key to the diagnosis and every smoker with chronic respiratory symptoms should have a spirometry to confirm the diagnosis of COPD.

REFERENCES

1. GOLD: The global initiative for Chronic Obstructive Pulmonary Disease. www.goldcopd.com
2. Singapore Ministry of health website. www.moh.gov.sg
3. Halbert RJ, Natoli JL, Gano A, Badamgarav E, Buist AS, Mannino DM. Global buren of COPD: systematic review and meta-analysis. Eur Respir J 2006.
4. Menezes AM, Perez-Padilla R, Jardim JR, Muino A, Lopez MV, Valdivia G, et al. COPD in five Latin American studies; a prevalence study. Lancet 2005; 366: 1875-81.
5. Fukuchi Y, Nishimura M, Ichinose M, Adachi M, Nagal A, Kuriyama T, et al. COPD in Japan; the Nippon COPD Epidemiology study. Respirology 2004; 9: 458-65.