CASE THREE

Short case number: 3_7_3
Category: Respiratory System
Discipline: Medicine
Setting: General Practice
Topic: Chronic Obstructive Pulmonary Disease

Case

Min Lai, aged 48 years presents with a chronic persistent cough. She complains of breathlessness and of morning production of sputum. On further questioning she scores a 3 on the modified MRC dyspnoea scale.

Questions

1. What further history & examination would you undertake in this case?
2. What investigations would you order?
3. What is the modified MRC dyspnoea scale?
4. How does FEV1 help distinguish the severity of airflow obstruction?
5. How would you manage this case if a diagnosis of COPD was made?
6. What is the role of smoking cessation in this case?

Suggested reading:

Innes JA, Reid PT. Respiratory disease. In: Boon NA et aal. Davidson's Principles and Practice of Medicine 20th Ed. Churchill Livingstone, London, 2006 PP647-737.

ANSWERS

1. What further history & examination would you undertake in this case?

COPD should be suspected in any patient over the age of 40 years who presents with symptoms of persistent cough and sputum production and/or breathlessness.
Depending on the presentation important differential diagnoses include asthma, tuberculosis, bronchiectasis and congestive cardiac failure.
Chronic severe asthma may be difficult to distinguish from COPD.
A history of smoking and occupational history must be sought.
If COPD is suspected, a history of the cough must be sought. This is usually the first symptom but seldom prompts the patient to consult a doctor. It is characteristically accompanied by small amounts of mucoid sputum. Chronic bronchitis is formally defined when a cough and sputum occur on most days for at least 3 consecutive months for at least 2 successive years. Haemoptysis may complicate exacerbations of COPD but should not be attributed to COPD without thorough investigation.

Breathlessness usually heralds the first presentation to the health professional. The level should be quantified for future reference; scales such as the modified MRC dyspnoea scale or the Borg scale may be of assistance. In advanced disease, enquiry should be made as to the presence of oedema (which may be seen for the first time during an exacerbation) and morning headaches indicative of hypercapnia.

Physical signs are typically non-specific, correlate poorly with lung function, and are seldom obvious until the disease is advanced. The presence of pitting oedema should be documented and the body mass index recorded. Crackles may accompany infection but if persistent raise the possibility of bronchiectasis. Finger clubbing is not consistent with COPD and should alert the physician to potentially more serious pathology.

2. What investigations would you order?

- Chest x-ray

There are no radiographic signs that correlate with the severity of airflow limitation. However, a chest x-ray should be taken to exclude other causes of cough and increasing shortness of breath such as cardiac failure, other complications of smoking such as lung cancer, and the presence of large bullae

- Full blood count

A blood count is useful to exclude anaemia or document polycythaemia, and in younger patients with predominantly basal emphysema, α_1-antiproteinase should be assayed.

- Spirometry

The diagnosis of COPD requires objective demonstration of airflow obstruction by spirometry and is established when the post-bronchodilator FEV_1 is less than 80% of the predicted value and accompanied by $FEV_1/FVC < 70\%$. The presence of an $FEV_1/FVC < 70\%$ in the presence of an FEV_1 of 80% or more suggests the presence of mild disease. Particular attention should be paid to vital capacity, as this is dependent on the technique and effort employed by the patient. The severity of COPD may be defined in relation to the post-bronchodilator FEV_1. A low peak flow is consistent with COPD but it is not sufficiently specific to confirm the diagnosis, is unable to discriminate

between obstructive and restrictive disorders, and may underestimate the severity of airflow limitation in COPD.

- Lung function tests

Measurement of lung volumes provides an assessment of hyperinflation. This is generally performed by helium dilution technique; however, in patients with severe COPD, and in particular large bullae, body plethysmography is preferred because the use of helium may underestimate lung volumes. The presence of emphysema is suggested by a low gas transfer.

- Exercise tolerance tests

Exercise tests provide an objective assessment of exercise tolerance and provide a baseline on which to judge the response to bronchodilator therapy or rehabilitation programmes; they may also be valuable when assessing prognosis

Pulse oximetry

Pulse oximetry may prompt referral for a domiciliary oxygen assessment if less than 93%.

3. What is the modified MRC dyspnoea scale?

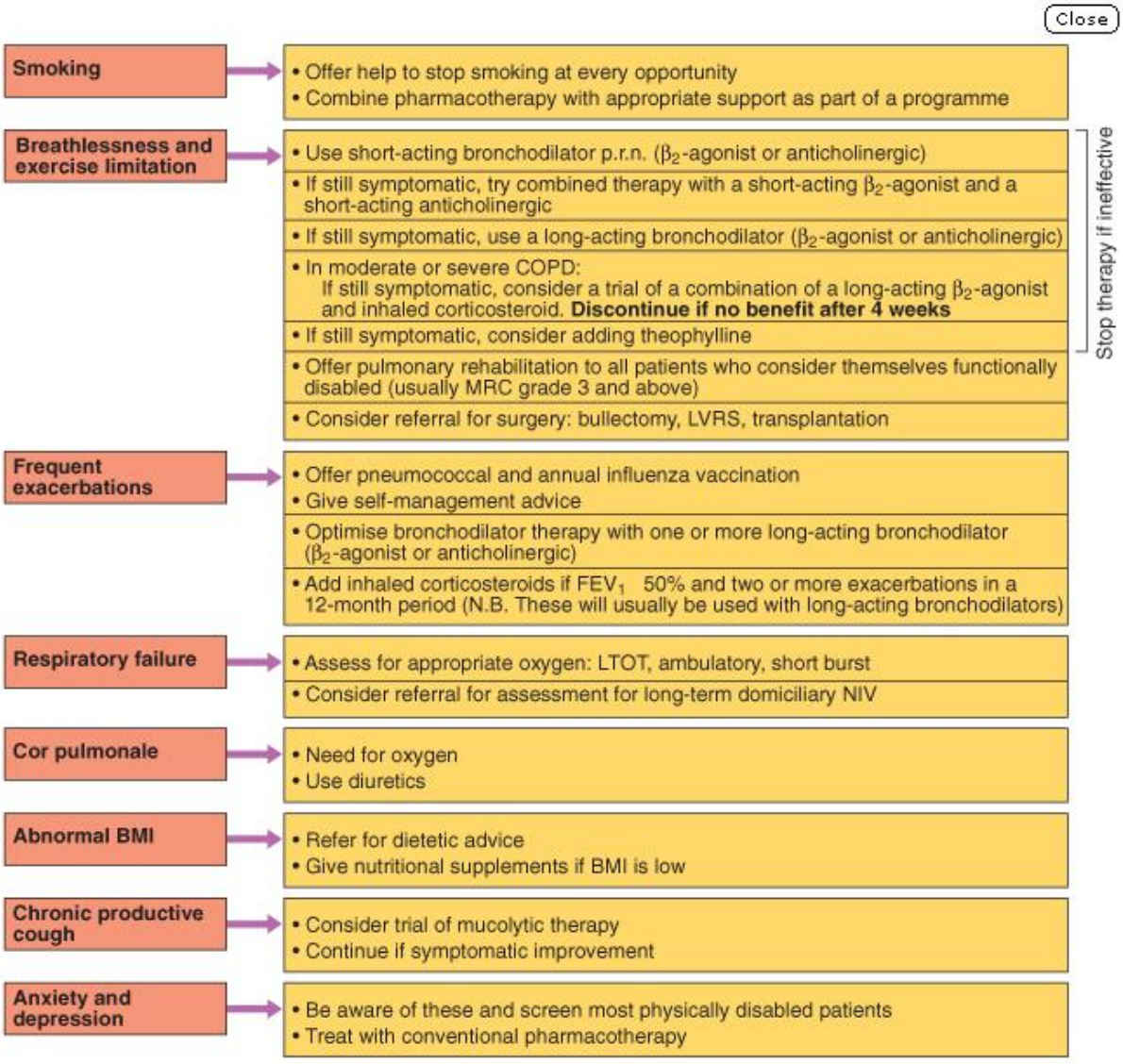
This is a scale that quantifies the degree of breathlessness experienced by a person and allows comparisons over time.

Grade	Degree of breathlessness related to activity
0	No breathlessness except with strenuous exercise
1	Breathlessness when hurrying on the level or walking up a slight hill
2	Walks slower than contemporaries on level ground because of breathlessness or has to stop for breath when walking at own pace
3	Stops for breath after walking about 100 m or after a few minutes on level ground
4	Too breathless to leave the house, or breathless when dressing or undressing

4. How does FEV1 help distinguish the severity of airflow obstruction?

Severity	FEV1
Mild	50-80% of predicted
Moderate	30-49% of predicted
Severe	<30% of predicted

5. How would you manage this case if a diagnosis of COPD was made?



Summary of management of COPD.

6. What is the role of smoking cessation in this case?

Every attempt should be made to highlight the role of smoking in the development and progress of the disease and encourage, advice and assist the patient toward smoking cessation. On cessation, patients should be warned to expect an apparent worsening of chest symptoms and reassured that this is temporary. Cessation is difficult but remains the only intervention proven to decelerate the decline in FEV_1.