CHAPTER 15. CHRONIC OBSTRUCTIVE PULMONARY DISEASE

SELF-ASSESSMENT QUESTIONS

1. All of the following play a role in the pathophysiology of COPD *except:*

A. Chronic inflammation from repeated exposure to noxious particles and gases

B. An imbalance between proteinases and antiproteinases

C. Inflammation similar to what is seen in asthma, which is mainly mediated through eosinophils and mast cells

D. Oxidative stress

E. Impairment of the normal protective and repair mechanisms in the lungs

2. In COPD, where in the lungs is the primary site of obstruction?

A. Large bronchi

B. Large bronchioles

C. Mucus glands

D. Small bronchi and bronchioles

E. Trachea

3. A 67-year-old man presents to his primary care physician complaining of productive cough and dyspnea on exertion for the past 6 months; COPD is suspected. Which of the following further supports the diagnosis of COPD?

A. A 45 pack–year history of smoking

B. FEV_1/FVC of 60% (0.60)

C. Family history of AAT deficiency

D. Fifteen years of employment in a plastics plant with exposure to talc

E. All of the above

4. Which of the following is an adverse effect of tiotropium?

A. Hypokalemia

B. Dry mouth

C. Insomnia

D. Irritability

E. Seizures

5. A 66-year-old man was admitted to the hospital 4 days ago for an acute COPD exacerbation. During this hospitalization, he has been treated with albuterol 2.5 mg via nebulizer every 4 hours, ipratropium 0.5 mg via nebulizer every 8 hours, prednisone 30 mg orally once daily, and cefuroxime axetil 500 mg orally twice daily, as well as fluticasone 110 mcg inhaled twice daily and theophylline 200 mg orally twice daily (fluticasone and theophylline were continued from outpatient treatment). Today he complains of restlessness and feeling like his heart is racing, which he attributes to being unable to smoke since being admitted to the hospital. Which of the following is/are alternative causes of these symptoms?

A. Theophylline toxicity secondary to reduced metabolism

B. Adverse effect of albuterol

C. Adverse effect of fluticasone

D. All of the above

E. A and B only

6. A 65-year-old woman with emphysema is seen in clinic today for a checkup. Her current COPD pharmacotherapy includes tiotropium 18 mcg once daily, an albuterol MDI as needed and formoterol 12 mcg every 12 hours. She is adherent with medications and uses her inhalers correctly. She reports increasing use of albuterol over the last 3 months and increased breathlessness; she denies any recent changes in sputum. Her postbronchodilator FEV_1 today is 42%. Which of the following is the *most* appropriate change to her current treatment regimen?

A. Add roflumilast 500 mcg orally every 24 hours

B. Add methylprednisolone 60 mg intravenously every 6 hours

C. Discontinue formoterol and start fluticasone furoate/vilanterol 100 mcg/ 25 mcg, one inhalation daily

D. Add fluticasone/salmeterol 500 mcg/50 mcg, one inhalation every 12 hours

E. Discontinue tiotropium and formoterol and start umeclidinium/vilanterol 62.5 mcg/25 mcg, one inhalation daily

7. A 75-year-old man with severe COPD currently treated with tiotropium, formoterol/budesonide, and albuterol MDI as needed presents to the clinic complaining of a more frequent cough, increased sputum production, and a change in sputum color. The last time he had symptoms like these was 6 months ago, and at that time he was hospitalized for 3 days. After being diagnosed with a COPD exacerbation and continuing his current maintenance therapies, which of the following is the most appropriate initial treatment recommendation?

A. Mometasone 220 mcg inhalation every 12 hours

B. Doxycycline 100 mg orally every 12 hours

C. Ipratropium two inhalations every 6 hours

D. Theophylline 300 mg orally every 12 hours

E. All of the above are appropriate initial treatment recommendations

8. An 81-year-old woman presents to the emergency department complaining of symptoms consistent with a COPD exacerbation. She tells you that she takes only tiotropium daily at home and that she is supposed to be on one other inhaler but has not had it refilled in the last 6 months. Which of the following would be the most appropriate medication to add to her regimen in the emergency department?

A. Ipratropium

B. Aminophylline

C. Roflumilast

D. Levalbuterol

E. None of the above would be an appropriate recommendation

9. Which of the following interventions might be appropriate for a patient with moderate (GOLD 2) COPD currently using only an albuterol MDI?

A. Oxygen therapy for 16 hours per day

B. Two weeks of pulmonary rehabilitation

C. Surgery (eg, bullectomy)

D. Lung transplantation

E. All of the above would be considered appropriate interventions

10. A 67-year-old man with chronic cough and sputum production, an FEV_1/FVC of 68% (0.68), and an FEV_1 65% of predicted can be classified according to the GOLD guidelines as:

A. Not having COPD

B. GOLD 1: mild

C. GOLD 2: moderate

D. GOLD 3: severe

E. GOLD 4: very severe

11. All of the following are appropriate patient education points for COPD *except*:

A. Smoking cessation counseling

B. Role of regular exercise

C. End-of-life issues and resuscitation wishes

D. When to quit taking medications as symptoms improve

E. Signs and symptoms of an exacerbation

12. Inhaled corticosteroids may improve all of the following parameters in a COPD patient with an FEV_1 of 55% *except*:

A. Symptom frequency

B. Lung function

C. Quality of life

D. Exacerbation rates

E. Mortality rates

13. A 58-year-old man with COPD was started on inhaled corticosteroids 2 months ago. Which one of the following parameters would be best for evaluating the effectiveness of the inhaled corticosteroid and determining if continued use is needed?

A. Arterial blood gases

B. Body mass index

C. Symptom improvement

D. Chest x-ray

E. FEV_1

14. A 59-year-old man presents with cough, sputum production, and dyspnea with exertion that began 6 months ago. He is a nonsmoker, but he has worked as a bartender four nights a week for the last 32 years. Lung examination reveals significant wheezing bilaterally. Which one of the following confirms the suspected diagnosis of COPD?

A. $PaCO_2$ 55 mm Hg (7.3 kPa) on arterial blood gas

B. Exposure to secondhand smoke

C. Postbronchodilator FEV_1/FVC ratio of 60% (0.60)

D. FEV_1 75%

E. Absence of infiltrates on chest x-ray

15. A 72-year-old man with COPD, hypertension, dyslipidemia, coronary artery disease, and osteoarthritis presents to clinic for routine follow-up. He is currently treated with formoterol, albuterol as needed, lisinopril, metoprolol, atorvastatin, aspirin, and acetaminophen. He reports no changes in his respiratory symptoms. His COPD Assessment Test (CAT) score is 9. He did go

to an urgent care facility twice in the past 5 months for worsening COPD. He was treated with antibiotics and prednisone on both occasions. His pulmonary function tests (PFTs) today reveal an FEV_1 of 54%. Which of the following is the most appropriate medication change to make today?

A. No changes are needed because the patient's symptoms are stable

B. Change formoterol to the combination inhaler budesonide–formoterol

C. Add ciclesonide

D. Discontinue metoprolol

E. Both B and D should be done today

ANSWERS

1. C

2. D

3. E

4. B

5. E

6. C

7. B

8. D

9. A

10. C

11. D

12. E

13. C

14. C

15. B