

CHAPTER 9. ARRHYTHMIAS, SELF-ASSESSMENT QUESTIONS

1. Where in the heart is the atrioventricular (AV) node located?
 - A. High right atrium
 - B. Low right atrium
 - C. Junction of the atria and ventricles
 - D. High right ventricle

2. Which phase of the ventricular action potential is most likely to be altered by a sodium channel blocking drug?
 - A. Phase 0
 - B. Phase 1
 - C. Phase 2
 - D. Phase 3

3. Which one of the following ECG intervals or durations corresponds most closely to phase 3 on the ventricular action potential?
 - A. PR interval
 - B. QRS complex
 - C. QT interval
 - D. T wave

4. Which one of the following arrhythmias increases the risk of stroke two- to sevenfold?
 - A. Atrial fibrillation (AF)
 - B. Paroxysmal supraventricular tachycardia (PSVT)
 - C. Ventricular premature depolarizations (VPDs)

D. Ventricular tachycardia (VT)

5. Which one of the following most accurately describes the mechanism of AF?

A. Increased automaticity in the atria, triggering a single atrial reentrant circuit

B. Increased automaticity in the atria, triggering multiple simultaneous atrial reentrant circuits

C. Increased automaticity in the pulmonary veins, triggering a single atrial reentrant circuit

D. Increased automaticity in the pulmonary veins, triggering multiple simultaneous atrial reentrant circuits

6. Which one of the following most accurately describes the mechanism of PSVT?

A. A single reentrant circuit in the atrium

B. Multiple simultaneous reentrant circuits in the atria

C. Reentry involving the AV node

D. Reentry occurring in the ventricles

7. Which of the following is the common myocardial pathology associated with hypertension, ischemic heart disease, heart failure, and valve disease that promotes the electrophysiological alterations that result in atrial fibrillation?

A. Fibrosis of the SA node

B. Fibrosis of the AV node

C. Left atrial hypertrophy

D. Left ventricular hypertrophy

8. A 66-year-old man presents to the ED complaining of palpitations, dizziness, lightheadedness, and near-syncope. Past medical history is significant for hypertension for 10 years. ECG reveals an irregularly irregular rhythm with no visible P waves and an undulating baseline.

His blood pressure in the ED is 99/63 mm Hg, and his heart rate is 125 beats/min. Which one of the following is the most appropriate treatment?

- A. Immediate direct current cardioversion
- B. Amiodarone 300 mg IV administered over 1 hour
- C. Digoxin 0.25 mg IV, repeated every 2 hours up to a total dose of 1.5 mg
- D. Metoprolol 5 mg IV administered over 2 minutes

9. A 58-year-old woman presents to the ED complaining of dizziness. ECG reveals an irregularly irregular rhythm with no visible P waves and an undulating baseline. She has a past medical history of hypertension and heart failure (left ventricular ejection fraction 30% [0.30]). Her blood pressure in the ED is 105/65 mm Hg, and her heart rate is 145 beats/min. Which one of the following is the most appropriate treatment?

- A. Immediate direct current cardioversion
- B. Amiodarone 300 mg IV administered over 1 hour
- C. Digoxin 0.25 mg IV, repeated every 2 hours up to a total dose of 1.5 mg
- D. Diltiazem 0.25 mg/kg IV bolus followed by 5 mg/hour IV continuous infusion

10. A 58-year-old woman presents to the ED complaining of dizziness and crushing chest pain. ECG reveals an irregularly irregular rhythm with no visible P waves and an undulating baseline. She has a past medical history of hypertension and heart failure (left ventricular ejection fraction 25% [0.25]). Her blood pressure in the ED is 85/65 mm Hg, and her heart rate is 160 beats/min.

Which one of the following is the most appropriate treatment?

- A. Immediate direct current cardioversion
- B. Amiodarone 300 mg IV administered over 1 hour
- C. Digoxin 0.25 mg IV, repeated every 2 hours up to a total dose of 1.5 mg

D. Diltiazem 0.25 mg/kg IV bolus followed by 5 mg/hour IV continuous infusion

11. A 56-year-old woman has paroxysmal atrial fibrillation and a history of hypertension. A recent exercise–stress test revealed no chest pain or evidence of ischemic changes on ECG, and she has no evidence of heart failure. She is currently receiving the maximum dose of the appropriate drug for ventricular rate control; however, she continues to complain of palpitations and dizziness approximately twice weekly, and these episodes last for approximately 3 to 4 hours. Which one of the following is the most appropriate therapy at this time?

A. Amiodarone

B. Catheter ablation

C. Procainamide

D. No additional drug therapy is indicated

12. A 65-year-old man has a past medical history of hypertension and coronary artery disease, for which he is currently receiving hydrochlorothiazide 25 mg daily, enalapril 10 mg twice daily, and amlodipine 10 mg daily. He presents to his physician complaining of intermittent palpitations and light-headedness. An ambulatory ECG reveals 6 to 10 ventricular premature depolarizations per hour, intermittent couplets, and a heart rate of 82 beats/min. Which one of the following is the most appropriate course of action?

A. Amiodarone 400 mg daily

B. Flecainide 150 mg every 12 hours

C. Metoprolol 50 mg twice daily

D. No treatment should be initiated

13. A 65-year-old man was admitted to the cardiac intensive care unit today with an exacerbation of heart failure due to a hypertensive crisis. Echocardiogram reveals a left ventricular ejection fraction of 35% [0.35]. He also has a past history of hypertension and dyslipidemia. While in the cardiac intensive care unit, the patient complains of palpitations and light-headedness, and his blood pressure is 105/70 mm Hg. ECG reveals ventricular tachycardia at a rate of 125 beats/min, which lasts longer than 30 seconds and does not terminate on its own. Which one of the following is the most appropriate treatment?

- A. No treatment is necessary
- B. Intravenous amiodarone
- C. Intravenous procainamide
- D. Immediate direct current cardioversion

14. Which one of the following best describes the role of drug therapy in patients with ventricular fibrillation?

- A. Drugs cause termination of ventricular fibrillation and return of spontaneous circulation
- B. Drugs convert ventricular fibrillation into ventricular tachycardia, which can then be terminated by direct current cardioversion
- C. Drugs improve the likelihood of success of electrical defibrillation, but alone do not terminate ventricular fibrillation
- D. Drugs remove the need for cardiopulmonary resuscitation

15. Which one of the following is a risk factor for drug-induced torsades de pointes?

- A. Age older than 55 years
- B. Female sex
- C. Hypertension

D. Chronic obstructive pulmonary disease

ANSWERS

1. B
2. A
3. D
4. A
5. D
6. C
7. C
8. D
9. C
10. A
11. B
12. C
13. B
14. C
15. B