

NEXTGENCOURSE.PRO

Mastering Cardiology for USMLE Step 1

High-Yield Topics Covered in This Chapter

This section includes USMLE Step 1–focused MCQs covering cardiac physiology, murmurs, congenital heart disease, cardiomyopathies, ECG interpretation, and cardiac pharmacology.

1.

Which phase of the cardiac cycle corresponds to the **largest increase in ventricular pressure without volume change**?

- A. Rapid filling
- B. Isovolumetric contraction
- C. Ejection
- D. Isovolumetric relaxation
- E. Diastasis

Answer: B

2.

Which valve closes at the beginning of isovolumetric contraction?

- A. Mitral
- B. Tricuspid
- C. Aortic
- D. Pulmonic
- E. All valves open

Answer: A

3.

The first heart sound (S1) is caused by closure of the:

- A. Semilunar valves
- B. AV valves
- C. Aortic valve only
- D. Pulmonic valve only
- E. Chordae tendineae

Answer: B

4.

Which event produces the second heart sound (S2)?

- A. AV valve closure
- B. Rapid ventricular filling
- C. Semilunar valve closure
- D. Atrial contraction
- E. Papillary muscle contraction

Answer: C

5.

Physiologic splitting of S2 increases during inspiration because of:

- A. Decreased venous return
- B. Delayed pulmonic valve closure
- C. Early aortic valve closure
- D. Increased LV preload
- E. Decreased RV preload

Answer: B

6.

Which variable is directly proportional to stroke volume?

- A. Afterload
- B. Heart rate
- C. Preload
- D. Blood viscosity
- E. Peripheral resistance

Answer: C

7.

Which change increases preload?

- A. Standing suddenly
- B. Dehydration
- C. Venodilation
- D. Increased venous return
- E. Increased afterload

Answer: D

8.

Which factor increases afterload?

- A. Decreased aortic pressure
- B. Increased systemic vascular resistance
- C. Venodilation
- D. Decreased blood viscosity
- E. Decreased wall tension

Answer: B

9.

According to Laplace's law, wall stress is proportional to:

- A. Pressure \times radius
- B. Pressure \div radius
- C. Radius \div thickness
- D. Thickness \times pressure
- E. Volume \div pressure

Answer: A

10.

Left ventricular hypertrophy reduces wall stress primarily by increasing:

- A. Radius
- B. Pressure
- C. Thickness
- D. Volume
- E. Heart rate

Answer: C

11.

Which parameter is represented by the width of the pressure–volume loop?

- A. Preload
- B. Afterload
- C. Stroke volume
- D. Contractility
- E. End-systolic volume

Answer: C

12.

Increased contractility results in:

- A. Increased end-systolic volume
- B. Decreased stroke volume
- C. Increased slope of ESPVR
- D. Rightward shift of PV loop
- E. Increased preload only

Answer: C

13.

Which change causes a **leftward shift** of the PV loop?

- A. Increased afterload
- B. Decreased contractility
- C. Increased preload
- D. Increased contractility
- E. Increased blood pressure

Answer: D

14.

Which chamber has the **highest pressure**?

- A. Right atrium
- B. Right ventricle
- C. Left atrium
- D. Left ventricle
- E. Pulmonary artery

Answer: D

15.

Which chamber has the **lowest oxygen saturation**?

- A. Left atrium
- B. Pulmonary vein
- C. Right ventricle
- D. Aorta
- E. Pulmonary artery

Answer: E

16.

Cardiac output equals:

- A. $HR \times \text{preload}$
- B. $HR \times \text{stroke volume}$
- C. $\text{Stroke volume} \div HR$
- D. $\text{Preload} \times \text{afterload}$
- E. $\text{Contractility} \times HR$

Answer: B

17.

Which variable primarily determines diastolic blood pressure?

- A. Stroke volume
- B. Heart rate
- C. Peripheral resistance
- D. Contractility
- E. Preload

Answer: C

18.

Mean arterial pressure (MAP) is best approximated by:

- A. $(SBP + DBP)/2$
- B. $DBP + 1/3$ pulse pressure
- C. $SBP - DBP$
- D. $HR \times SV$
- E. $CO \times$ preload

Answer: B

19.

Pulse pressure increases with:

- A. Decreased stroke volume
- B. Increased arterial compliance
- C. Increased stroke volume
- D. Decreased systolic pressure
- E. Increased diastolic pressure

Answer: C

20.

Which condition produces **wide pulse pressure**?

- A. Aortic stenosis
- B. Mitral stenosis
- C. Aortic regurgitation
- D. Cardiogenic shock
- E. Tamponade

Answer: C

21.

Which vessel contributes most to total peripheral resistance?

- A. Aorta
- B. Large arteries
- C. Arterioles
- D. Capillaries
- E. Veins

Answer: C

22.

Which autonomic effect increases heart rate?

- A. Parasympathetic stimulation
- B. β_1 receptor activation
- C. α_1 receptor activation
- D. M_2 receptor activation
- E. Vagal tone

Answer: B

23.

Which ion channel is responsible for phase 0 depolarization in ventricular myocytes?

- A. Calcium
- B. Potassium
- C. Sodium
- D. Chloride
- E. Magnesium

Answer: C

24.

Phase 4 depolarization in SA node cells is due to:

- A. Sodium influx via funny channels
- B. Calcium efflux
- C. Potassium influx
- D. Chloride efflux
- E. Sodium-potassium ATPase

Answer: A

25.

Which ion mediates phase 2 of ventricular action potential?

- A. Sodium
- B. Potassium
- C. Calcium
- D. Chloride
- E. Magnesium

Answer: C

26.

Beta-blockers decrease heart rate by:

- A. Blocking sodium channels
- B. Decreasing phase 0 slope
- C. Decreasing phase 4 slope
- D. Increasing potassium efflux
- E. Increasing calcium influx

Answer: C

27.

Which ECG wave represents atrial depolarization?

- A. QRS
- B. P wave
- C. T wave
- D. PR segment
- E. ST segment

Answer: B

28.

Which ECG interval represents AV nodal conduction?

- A. QRS
- B. QT
- C. PR interval
- D. ST segment
- E. RR interval

Answer: C

29.

Prolonged QT interval predisposes to:

- A. Atrial fibrillation
- B. Ventricular tachycardia
- C. Torsades de pointes
- D. Heart block
- E. Sinus bradycardia

Answer: C

30.

Which electrolyte abnormality prolongs QT interval?

- A. Hyperkalemia
- B. Hypokalemia
- C. Hypercalcemia
- D. Hyponatremia
- E. Hyponatremia

Answer: B

31.

Hyperkalemia causes which ECG change?

- A. Prolonged QT
- B. Flattened T waves
- C. Peaked T waves
- D. ST elevation
- E. Q waves

Answer: C

32.

Which electrolyte shortens QT interval?

- A. Hypocalcemia
- B. Hypercalcemia
- C. Hypokalemia
- D. Hypomagnesemia
- E. Hyperkalemia

Answer: B

33.

Electrical alternans is classically associated with:

- A. Myocardial infarction
- B. Hypertrophic cardiomyopathy
- C. Cardiac tamponade
- D. Atrial fibrillation
- E. Mitral stenosis

Answer: C

34.

Low voltage ECG complexes suggest:

- A. LV hypertrophy
- B. Hyperthyroidism
- C. Pericardial effusion
- D. Hypertension
- E. Aortic stenosis

Answer: C

35.

Which wave corresponds to ventricular repolarization?

- A. P
- B. Q
- C. R
- D. S
- E. T

Answer: E

36.

Which structure delays conduction to allow ventricular filling?

- A. SA node
- B. AV node
- C. Bundle of His
- D. Purkinje fibers
- E. Ventricular myocardium

Answer: B

37.

Fastest conduction velocity occurs in:

- A. AV node
- B. SA node
- C. Ventricular muscle
- D. Purkinje fibers
- E. Atrial muscle

Answer: D

38.

Which change shifts oxygen–hemoglobin dissociation curve to the right?

- A. Decreased temperature
- B. Decreased CO₂
- C. Decreased H⁺
- D. Increased 2,3-BPG
- E. Increased pH

Answer: D

39.

Rightward shift facilitates:

- A. Oxygen loading
- B. Oxygen unloading
- C. Increased affinity
- D. Decreased tissue delivery
- E. Increased saturation

Answer: B

40.

Coronary blood flow occurs primarily during:

- A. Systole
- B. Isovolumetric contraction
- C. Diastole
- D. Atrial contraction
- E. Rapid ejection

Answer: C

41.

Subendocardial ischemia is worsened by:

- A. Decreased heart rate
- B. Increased diastolic time
- C. Increased LV pressure
- D. Decreased wall stress
- E. Decreased afterload

Answer: C

42.

Which vessel supplies the SA node most commonly?

- A. LAD
- B. LCX
- C. RCA
- D. PDA
- E. Marginal artery

Answer: C

43.

Inferior wall MI most commonly affects which artery?

- A. LAD
- B. LCX
- C. RCA
- D. Left main
- E. Diagonal

Answer: C

44.

Anterior wall MI involves which leads?

- A. II, III, aVF
- B. I, aVL
- C. V1–V4
- D. V5–V6
- E. aVR

Answer: C

45.

ST elevation indicates:

- A. Old infarction
- B. Ventricular hypertrophy
- C. Acute myocardial injury
- D. Hypokalemia
- E. Pericardial effusion

Answer: C

46.

Pathologic Q waves signify:

- A. Acute ischemia
- B. Reversible injury
- C. Myocardial necrosis
- D. Electrolyte imbalance
- E. Pericarditis

Answer: C

47.

Troponin I is released from which structure?

- A. Sarcoplasmic reticulum
- B. Actin filament
- C. Myosin head
- D. Troponin complex
- E. Z line

Answer: D

48.

Troponin elevation occurs earliest at approximately:

- A. 30 minutes
- B. 1 hour
- C. 3–4 hours
- D. 12 hours
- E. 48 hours

Answer: C

49.

CK-MB is useful because it:

- A. Is highly sensitive
- B. Is heart-specific
- C. Returns to normal quickly
- D. Detects very early MI
- E. Never elevates in muscle disease

Answer: C

50.

Reperfusion injury involves generation of:

- A. Nitric oxide
- B. Reactive oxygen species
- C. Lactic acid
- D. Calcium chelators
- E. ATP

Answer: B

51.

A crescendo–decrescendo systolic murmur best describes:

- A. Mitral regurgitation
- B. Aortic stenosis
- C. Mitral stenosis
- D. Tricuspid regurgitation
- E. Ventricular septal defect

Answer: B

52.

A holosystolic murmur radiating to the axilla is characteristic of:

- A. Aortic stenosis
- B. Mitral regurgitation
- C. Mitral stenosis
- D. Aortic regurgitation
- E. Pulmonic stenosis

Answer: B

53.

Which murmur increases with a **handgrip**?

- A. Aortic stenosis
- B. Hypertrophic cardiomyopathy
- C. Mitral regurgitation
- D. Pulmonic stenosis
- E. Atrial septal defect

Answer: C

54.

Which maneuver increases murmur intensity in hypertrophic cardiomyopathy?

- A. Squatting
- B. Handgrip
- C. Passive leg raise
- D. Valsalva maneuver
- E. Inspiration

Answer: D

55.

A diastolic decrescendo murmur along the left sternal border suggests:

- A. Mitral stenosis
- B. Aortic regurgitation
- C. Tricuspid stenosis
- D. Pulmonic stenosis
- E. VSD

Answer: B

56.

Wide pulse pressure is most characteristic of:

- A. Aortic stenosis
- B. Mitral stenosis
- C. Aortic regurgitation
- D. Tricuspid regurgitation
- E. Restrictive cardiomyopathy

Answer: C

57.

Opening snap followed by a low-pitched rumbling diastolic murmur suggests:

- A. Mitral regurgitation
- B. Mitral stenosis
- C. Aortic regurgitation
- D. Aortic stenosis
- E. Tricuspid regurgitation

Answer: B

58.

Mitral stenosis is most commonly caused by:

- A. Degenerative calcification
- B. Congenital abnormality
- C. Ischemic heart disease
- D. Rheumatic fever
- E. Infective endocarditis

Answer: D

59.

Which murmur increases with **inspiration**?

- A. Mitral regurgitation
- B. Aortic stenosis
- C. Tricuspid regurgitation
- D. Hypertrophic cardiomyopathy
- E. Aortic regurgitation

Answer: C

60.

Fixed splitting of S2 is classically associated with:

- A. Ventricular septal defect
- B. Patent ductus arteriosus
- C. Atrial septal defect
- D. Mitral stenosis
- E. Pulmonary hypertension

Answer: C

61.

Patent ductus arteriosus produces which murmur?

- A. Systolic only
- B. Diastolic only
- C. Continuous machinery murmur
- D. Holosystolic murmur
- E. Early systolic murmur

Answer: C

62.

Failure of closure of the ductus arteriosus results in shunting from:

- A. Right to left
- B. Left to right
- C. Atrium to ventricle
- D. Ventricle to atrium
- E. Pulmonary artery to vein

Answer: B

63.

Which drug promotes closure of PDA?

- A. Alprostadil
- B. Nitroglycerin
- C. Indomethacin
- D. Propranolol
- E. Digoxin

Answer: C

64.

Which congenital defect causes a boot-shaped **heart** on X-ray?

- A. Transposition of great vessels
- B. Tetralogy of Fallot
- C. Truncus arteriosus
- D. Total anomalous pulmonary venous return
- E. Coarctation of aorta

Answer: B

65.

Tetralogy of Fallot includes all EXCEPT:

- A. Pulmonary stenosis
- B. Right ventricular hypertrophy
- C. Ventricular septal defect
- D. Overriding aorta
- E. Atrial septal defect

Answer: E

66.

Cyanosis relieved by squatting is characteristic of:

- A. PDA
- B. ASD
- C. VSD
- D. Tetralogy of Fallot
- E. Coarctation

Answer: D

67.

Transposition of the great arteries is incompatible with life unless there is:

- A. Pulmonary stenosis
- B. ASD, VSD, or PDA
- C. LV hypertrophy
- D. Mitral regurgitation
- E. Tricuspid stenosis

Answer: B

68.

Which congenital defect causes differential cyanosis?

- A. ASD
- B. VSD
- C. PDA with Eisenmenger syndrome
- D. TOF
- E. Coarctation (preductal)

Answer: C

69.

Coarctation of the aorta causes:

- A. Hypertension in legs
- B. Weak upper extremity pulses
- C. Rib notching on X-ray
- D. Continuous murmur
- E. Early cyanosis

Answer: C

70.

Infantile (preductal) coarctation is associated with:

- A. Turner syndrome
- B. Marfan syndrome
- C. Down syndrome
- D. DiGeorge syndrome
- E. NF1

Answer: A

71.

Rheumatic fever results from molecular mimicry against:

- A. Myosin
- B. Actin
- C. Cardiac troponin
- D. M protein
- E. Collagen

Answer: D

72.

Aschoff bodies are characteristic of:

- A. Infective endocarditis
- B. Rheumatic heart disease
- C. Amyloidosis
- D. Sarcoidosis
- E. Tuberculosis

Answer: B

73.

Rheumatic fever most commonly damages which valve?

- A. Aortic
- B. Tricuspid
- C. Pulmonic
- D. Mitral
- E. All equally

Answer: D

74.

Infective endocarditis most commonly affects which valve in IV drug users?

- A. Mitral
- B. Aortic
- C. Tricuspid
- D. Pulmonic
- E. Mitral + aortic

Answer: C

75.

Most common causative organism of acute infective endocarditis:

- A. Viridans streptococci
- B. Enterococcus
- C. Staphylococcus aureus
- D. Staph epidermidis
- E. HACEK organisms

Answer: C

76.

Janeway lesions are best described as:

- A. Painful nodules
- B. Painless macules
- C. Petechiae
- D. Osler nodes
- E. Purpura

Answer: B

77.

Osler nodes differ from Janeway lesions because they are:

- A. Painless
- B. Non-immune mediated
- C. Painful
- D. Found on trunk
- E. Caused by emboli only

Answer: C

78.

Which condition predisposes most strongly to infective endocarditis?

- A. Mitral valve prolapse
- B. Rheumatic heart disease
- C. Prosthetic heart valve
- D. Atrial fibrillation
- E. Hypertension

Answer: C

79.

Myxomatous degeneration of the mitral valve leads to:

- A. Mitral stenosis
- B. Mitral regurgitation
- C. Aortic regurgitation
- D. Tricuspid stenosis
- E. Pulmonic regurgitation

Answer: B

80.

Mitral valve prolapse murmur is best described as:

- A. Holosystolic only
- B. Mid-systolic click
- C. Diastolic rumble
- D. Continuous murmur
- E. Early systolic click

Answer: B

81.

Which maneuver makes MVP murmur occur earlier?

- A. Squatting
- B. Handgrip
- C. Passive leg raise
- D. Standing
- E. Inspiration

Answer: D

82.

Acute mitral regurgitation causes:

- A. LV hypertrophy
- B. Pulmonary edema
- C. Wide pulse pressure
- D. Bradycardia
- E. Decreased LA pressure

Answer: B

83.

Constrictive pericarditis presents with:

- A. Pulsus paradoxus
- B. Electrical alternans
- C. Kussmaul sign
- D. Beck triad
- E. Wide pulse pressure

Answer: C

84.

Cardiac tamponade is characterized by:

- A. Increased stroke volume
- B. Elevated diastolic pressures
- C. Loud heart sounds
- D. Wide pulse pressure
- E. Increased LV filling

Answer: B

85.

Beck triad includes all EXCEPT:

- A. Hypotension
- B. JVD
- C. Muffled heart sounds
- D. Bradycardia
- E. Low cardiac output

Answer: D

86.

Pulsus paradoxus is best defined as:

- A. Increase in systolic BP during inspiration
- B. Decrease in systolic BP during inspiration
- C. Fixed splitting of S2
- D. Alternating pulse amplitude
- E. Absent pulse

Answer: B

87.

Which cardiomyopathy presents with diastolic dysfunction and thickened walls?

- A. Dilated
- B. Restrictive
- C. Hypertrophic
- D. Ischemic
- E. Takotsubo

Answer: C

88.

Hypertrophic cardiomyopathy is caused by mutation in:

- A. Dystrophin
- B. Collagen
- C. Sarcomere proteins
- D. Ion channels
- E. Mitochondrial DNA

Answer: C

89.

Sudden cardiac death in young athletes is most commonly due to:

- A. Dilated cardiomyopathy
- B. Restrictive cardiomyopathy
- C. Hypertrophic cardiomyopathy
- D. Arrhythmogenic RV dysplasia
- E. Myocarditis

Answer: C

90.

Dilated cardiomyopathy leads to:

- A. Increased EF
- B. Decreased chamber size
- C. Systolic dysfunction
- D. Diastolic dysfunction only
- E. Increased wall thickness

Answer: C

91.

Alcohol most commonly causes which cardiomyopathy?

- A. Hypertrophic
- B. Restrictive
- C. Dilated
- D. Ischemic
- E. Stress-induced

Answer: C

92.

Restrictive cardiomyopathy is classically caused by:

- A. Alcohol
- B. Hypertension
- C. Amyloidosis
- D. Sarcomere mutation
- E. Viral infection

Answer: C

93.

Amyloid deposition in the heart leads to:

- A. Increased compliance
- B. Decreased ventricular filling
- C. Dilated chambers
- D. Systolic murmur
- E. LV hypertrophy with high voltage ECG

Answer: B

94.

Takotsubo cardiomyopathy is triggered by:

- A. Viral infection
- B. Chronic alcohol use
- C. Emotional stress
- D. Genetic mutation
- E. Hypertension

Answer: C

95.

Which finding distinguishes restrictive cardiomyopathy from constrictive pericarditis?

- A. JVD
- B. Kussmaul sign
- C. Pericardial calcification
- D. Elevated filling pressures
- E. Dyspnea

Answer: C

96.

Mural thrombus most commonly forms after:

- A. Atrial fibrillation
- B. Ventricular aneurysm
- C. Mitral stenosis
- D. Endocarditis
- E. Hypertrophic cardiomyopathy

Answer: B

97.

Left atrial enlargement predisposes to:

- A. Ventricular tachycardia
- B. Atrial fibrillation
- C. Heart block
- D. Sinus bradycardia
- E. PVCs

Answer: B

98.

Which murmur is best heard with patient leaning forward?

- A. Mitral stenosis
- B. Mitral regurgitation
- C. Aortic regurgitation
- D. Tricuspid regurgitation
- E. Pulmonic stenosis

Answer: C

99.

Which murmur is best heard in the left lateral decubitus position?

- A. Aortic stenosis
- B. Aortic regurgitation
- C. Mitral stenosis
- D. Pulmonic regurgitation
- E. Tricuspid stenosis

Answer: C

100.

Which pathology produces a “water hammer” pulse?

- A. Aortic stenosis
- B. Mitral regurgitation
- C. Aortic regurgitation
- D. Mitral stenosis
- E. Tricuspid regurgitation

Answer: C

101.

A newborn with cyanosis that worsens with crying most likely has:

- A. Ventricular septal defect
- B. Atrial septal defect
- C. Tetralogy of Fallot
- D. Patent ductus arteriosus
- E. Coarctation of aorta

Answer: C

102.

The most common congenital heart defect overall is:

- A. ASD
- B. PDA
- C. VSD
- D. TOF
- E. Coarctation

Answer: C

103.

Which congenital defect causes fixed splitting of S2?

- A. VSD
- B. PDA
- C. ASD
- D. TOF
- E. TGA

Answer: C

104.

A secundum ASD results from failure of development of:

- A. Septum primum
- B. Septum secundum
- C. Endocardial cushions
- D. Neural crest cells
- E. Sinus venosus

Answer: B

105.

An ostium primum ASD is most commonly associated with:

- A. Turner syndrome
- B. Down syndrome
- C. DiGeorge syndrome
- D. Marfan syndrome
- E. Edwards syndrome

Answer: B

106.

Which defect results from failure of endocardial cushion formation?

- A. VSD
- B. ASD secundum
- C. ASD primum
- D. PDA
- E. TOF

Answer: C

107.

A large VSD eventually leads to:

- A. LV hypertrophy only
- B. Pulmonary hypertension
- C. Decreased pulmonary blood flow
- D. Early cyanosis
- E. Bradycardia

Answer: B

108.

Eisenmenger syndrome results from:

- A. Right-to-left shunt at birth
- B. Persistent pulmonary hypertension
- C. Long-standing left-to-right shunt
- D. Pulmonary valve stenosis
- E. Aortic valve regurgitation

Answer: C

109.

Which defect classically presents with differential cyanosis?

- A. ASD
- B. VSD
- C. PDA
- D. TOF
- E. TGA

Answer: C

110.

PDA is physiologically closed by increased levels of:

- A. Prostaglandin E₂
- B. Nitric oxide
- C. Bradykinin
- D. Oxygen
- E. Carbon dioxide

Answer: D

111.

Which drug keeps the ductus arteriosus open?

- A. Indomethacin
- B. Ibuprofen
- C. Acetaminophen
- D. Alprostadil
- E. Propranolol

Answer: D

112.

A “snowman sign” on chest X-ray suggests:

- A. TOF**
- B. TGA**
- C. TAPVR**
- D. Coarctation**
- E. VSD**

Answer: C

113.

Total anomalous pulmonary venous return requires survival via:

- A. VSD**
- B. PDA**
- C. ASD**
- D. Intact septum**
- E. Pulmonary stenosis**

Answer: C

114.

Which congenital heart defect is associated with rib notching?

- A. ASD**
- B. VSD**
- C. PDA**
- D. Coarctation of aorta**
- E. TOF**

Answer: D

115.

Postductal coarctation presents with:

- A. Cyanosis in infancy
- B. Hypertension in upper extremities
- C. Weak radial pulses
- D. Bradycardia
- E. Pulmonary edema

Answer: B

116.

Which syndrome is associated with coarctation of the aorta?

- A. Down syndrome
- B. Turner syndrome
- C. Marfan syndrome
- D. DiGeorge syndrome
- E. Williams syndrome

Answer: B

117.

Failure of neural crest cell migration causes:

- A. VSD
- B. ASD
- C. PDA
- D. TOF
- E. Mitral stenosis

Answer: D

118.

Transposition of the great arteries results from failure of:

- A. Septation
- B. Spiral septum formation
- C. Endocardial cushion development
- D. Ductus arteriosus closure
- E. Ventricular compaction

Answer: B

119.

Which congenital heart defect presents with early cyanosis and no murmur?

- A. VSD**
- B. ASD**
- C. TGA**
- D. PDA**
- E. TOF**

Answer: C

120.

Most common cause of death in untreated TGA:

- A. Heart failure**
- B. Arrhythmia**
- C. Hypoxemia**
- D. Thromboembolism**
- E. Infection**

Answer: C

Cardiomyopathies

121.

Hypertrophic cardiomyopathy typically shows:

- A. Dilated chambers**
- B. Decreased EF**
- C. Asymmetric septal hypertrophy**
- D. Restrictive filling only**
- E. Thin ventricular walls**

Answer: C

122.

HCM murmur increases with:

- A. Squatting
- B. Handgrip
- C. Increased preload
- D. Decreased preload
- E. Inspiration

Answer: D

123.

Which mutation causes hypertrophic cardiomyopathy?

- A. Dystrophin
- B. Myosin heavy chain
- C. Collagen type I
- D. Titin deletion
- E. Lamin A/C

Answer: B

124.

Sudden death in HCM is due to:

- A. Heart failure
- B. MI
- C. Ventricular arrhythmia
- D. Stroke
- E. Endocarditis

Answer: C

125.

Dilated cardiomyopathy leads to which ECG finding?

- A. High voltage
- B. Short QT
- C. Low ejection fraction
- D. ST elevation
- E. Delta wave

Answer: C

126.

Which condition causes secondary dilated cardiomyopathy?

- A. Sarcoidosis**
- B. Amyloidosis**
- C. Chronic alcohol use**
- D. Hemochromatosis**
- E. Scleroderma**

Answer: C

127.

Peripartum cardiomyopathy presents with:

- A. Diastolic failure only**
- B. Systolic heart failure**
- C. Restrictive physiology**
- D. LV hypertrophy**
- E. Bradycardia**

Answer: B

128.

Restrictive cardiomyopathy shows:

- A. Reduced EF**
- B. Ventricular dilation**
- C. Impaired diastolic filling**
- D. Increased compliance**
- E. Decreased filling pressures**

Answer: C

129.

Amyloid heart disease ECG typically shows:

- A. LV hypertrophy
- B. High voltage QRS
- C. Low voltage QRS
- D. ST elevation
- E. Peaked T waves

Answer: C

130.

Sarcoidosis can cause cardiomyopathy by:

- A. Fibrosis
- B. Granuloma formation
- C. Fatty infiltration
- D. Iron overload
- E. Glycogen deposition

Answer: B

131.

Hemochromatosis leads to:

- A. Hypertrophic cardiomyopathy
- B. Restrictive cardiomyopathy
- C. Dilated cardiomyopathy
- D. Arrhythmogenic RV dysplasia
- E. Takotsubo cardiomyopathy

Answer: B

132.

Arrhythmogenic right ventricular cardiomyopathy is due to:

- A. Amyloid deposition
- B. Sarcomere mutation
- C. Fibrofatty infiltration
- D. Pressure overload
- E. Iron deposition

Answer: C

133.

Most common cause of myocarditis in the US:

- A. Adenovirus
- B. Coxsackie B virus
- C. HIV
- D. Influenza
- E. Parvovirus B19

Answer: B

134.

Myocarditis often presents with:

- A. Loud murmur
- B. Chest pain and arrhythmias
- C. Fixed split S2
- D. Cyanosis at birth
- E. Rib notching

Answer: B

135.

Chagas disease causes cardiomyopathy?

- A. Hypertrophic
- B. Restrictive
- C. Dilated
- D. Ischemic
- E. Stress-induced

Answer: C

136.

Eosinophilic myocarditis is associated with:

- A. Hypersensitivity reactions
- B. Alcohol abuse
- C. Viral infection
- D. Diabetes
- E. Sarcoidosis

Answer: A

137.

Endomyocardial fibrosis leads to:

- A. Increased compliance
- B. Restrictive cardiomyopathy
- C. Dilated chambers
- D. Valvular stenosis
- E. Ventricular aneurysm

Answer: B

138.

Takotsubo cardiomyopathy shows:

- A. Permanent myocardial damage
- B. Apical ballooning
- C. LV hypertrophy
- D. Dilated atria
- E. Chronic fibrosis

Answer: B

139.

Takotsubo cardiomyopathy is mediated by:

- A. Infection
- B. Autoimmune reaction
- C. Catecholamine surge
- D. Ischemic necrosis
- E. Iron overload

Answer: C

140.

Which cardiomyopathy is reversible?

- A. Hypertrophic
- B. Restrictive
- C. Dilated (alcoholic)
- D. Ischemic
- E. Arrhythmogenic

Answer: C

141.

Left ventricular aneurysm most commonly results from:

- A. Viral myocarditis
- B. Acute pericarditis
- C. Transmural MI
- D. Hypertension
- E. Amyloidosis

Answer: C

142.

Ventricular aneurysm predisposes to:

- A. Heart block
- B. Thrombus formation
- C. Valve rupture
- D. Tamponade
- E. Pulmonary edema

Answer: B

143.

Papillary muscle rupture leads to acute:

- A. Aortic regurgitation
- B. Mitral regurgitation
- C. Tricuspid stenosis
- D. Pulmonic regurgitation
- E. Mitral stenosis

Answer: B

144.

Free wall rupture after MI leads to:

- A. Acute MR
- B. Ventricular septal defect
- C. Cardiac tamponade
- D. Chronic aneurysm
- E. Arrhythmia

Answer: C

145.

Most common cause of sudden death post-MI (early):

- A. Heart failure
- B. Rupture
- C. Ventricular arrhythmia
- D. Embolism
- E. Papillary muscle rupture

Answer: C

146.

Dressler syndrome is caused by:

- A. Infection
- B. Autoimmune reaction
- C. Ischemia
- D. Fibrosis
- E. Calcification

Answer: B

147.

Dressler syndrome occurs:

- A. Within hours
- B. Within days
- C. 1–2 weeks post-MI
- D. Months later
- E. Years later

Answer: C

148.

Which finding supports constrictive pericarditis over restrictive cardiomyopathy?

- A. JVD
- B. Dyspnea
- C. Pericardial calcification
- D. Elevated filling pressures
- E. Ascites

Answer: C

149.

Kussmaul sign indicates:

- A. Increased JVP with inspiration
- B. Decreased JVP with inspiration
- C. Fixed splitting of S2
- D. Pulsus paradoxus
- E. Wide pulse pressure

Answer: A

150.

Most common cause of pericarditis:

- A. Tuberculosis
- B. Autoimmune disease
- C. Viral infection
- D. Bacterial infection
- E. Malignancy

Answer: C

Antiarrhythmic Drugs

151.

Class I antiarrhythmic drugs primarily block which ion channel?

- A. Potassium
- B. Calcium
- C. Sodium
- D. Chloride
- E. Magnesium

Answer: C

152.

Which Class I drug has **moderate Na⁺ channel blockade**?

- A. Quinidine
- B. Lidocaine
- C. Flecainide
- D. Procainamide
- E. Propafenone

Answer: D

153.

Class IB antiarrhythmics are most effective in:

- A. Atrial arrhythmias
- B. Ventricular arrhythmias
- C. AV nodal reentry

- D. Bradyarrhythmias
- E. Atrial fibrillation

Answer: B

154.

Which Class I drug shortens action potential duration?

- A. Quinidine
- B. Procainamide
- C. Flecainide
- D. Lidocaine
- E. Disopyramide

Answer: D

155.

Class IC drugs are contraindicated in patients with:

- A. Hypertension
- B. Heart failure
- C. Post-MI structural heart disease
- D. Atrial fibrillation
- E. Hyperthyroidism

Answer: C

156.

Which antiarrhythmic prolongs QT interval and can cause torsades?

- A. Lidocaine
- B. Flecainide
- C. Quinidine
- D. Propafenone
- E. Esmolol

Answer: C

157.

Class II antiarrhythmics act by:

- A. Blocking Na⁺ channels
- B. Blocking Ca²⁺ channels
- C. Blocking β_1 receptors
- D. Blocking K⁺ channels
- E. Activating vagal tone

Answer: C

158.

Which drug decreases AV nodal conduction and prolongs PR interval?

- A. Amiodarone
- B. Adenosine
- C. Verapamil
- D. Propranolol
- E. Procainamide

Answer: D

159.

Class III antiarrhythmics primarily block:

- A. Sodium channels
- B. Calcium channels
- C. Potassium channels
- D. β receptors
- E. Funny channels

Answer: C

160.

Which Class III drug has the **fewest proarrhythmic effects**?

- A. Sotalol
- B. Dofetilide
- C. Ibutilide
- D. Amiodarone
- E. Quinidine

Answer: D

161.

Amiodarone toxicity includes all EXCEPT:

- A. Pulmonary fibrosis
- B. Thyroid dysfunction
- C. Corneal deposits
- D. Nephrotoxicity
- E. Hepatotoxicity

Answer: D

162.

Which drug causes torsades de pointes?

- A. Lidocaine
- B. Amiodarone
- C. Sotalol
- D. Propranolol
- E. Adenosine

Answer: C

163.

Class IV antiarrhythmics block:

- A. Sodium channels
- B. Potassium channels
- C. Calcium channels
- D. β receptors
- E. Funny channels

Answer: C

164.

Which drug is contraindicated in heart failure due to negative inotropy?

- A. Metoprolol
- B. Verapamil
- C. Amiodarone
- D. Digoxin
- E. Procainamide

Answer: B

165.

Adenosine works by increasing:

- A. Calcium influx
- B. Sodium influx
- C. Potassium efflux
- D. β_1 stimulation
- E. Sympathetic tone

Answer: C

166.

Adenosine is first-line treatment for:

- A. Atrial fibrillation
- B. Ventricular tachycardia
- C. AV nodal reentrant tachycardia
- D. Torsades de pointes
- E. Atrial flutter

Answer: C

167.

Digoxin increases contractility by inhibiting:

- A. Ca^{2+} ATPase
- B. $\text{Na}^+/\text{Ca}^{2+}$ exchanger
- C. Na^+/K^+ ATPase
- D. L-type Ca^{2+} channels
- E. Ryanodine receptor

Answer: C

168.

Digoxin toxicity is potentiated by:

- A. Hyperkalemia
- B. Hypokalemia
- C. Hyponatremia
- D. Hypocalcemia
- E. Hypermagnesemia

Answer: B

169.

Digoxin causes which ECG change?

- A. Prolonged QT
- B. ST elevation
- C. ST depression (scooped)
- D. Delta wave
- E. U wave

Answer: C

170.

Which arrhythmia is most associated with digoxin toxicity?

- A. Atrial flutter
- B. Ventricular fibrillation
- C. Atrial tachycardia with block
- D. Sinus bradycardia
- E. Junctional rhythm

Answer: C

Arrhythmias & Conduction Disorders

171.

Atrial fibrillation is characterized by:

- A. Regular irregular rhythm
- B. Sawtooth P waves
- C. No discrete P waves
- D. Wide QRS complexes
- E. Fixed ventricular rate

Answer: C

172.

Atrial flutter shows:

- A. Irregular baseline
- B. Sawtooth flutter waves
- C. Absent atrial activity
- D. Wide QRS
- E. QT prolongation

Answer: B

173.

Which arrhythmia is associated with risk of thromboembolism?

- A. Sinus tachycardia
- B. Atrial fibrillation
- C. Junctional rhythm
- D. First-degree AV block
- E. PVCs

Answer: B

174.

Wolff–Parkinson–White syndrome shows:

- A. Prolonged PR interval
- B. Delta wave
- C. Narrow QRS
- D. Short QT
- E. Peaked T waves

Answer: B

175.

WPW is caused by an accessory pathway called:

- A. Bundle of His
- B. Purkinje fibers
- C. Kent bundle
- D. Bachmann bundle
- E. AV node

Answer: C

176.

Which drug is contraindicated in WPW with atrial fibrillation?

- A. Procainamide
- B. Amiodarone
- C. Verapamil
- D. Propranolol
- E. Quinidine

Answer: C

177.

First-degree AV block shows:

- A. Dropped beats
- B. Progressive PR lengthening
- C. Fixed prolonged PR
- D. AV dissociation
- E. Irregular rhythm

Answer: C

178.

Mobitz type I (Wenckebach) shows:

- A. Sudden dropped beats
- B. Progressive PR prolongation
- C. Fixed PR interval
- D. Wide QRS
- E. Complete AV dissociation

Answer: B

179.

Mobitz type II block is dangerous because it:

- A. Is benign
- B. Responds to atropine
- C. Can progress to complete heart block
- D. Occurs at AV node
- E. Has narrow QRS

Answer: C

180.

Third-degree AV block shows:

- A. Progressive PR prolongation
- B. Fixed PR
- C. AV dissociation
- D. Occasional dropped beats
- E. Sinus tachycardia

Answer: C

181.

Which rhythm requires immediate defibrillation?

- A. Atrial fibrillation
- B. Ventricular tachycardia with pulse
- C. Ventricular fibrillation
- D. Sinus tachycardia
- E. Atrial flutter

Answer: C

182.

Torsades de pointes is associated with:

- A. Short QT
- B. Prolonged QT
- C. Narrow QRS
- D. Hypercalcemia
- E. Hyperkalemia

Answer: B

183.

First-line treatment for torsades de pointes:

- A. Lidocaine
- B. Amiodarone
- C. Magnesium sulfate
- D. Adenosine
- E. Propranolol

Answer: C

184.

Which electrolyte abnormality predisposes to torsades?

- A. Hypercalcemia
- B. Hypocalcemia
- C. Hyperkalemia
- D. Hyponatremia
- E. Hypermagnesemia

Answer: B

185.

Brugada syndrome is caused by mutation in:

- A. Potassium channels
- B. Calcium channels
- C. Sodium channels
- D. β receptors
- E. Funny channels

Answer: C

186.

Brugada syndrome ECG shows:

- A. ST elevation in V1–V3
- B. Delta wave
- C. QT prolongation
- D. Sawtooth waves
- E. Electrical alternans

Answer: A

187.

Long QT syndrome increases risk of:

- A. Atrial flutter
- B. Ventricular fibrillation
- C. Torsades de pointes
- D. Sinus bradycardia
- E. AV block

Answer: C

188.

Which drug prolongs the QT interval?

- A. Lidocaine
- B. Flecainide
- C. Sotalol
- D. Propranolol
- E. Adenosine

Answer: C

189.

PVCs are characterized by:

- A. Narrow QRS
- B. Absent P wave
- C. Wide QRS
- D. Prolonged PR
- E. Delta wave

Answer: C

190.

Bigeminy refers to:

- A. Two atrial beats
- B. Alternating normal and PVC
- C. Two PVCs in a row
- D. Three PVCs in a row
- E. Ventricular tachycardia

Answer: B

191.

Ventricular tachycardia is defined as:

- A. >100 bpm with narrow QRS
- B. >100 bpm with wide QRS
- C. <60 bpm
- D. Irregular rhythm
- E. Absent QRS

Answer: B

192.

Most common cause of ventricular tachycardia:

- A. Electrolyte imbalance
- B. Acute ischemia
- C. Chronic myocardial scar
- D. Drugs
- E. Infection

Answer: C

193.

Which arrhythmia has a “twisting of points” appearance?

- A. Ventricular fibrillation
- B. Atrial flutter
- C. Torsades de pointes
- D. SVT
- E. Sinus tachycardia

Answer: C

194.

Treatment for unstable ventricular tachycardia:

- A. Adenosine
- B. Lidocaine
- C. Synchronized cardioversion
- D. Magnesium
- E. β -blocker

Answer: C

195.

Asystole is treated with:

- A. Defibrillation
- B. Cardioversion
- C. Epinephrine
- D. Magnesium
- E. Adenosine

Answer: C

196.

Pulseless electrical activity occurs when:

- A. Electrical activity without contraction
- B. No electrical activity
- C. Ventricular fibrillation
- D. Atrial fibrillation
- E. Sinus bradycardia

Answer: A

197.

Most common reversible cause of PEA:

- A. Hypothermia
- B. Tension pneumothorax
- C. Hypovolemia
- D. Tamponade
- E. Acidosis

Answer: C

198.

Which condition produces electrical alternans?

- A. MI
- B. Tamponade
- C. Hypertension
- D. Cardiomyopathy
- E. Aortic stenosis

Answer: B

199.

A pacemaker is indicated in:

- A. First-degree AV block
- B. Mobitz type I
- C. Mobitz type II
- D. Sinus tachycardia
- E. PVCs

Answer: C

200.

Sudden cardiac death is most commonly caused by:

- A. Asystole
- B. Atrial fibrillation
- C. Ventricular fibrillation
- D. Heart failure
- E. AV block

Answer: C

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