

Minimum Questions
Diseases of the heart and arteries (cardiology, angiology)
Year IV.
2018

1. The unstable coronary plaque is characterized by

- a/ thin fibrous cap
- b/ large calcium particles towards the media
- c/ lack of lipid core
- d/ thick fibrous cap.

2. The stenosis of an epicardial coronary artery starts to result effort symptoms at

- a/ 10
 - b/ 20
 - c/ 40
 - d/ 50-60
- % diameter stenosis.

3. The coronary flow is

- a/ predominant during the diastole
- b/ predominant during the systole
- c/ equal during the whole cardiac cycle.

4. The anti-ischemic effect of the beta blockers is based on

- a/ the decreased blood pressure
- b/ the decreased contractility of the myocardium
- c/ the prolonged diastole
- d/ a+b+c
- e/ the increased peak systolic flow velocity.

5. The anti-ischemic effect of the calcium antagonists is based on

- a/ the dilatation of the coronary artery
- b/ the alleviation of coronary spasm
- c/ the increase of collateral circulation
- d/ a+b+c.

6. The most frequent cause of the stabile angina pectoris is

- a/ significant coronary stenosis
- b/ coronary thrombus
- c/ microvascular spasm
- d/ anemia.

7. On the exercise ECG you have the measure the ST depression

- a/ at the J point (the junction of the QRS complex and the ST segment)
- b/ after 0.08s from the J point
- c/ at the beginning of the T wave
- d/ at the end of the T wave.

8. The fractional flow reserve (FFR) is measured as the

- a/ ratio of the distal intracoronary and the proximal (aortic) pressure during maximal vasodilatation
- b/ ratio of the distal intracoronary and the proximal (aortic) pressure during the basal state
- c/ ratio of the flow velocities during vasodilatation and the basal state

9. The fractional flow reserve (FFR) reflects

- a/ the increase of the coronary flow during vasodilatation
- b/ the remaining fraction of the flow in the stenotic coronary artery during vasodilatation compared to the normal flow
- c/ the decrease of the aortic pressure during vasodilatation.

10. Revascularization is indicated if the fractional flow reserve (FFR) is:

- a/ 2-3
- b/ 0.90-1.00
- c/ 0.80-0.90
- d/ <0.80

11. Which test is not appropriate for the diagnosis of stable angina pectoris?

- a/ resting 12-lead ECG
- b/ dobutamine echocardiography
- c/ dipyridamole MIBI SPECT
- d/ exercise ECG

12. Diagnostic criterion of the STEMI on the ECG is

- a, ST-elevation in any leads, even only in one
- b, ST-elevation at least in two neighboring leads
- c, ST-depression at least in two neighboring leads

13. In inferior STEMI, the ST-elevations are in

- a, leads II, III and aVF
- b, leads I, aVL and V5-6
- c, leads V1-6
- d, leads aVR and V5-6

14. In STEMI, blood test for necroenzymes:

- a, is mandatory
- b, should be taken initially, but waiting for the result should not postpone the intervention
- c, to be done every 6 hours
- d, is mandatory only if it is an anterior STEMI

15. The main reason of STEMI is

- a, 40-50% stenosis in coronary arteries
- b, mostly white thrombus
- c, mostly red thrombus
- d, coronary spasm

16. In STEMI, for pain management ... is to be administered.

- a, nitrate
- b, centrally acting pain medication (i.e.: morphine)
- c, paracetamol
- d, low dose acetylsalicylic-acid

17. The most effective treatment in STEMI is

- a, percutaneous coronary intervention
- b, thrombolysis
- c, conservative management

d, watchful waiting

18. In STEMI, anticoagulation therapy must be administered as

a, unfractionated heparin intravenously

b, LMWH subcutaneously

c, LMWH intravenously

19. Which antiplatelet drug cannot be administered orally

a, acetylic acid

b, clopidogrel

c, prasugrel

d, IIb/IIIa receptor inhibitor

20. After the diagnosis of STEMI, the patient must reach a PCI center in no more than

a, 60 minutes

b, 90 minutes

c, 120 minutes

d, 180 minutes

21. Can you detect troponin level increase in the serum in case of unstable angina?

a, yes

b, only when chest pain is present

c, only when accompanied with ECG alteration

d, no

22. Can you detect troponin level increase in the serum in case of NSTEMI?

a, yes

b, only when chest pain is present

c, only when accompanied with ECG alteration

d, no

23. Has acetyl-salicylic acid to be given in unstable angina?

a, yes

b, only for high risk patients

c, no

d, only if ST-elevation is present

24. The most common cause of NSTEMI/unstable angina is

a, occlusive thrombus

b, plaque, occluding the artery

c, non-occlusive thrombus

d, coronary spasm

25. Silent ischemia

a, is always accompanied by chest pain

b, is often accompanied by ST depression on the ECG

c, frequently occurs in diabetic patients

d, b + c

26. Unstable angina is

a, not caused by arteriosclerosis

b, not accompanied by chest pain

- c, accompanied by chest pain
- d, caused by occlusion of an artery

27. Not part of the acute treatment of NSTEMI:

- a, ASA
- b, heparin
- c, nitrate
- d, ACE-I

28. The most effective treatment of NSTEMI is

- a, coronary intervention
- b, conservative therapy
- c, bed rest
- d, coronary-CT

29. The long-term treatment of NSTEMI consists of, except

- a, ASA
- b, clopidogrel
- c, nitrate
- d, beta-blocker

30. In unstable angina, intervention is needed, if

- a, recurrent angina is present
- b, if blood pressure is >180/100Hgmm
- c, dizziness is present
- d, family history of CAD

31. Which is the false statement?

- a, In the understanding and differentiating the modes of stimulation and pacing systems can help the pacemaker coding system.
- b, Tachycardia usually is abrupted by the pacemaker stimuli in patients with pacemaker.
- c, The pacemaker malfunction very often revealed by ECG.
- d, Upon application of pacemaker magnet over the implanted device, the pacemaker begins the stimuli according to the programmed mode.

32. Meanings of pacemaker codes are wrong except one

- a, The first letter indicates the chamber paced. It may be A (atrial) or V (ventricular), or both, letter D (dual).
- b, The thirds letter tells us the mode of response to sensing.
- c, The fourth and fifth position show the tachycardia stimulation.
- d, The second letter represents the chamber used for sensing for intrinsic signals.

33. Ineffective stimulation in patients with pacemaker cannot be detected in case of

- a, electrode dislodgement
- b, electrode insulation failure
- c, pacemaker syndrome
- d, electrode fracture

34. Typical underlying ECG in patients with sick sinus syndrome, except one

- a, Sinus bradycardia
- b, SA block
- c, Ventricular premature beat

d, Tachycardia - bradycardia syndrome

35. Causes of bradycardia, except one

- a, Hyperthyreosis
- b, Increased intracranial pressure
- c, Drugs: digitalis, beta blocker
- d, Athletic heart

36. Causes of atrioventricular blocks, except one

- a, Drugs: digitalis, beta blockers
- b, Electrolyte abnormalities
- c, Structural heart diseases
- d, Theophylline

37. Which statement is false?

- a, Syncope is a short period of temporary loss of consciousness.
- b, Syncope can be due to malignant ventricular arrhythmias as well.
- c, Patients suffering from syncope should always be admitted to hospital.
- d, In the background of syncope there is always no a structural heart disease.

38. Which of the following investigations should not be done as the first evaluation process of syncope

- a, Twelve-lead ECG.
- b, Detailed history
- c, Coronary angiography
- d, Blood pressure measurement, in lying and standing position as well

39. On the basis of ECG, arrhythmia-associated syncope is likely in the following cases, except one:

- a, Less than 50/min sinus bradycardia or recurrent SA block or sinus pause longer than 3000 milliseconds.
- b, Mobitz II. second or third degree AV block.
- c, Rapid paroxysmal supraventricular or ventricular tachycardia.
- d, First-degree AV block.

40. The followings justify immediate clinical record in case of syncope, except one:

- a, Severe structural heart disease
- b, If syncope occurs in the supine position or during exercise
- c, If there is sudden cardiac death in the family history
- d, Ventricular premature beat

41. The most common mechanism of regular narrow QRS complex tachycardia is:

- a, AV nodal reentry
- b, Accessory atrioventricular pathway
- c, Atrial fibrillation
- d, Ventricular extrasystole

42. What is the most common arrhythmia in human?

- a, Atrial flutter
- b, Atrial fibrillation
- c, Ventricular extrasystole
- d, Ventricular tachycardia

43. The definition of sustained arrhythmia is:

- a, Any arrhythmia lasting for more than 30 seconds
- b, Any arrhythmia lasting for more than 1 minute
- c, Any arrhythmia lasting for more than 10 minutes
- d, Any arrhythmia lasting for more than 1 hour

44. WPW syndrome consists of:

- a, Short PQ interval
- b, Delta wave
- c, Paroxysmal palpitation
- d, All of the above

45. Which medication can be used for the acute treatment of a regular narrow QRS complex tachycardia?

- a, Adenosine iv.
- b, Verapamil iv.
- c, Metoprolol iv.
- d, All of the above

46. Which medication can be used for the acute treatment of ventricular tachycardia?

- a, Procainamide iv.
- b, Digoxin iv.
- c, Metoprolol iv.
- d, Verapamil iv.

47. Which of the statements below is valid?

- a, Ventricular tachycardias always result in hemodynamic instability (hypotension).
- b, Supraventricular tachycardias can cause only mild symptoms, but no syncope
- c, Both are correct
- d, None of the above

48. Which arrhythmia can present as a wide QRS complex tachycardia on the 12-lead ECG?

- a, Ventricular tachycardia
- b, Supraventricular tachycardia with bundle branch block
- c, Both
- d, None

49. What is FBI tachycardia?

- a, A fast, broad, irregular tachycardia caused by atrial fibrillation and a co-existing accessory pathway with anterograde conduction
- b, A regular narrow QRS complex tachycardia
- c, An irregular narrow QRS complex tachycardia
- d, None of the above

50. An increased thromboembolic risk is associated with:

- a, Atrial fibrillation
- b, Atrial flutter
- c, Both
- d, Neither of the above

51. Implantable cardioverter defibrillators (ICDs) can be used to treat:

- a, Regular supraventricular tachycardias

- b, Ventricular tachycardias and ventricular fibrillation
- c, Atrial fibrillation
- d, Ventricular extrasystoles

52. Catheter ablation is most efficient for the treatment of:

- a, Paroxysmal supraventricular tachycardias
- b, Ventricular tachyarrhythmias
- c, Atrial fibrillation
- d, Bradyarrhythmias

53. The most common site of intracardiac thrombus formation in atrial fibrillation is:

- a, Right ventricle
- b, Left ventricle
- c, Left atrial appendage
- d, Right ventricle

54. Risk factor of thromboembolism in atrial fibrillation:

- a, Hypertension
- b, Diabetes
- c, Previous stroke
- d, All of the above

55. A 62 years old unconscious male patient with a wide QRS complex tachycardia at 220 beats/min and a systolic blood pressure below 60 Hgmm arrives at the emergency room. What to do first?

- a, Immediate echocardiography
- b, Iv. Digoxin administration
- c, Electrical cardioversion
- d, Iv. Verapamil bolus

56. Valid statement regarding ventricular extrasystoles:

- a, Ventricular extrasystoles indicate a worse prognosis in patients with poor left ventricular function after myocardial infarction.
- b, Ventricular extrasystoles always require treatment.
- c, The risk of sudden cardiac death can be reduced by suppressing the number of extrasystoles with antiarrhythmic medication.
- d, All above are correct.

57. A 29 year old female patient with a narrow QRS complex tachycardia at 180 beats/min arrives at the emergency room. Options for acute termination of the tachycardia include:

- a, Iv. adenosine (fast bolus)
- b, Iv. verapamil (slow bolus)
- c, Carotid sinus massage
- d, All of the above

58. The most common side effect with long-term amiodarone treatment:

- a, Blindness
- b, Lung cancer
- c, Renal failure
- d, Hyperthyreosis

59. The most common mechanism underlying wide QRS complex tachycardias:

- a, Supraventricular tachycardia with Bundle branch block
- b, Ventricular tachycardia
- c, FBI tachycardia
- d, Atrial flutter

60. Definition of ventricular tachycardia:

- a, 6 or more consecutive beats of ventricular origin at a rate of 120 beats/min or higher
- b, wide QRS complex tachycardia lasting for at least 30 sec
- c, wide QRS complex tachycardia lasting for at least 1 minute
- d, regular narrow QRS complex tachycardia lasting for at least 30 sec

61. What type of heart failure can be differentiated?

- a, systolic left ventricular
- b, diastolic left ventricular
- c, right ventricular
- d, all of the above

62. It is characteristic for systolic heart failure:

- a, normal ejection fraction
- b, impaired ejection fraction
- c, normal end-systolic, end-diastolic and stroke volume
- d, normal left atrial mean pressure

63. Criteria of diastolic dysfunction

- a, normal ejection fraction, diastolic dysfunction, enlarged left atrium, left ventricular hypertrophy
- b, reduced ejection fraction, normal chamber sizes, normal pressure in the left atrium
- c, normal chamber sizes, reduced right ventricular function
- d, any of above

64. Signs of left ventricular failure except:

- a, pulmonary congestion
- b, hepatic congestion
- c, dyspnea
- d, rhythm disturbances may occur

65. Which are the most important drugs using in the therapy of heart failure?

- a, ACE-inhibitors, beta blockers, Ca-channel blockers
- b, ACE-inhibitors, beta blockers, mineralocorticoid receptor blockers, diuretics
- c, digitalis, alfa-blockers, ARB-s
- d, diltiazem, verapamil, bronchodilators

66. What are the most important diagnostic tools to diagnose heart failure?

- a, Physical exams, ECG, chest X-ray, echocardiography
- b, coronary angiography
- c, nuclear cardiology methods
- d, positron emission tomography

67. What is the definition of heart failure?

- a, the heart can not pump enough blood for the different organs
- b, the pressures elevate in the left ventricle and in the aorta
- c, the intracardiac volumes decreases in all cardiac chambers
- d, The RAS- and the neuro-humoral system has a normal function in heart failure

68. Which devices can not improve the symptoms of heart failure?

- a, cardiac resynchronization therapy (CRT) - biventricular pacemaker
- b, intracardiac defibrillator implantation (ICD)- to prevent sudden death
- c, intraaortic balloon pump (IABP)
- d, occluder of the patent foramen ovale

69. Heart failure can appear in patients with:

- a, coronary artery disease
- b, valvular heart diseases
- c, cardiomyopathies
- d, pericardial diseases
- e, COPD
- f, all above

70. Which valvular heart disease can cause holosystolic murmur?

- a, mitral and tricuspid regurgitation
- b, aortic and pulmonary stenosis
- c, mitral and tricuspid stenosis
- d, aortic and pulmonary regurgitation

72. How can you prove the stenosis of the aortic valve?

- a, measuring the systolic gradient over the valve
- b, measuring the diastolic gradient in the coronary sinus
- c, measuring the systolic gradient over the mitral valve
- d, measuring the diastolic gradient over the valve

73. Which valvular heart disease cause „opening snap“?

- a, aortic regurgitation
- b, mitral regurgitation
- c, mitral stenosis
- d, tricuspid regurgitation

74. On the ECG you see a left bundle branch block. Which of the following disease can cause it?

- a, dilative cardiomyopathy
- b, coronary artery diseases
- c, heart failure
- d, all of above

75. Inspecting the patient, you can see the Musset sign. What kind of valvular heart diseases can have the patient?

- a, mitral stenosis
- b, mitral regurgitation
- c, aortic stenosis
- d, aortic regurgitation

76. Inspecting the patient, you can see „mitral roses“. What kind of valvular heart diseases can have the patient?

- a, mitral stenosis
- b, mitral regurgitation
- c, aortic stenosis
- d, aortic regurgitation

77. What can mean a loud ejection systolic murmur above the aorta in an elderly patient?

- a, tricuspid regurgitation
- b, aortic regurgitation
- c, aortic stenosis
- d, mitral stenosis

78. Proto-meso-diastolic murmur can be heard in patients with:

- a, aortic stenosis
- b, aortic regurgitation
- c, pulmonary regurgitation
- d, pulmonary stenosis
- e, b+c

79. Which type of chronic mitral regurgitation has the worst prognosis?

- a, rheumatic
- b, mitral valve prolapse
- c, ischemic
- d, degenerative

80. What is the normal area of the mitral valve?

- a, 4-6 cm²
- b, 2-3 cm²
- c, 1 cm²
- d, <1 cm²

81. Elevated heart rate predisposes the development of heart failure by:

- a, Increasing myocardial oxygen demand
- b, Reducing myocardial perfusion
- c, Reducing diastolic filling time
- d, Inducing coronary artery vasoconstriction
- e, All of the above

82. What test(s) would you perform to confirm the diagnosis as well as determine the type of heart failure?

- a, ECG
- b, Echocardiography
- c, Urine analysis
- d, Electrolytes, BUN, serum creatinine, plasma glucose
- e, All of the above

83. Management of acute cardiogenic shock include the following, except:

- a, Aspirin and heparin administration in case of myocardial infarction
- b, Inotropic and/or vasopressor therapy in patients with inadequate tissue perfusion to maintain mean arterial pressure of 60-65 mmHg
- c, Diuretics to decrease plasma volume and peripheral edema
- d, I.v. levosimendan to elevate blood pressure in case of hypotension
- e, Intra aortic balloon pump to augment diastolic coronary perfusion pressure

84. Patients with cardiogenic shock secondary to myocardial infarction may benefit from the following, except:

- a, PCI

- b, CABG
- c, Thrombolytic therapy
- d, TAVI
- e, IABP

85. Left ventricular assist devices (LVADs) are implanted:

- a, As a bridging option for patients with cardiogenic shock
- b, After the failure of medical treatment and an IABP
- c, When the cause of cardiogenic shock is potentially reversible
- d, All of the above

86. It is one of the Major Duke criteria:

- a, new cardiac murmur
- b, vegetation on a cardiac valve or on the surface of an implanted device
- c, A+B
- d, none of above

87. Who needs antibiotic prophylaxis before a dental procedure to prevent infective endocarditis?

- a, Patients with artificial valves
- b, Patients with rheumatic valvular heart diseases
- c, Patients with uncorrected congenital heart diseases
- d, all above

88. What kind of antibiotic therapy has to be used to prevent infective endocarditis during dental procedure?

- a, aminoglycoside
- b, penicillin-like
- c, cephalosporin
- d, antituberculosics

89. When is needed an urgent cardiac surgery in a patients with vegetation in infective endocarditis?

- a, In case of valve perforation with hemodynamic instability
- b, several small vegetation
- c, if autoimmune signs occur
- d, There is no need for urgent operation in such a patient

90. Urgent operation is needed, if the patient with infective endocarditis:

- a, has an uncontrolled infection
- b, severe heart failure
- c, has embolic complication
- d, if the vegetation increased despite antibiotic therapy
- e, all above

91. Areas of shunting in fetal circulation

- a. Lung
- b. Foramen ovale and ductus arteriosus
- c. Placenta
- d. arteria and vena umbilicalis

92. Patent ductus arteriosus (Botall) causes

- a. ejection systolic murmur
- b. machinery continuous murmur
- c. holosystolic murmur
- d. diastolic murmur

93. Primum type atrial septal defect is

- a. the most common type of the congenital heart diseases
- b. associated with other endocardial cushion defects (cleft AV valves, inlet type VSD)
- c. large, associated with anomalous pulmonary venous drainage
- d. associated with unroofed coronary sinus

94. What is Eisenmenger's syndrome

- a. Final common pathway for all significant left to right shunting in which unrestricted pulmonary blood flow leads to pulmonary vaso-occlusive disease (PVOD)
- b. Final common pathway for all significant right to left shunting in which unrestricted pulmonary blood flow leads to pulmonary vaso-occlusive disease (PVOD)

95. Indication of closure of the atrial or ventricular septal defects in case of

- a. shunt ratio (Qp/Qs) > 1.5
- b. shunt ratio (Qp/Qs) < 1.5
- c. shunt ratio (Qp/Qs) > 2
- d. shunt ratio (Qp/Qs) > 1,2

96. Typical ECG in atrial septal defect

- a. Left bundle branch block
- b. Left anterior hemiblock
- c. Left posterior hemiblock
- d. Incomplete right bundle branch block

97. Typical murmur in case of ventricular septal defect

- a. Systolic ejection murmur in 2R2
- b. Diastolic murmur in 2L2
- c. Parasternal loud harsh holosystolic murmur
- d. Apical holosystolic murmur, radiate to de left anterior axillar line.

98. Indication of closure of the VSD

- a. If there is evidence of LV dilatation, elevated PA vascular resistance and the Qp/Qs > 1.5, or in the case of recurrent infective endocarditis
- b. In case of angina even if the Qp/Qs is < 1,5
- c. In case of fatigue even if the Qp/Qs is < 1,5

99. Not characteristic to bicuspid aortic valve

- a. The ascending aorta gradually dilates (1 mm/year)
- b. Most common congenital malformation
- c. Symptoms of aortic stenosis develops in the fifths decade
- d. There is no risk of aortic dissection

100. Relative risk of MI in patients with PAD compared to the normal population

- a. 1x
- b. 4x
- c. 40x
- s. 100x

101. How much is the 10 years survival rate of patients with PAD with critical limb ischemia

- a. 1%
- b. 10%
- c. 50%
- d. 90%

102. Risk factors of PAD

- a. Moderate alcohol intake
- b. Dyslipidaemia
- c. Hyperviscosity
- d. Chronic renal disease
- e. b,c,d

103. What is the etiology of the neuroischemic leg ulcer

- a. Arterial
- b. Venous
- c. Buerger's disease
- d. Diabetes Mellitus

104. The value of reduced Ankle Brachial Index (ABI)

- a. Confirms the diagnosis of PAD
- b. Does not provide further risk stratification, with a lower ABI indicating worse prognosis
- c. Used in the differential diagnosis of leg symptoms, to identify a vascular etiology
- d. Strongly associated with coronary and cerebral artery diseases
- e. a,b,c,d

105. Non-compressible arteries are typical in

- a. Hypertension
- b. Diabetes Mellitus
- c. Chronic kidney disease
- d. Autoimmune diseases
- e. b,c,d

106. Transcutaneous-O₂ pressure is a useful tool for

- a. Assessing wound healing potential
- b. Screening for vascular disease
- c. Predicting amputation healing
- d. Predicting benefit from hyperbaric oxygen therapy
- e. a,b,c,d

107. Vasodilator treatment in PAD

- a. Calcium channel blockers
- b. Alpha blockers
- c. ACE inhibitors
- d. a,b,c
- e. Clopidogrel

108. Indication of thrombolytic therapy in PAD

- a. Intermittent claudication
- b. Acute limb ischemia
- c. Chronic critical limb ischemia
- d. Asymptomatic patient with low ABI

109. Which is not a typical findings in PAD?

- a, cold extremity
- b, pallor
- c, hair loss of the extremity
- d, hyperpigmentation
- e, decreased amplitude of the pulses
- f, trophic changes

110. After birth two shunts of the fetal circulation will close because of the pressure in the left side increases relative to the pressure in the right sided heart chambers. Meanwhile the blood pressure in the pulmonary circulation

- a. goes down
- b. goes up
- c. doesn't change