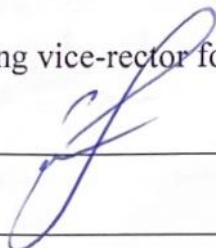


Ministry of Health of Ukraine
ODESA NATIONAL MEDICAL UNIVERSITY

Faculty of medicine, international
Department of Internal Medicine No. 1 with the cardiovascular pathology course

CONFIRMED by

Acting vice-rector for scientific and pedagogical work



Svitlana KOTYUZHYNKA
_____, 2022

**METHODOLOGICAL DEVELOPMENT OF PRACTICAL LESSON FROM
EDUCATIONAL DISCIPLINE**

Course: 4 Faculty: International
Academic discipline: Secrets of electrocardiogram

Approved:

Meetings of the department of internal medicine No. 1 on the course of cardiovascular pathology of the Odesa National Medical University

Protocol No. 1 from "31" 08 2022

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Practical lesson № 1

Topic: Conduction system of the heart. The basic rules for applying electrodes during ECG recording. Normal ECG parameters: waves, intervals, segments. Heart rate and conduction analysis. Analysis of the regularity of heart contractions. Determination of the sources of excitation: sinus rhythm, atrial rhythm, rhythm from the AV-node, ventricular (ideoventricular) rhythm. Electrical axis of the heart. Algorithm of ECG analysis. ECG in hypertrophies of different parts of the heart.

Purpose: to explain the essence of the conduction system of the heart, applying electrodes during ECG recording, normal ECG parameters, algorithm of ECG analysis.

Key words: Conduction system of the heart, waves, intervals, segments, heart rate, sinus rhythm, hypertrophies.

Equipment: laptop with a presentation, a multimedia projector, individual assignments on the topic of a practical lesson

Plan of the practical lesson

1. Organizational measures (greetings, verification of present students, messages of the topic and purpose of the lesson, motivation of students to study the topic)
2. Control of basic knowledge (written work, written test, frontal survey, etc.) (if necessary)
3. Questions (tests) to test basic knowledge of the topic of the lesson:

1. The P wave shows depolarization on the ECG:

- A. His bundle
- B. Right atrium
- S. Left ventricle
- D. Purkinje fiber
- E. Both atria

2. When analyzing the patient's ECG, it was established that the T wave is positive in standard leads. This means that the process normally takes place in the ventricles:

- A. Abbreviation
- B. Depolarization
- C. Excitement
- D. Repolarization
- E. Relaxation

3. A 30-year-old patient has a decrease in the amplitude of the R wave on the electrocardiogram. What does this wave mean on the ECG?

- A. Spread of excitation from the atria to the ventricles
- B. Spread of excitation throughout the ventricles
- C. Electrical heart diastole.
- D. Ventricular repolarization
- E. Spreading of excitation along the atria

4. When analyzing the ECG, it is necessary to determine what is the driver of the heart rhythm. This can be done on the basis of measurement:

- A. Amplitudes of waves
- B. In the direction of the teeth
- C. Lengths of teeth
- D. R-R interval durations
- E. Durations of the QRST complex

5. The patient has hypertrophy of the left ventricle. What will be the position of the electrical axis according to the ECG?

- A. A normogram is registered
- B. The right of way is registered
- C. Left axis
- D. The amplitude of the R wave in standard leads is the same
- E. The amplitude of the R wave in I standard lead will be smaller than in III

6. The patient's ECG showed an increase in the duration of the T wave. This is a consequence of a decrease in the speed of the ventricles:
- A. Repolarization
 - B. Depolarizations and repolarizations
 - C. Depolarization
 - D. Abbreviation
 - E. Relaxation
7. Repolarization processes are disturbed in the myocardium of the ventricles of the subject. This will lead to a violation of the amplitude, configuration, duration of the wave:
- A. Q
 - B. R
 - C. S
 - D. T
 - E. P
8. A sick person has a reduced amplitude of the T wave on the ECG. What does this mean?
- A. Presence of trophic changes in the myocardium
 - B. Electrical heart diastole
 - C. Electrical systole of the heart
 - D. Atrial depolarization
 - E. Ventricular depolarization
9. During the recording of the ECG in a patient with hyperfunction of the thyroid gland, an increase in heart rate was observed. A decrease in the duration of which component of the ECG indicates this?
- A. P-Q segment
 - B. P-Q interval
 - C. P-T interval
 - D. QRS complex
 - E. R-R interval
10. When a healthy person moves from a lying position to a standing position, the following compensatory mechanisms occur:
- A. Increased heart rate
 - B. Reduction of heart rate
 - C. Decrease in diastolic blood pressure
 - D. Decrease in vascular tone
 - E. Reduction of total peripheral resistance
11. What changes in heart activity are accompanied by emotional stress?
- A. Heart activity does not change
 - B. The heart gives tetanic contractions
 - C. The frequency of contractions decreases
 - D. Strength and frequency of contractions increases
 - E. Arrhythmias occur
12. The influence of the vagus nerve on the heart is manifested in:
- A. Reduced frequency of contractions
 - B. Reduction of the speed of conduction of excitation
 - C. Increases in the duration of the PQ interval
 - D. Increases in the duration of the RR interval
 - E. All answers are correct
13. During emotional excitement, the heart rate (HR) of a 30-year-old man reached 112 per minute. A change in the state of which structure of the conducting system of the heart causes an increase in heart rate
- A. Sinoatrial node
 - B. Purkinje fiber
 - C. Leg of His bundle
 - D. Atrioventricular node

- E. His bundle
14. In humans, the heart rate is constantly maintained at the level of 40 per minute. What is a pacemaker?
- Sinoatrial node
 - Atrioventricular node.
 - His bundle.
 - Legs of the bundle of His.
 - Purkinje fibers.
15. When analyzing the electrocardiogram, it was established that the duration of the heart cycle in a person is equal to 1 second. What is her heart rate per minute?
- 50
 - 60
 - 70
 - 80
 - 100
16. In a healthy adult, the speed of excitation through the atrioventricular node is 0.02-0.05 m per 1 second. Atrioventricular delay provides:
- Simultaneous contraction of both atria
 - Simultaneous contraction of both ventricles
 - Sufficient force of contraction of the atria
 - Sufficient strength of contraction of the ventricles
 - Sequence of contraction of the atria and ventricles

4. Discussion of theoretical issues:

- The conduction system of the human heart. Sequence and speed of excitation.
 - The mechanism of excitation in the conduction system of the heart. Potential of the sinoatrial node, its role.
 - Electrocardiogram (ECG), definition, lead.
 - Genesis of waves, segments and intervals. Electrical axis of the heart, angle alpha.
- Note.* The discussion of theoretical issues can take place in the form of answers to the questions, debates, discussions, presentations with reports, abstracts, discussion of reports and abstracts, review of the answers of higher education graduates, etc.

Topics of reports/abstracts:

- Interpret the physiological properties of the heart that ensure its pumping function (automaticity, excitability, conduction, contractility), based on the analysis of the electrocardiogram (ECG)
- Research and determination of the position of the electrical axis of the heart according to the electrocardiogram

Note. When preparing a report, abstract, analytical review, etc., students of higher education can, along with this, prepare didactic visual materials in the form of tables, code diagrams, slides, drawings, drug schemes, etc.

- Summary.

5. List of recommended literature (main, additional, electronic information resources):

Main:

- The ECG in Practice, John R. Hampton 6th edition 2018
- The ECG Made Practical, John R. Hampton 6th edition 2020
- Davidson's "Principles of Practice of Medicine" 23rd edition, 2018
- Harrison's "Principles of internal medicine", 19th edition, 2019.

Additional:

Thomas Cascino, MD, MSc, Michigan Medicine, University of Michigan; ***Michael J. Shea***, MD, Michigan Medicine at the University of Michigan. Last full review/revision Jul 2021| Content last modified Sep 2022.

Electronic information resources:

<https://www.msdmanuals.com/professional/SearchResults?query=ecg>

<https://www.msdmanuals.com/professional/cardiovascular-disorders/cardiovascular-tests-and-procedures/electrocardiography?query=ecg>

<https://www.msdmanuals.com/professional/cardiovascular-disorders/cardiovascular-tests-and-procedures/electrocardiography?query=ecg>

Practical lesson № 2

Topic: ECG-criteria of ischemia. ECG diagnosis of myocardial infarction (MI). Complications of MI on ECG. Violation of the heart rhythm on ECG. Sinus brady - tachycardia. Sinus tachycardia. Sinus arrhythmia. ECG criteria for diagnosing atrial fibrillation (AF), atrial flutter. ECG criteria for diagnosis of extrasystoles and ventricular arrhythmias (ventricular tachycardia, ventricular fibrillation, WPW syndrome).

Purpose: to explain the essence of the ischemia, ECG diagnosis of myocardial infarction, violation of the heart rhythm on ECG.

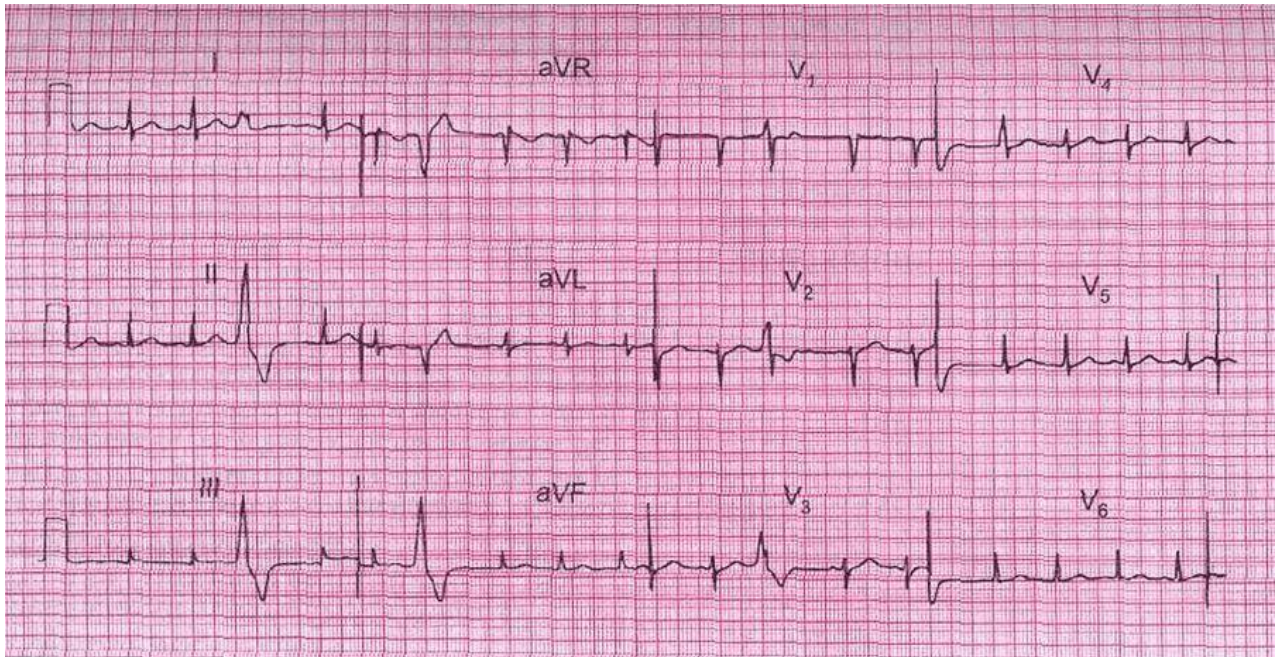
Key words: ischemia, myocardial infarction, heart rhythm, brady – tachycardia, arrhythmia, atrial fibrillation, atrial flutter, ventricular arrhythmias.

Equipment: laptop with a presentation, a multimedia projector, individual assignments on the topic of a practical lesson

Plan of the practical lesson

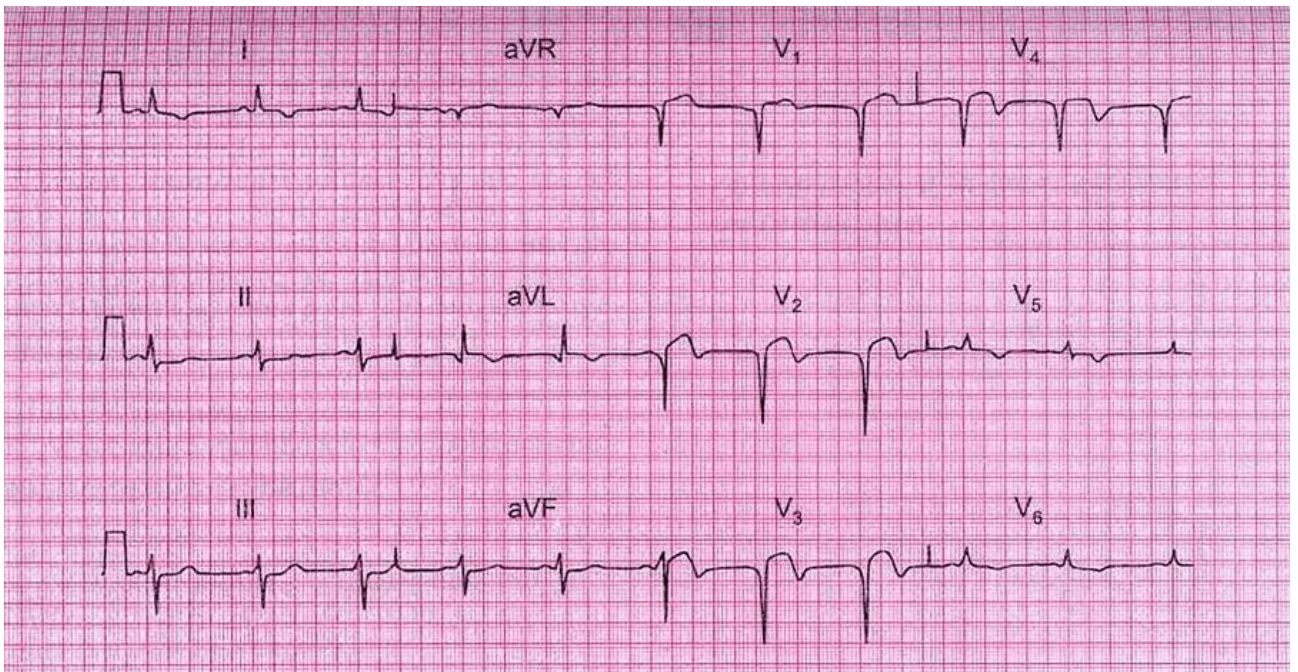
3. Organizational measures (greetings, verification of present students, messages of the topic and purpose of the lesson, motivation of students to study the topic)
4. Control of basic knowledge (written work, written test, frontal survey, etc.) (if necessary)
6. Questions (tests) to test basic knowledge of the topic of the lesson:
 1. Select a symptom characteristic of atrial fibrillation
 - A) On the ECG, the P wave is negative in front of the ventricular complex
 - B) Different R-R intervals**
 - C) Double-humped P wave
 - D) Different PQ interval
 - E) Prong P +/-
 2. Select the most typical ECG change for atrial fibrillation
 - A) There is no P wave**
 - B) Negative P wave in front of the QRS complex
 - C) Negative P wave behind the QRS complex
 - D) Different PQ interval
 - E) The same duration of the R-R intervals is noted
 3. One of the main signs of atrial fibrillation according to ECG data?
 - A) there are f waves of different amplitudes and durations**
 - B) Negative P wave in front of the QRS complex
 - C) Negative P wave behind the QRS complex
 - D) Different PQ interval
 - E) R-R intervals are the same
 4. Which of the following is most related to atrial fibrillation according to ECG data?
 - A) Extension of the PQ interval
 - B) Negative P wave in front of the QRS complex
 - C) Negative P wave behind the QRS complex
 - D) PQ interval does not change
 - E) R-R intervals are different**

5. What is most typical for atrial fibrillation according to ECG data?
- A) **Instead of the P wave, flicker waves of different amplitudes and durations**
 - B) Negative P wave in front of the QRS complex
 - C) Negative P wave behind the QRS complex
 - E) PQ interval does not change
 - E) The duration of the R-R intervals does not change
6. In favor of atrial fibrillation according to ECG data, the most significant is:
- A) **There are flickering waves of different magnitude, amplitude and duration**
 - B) The P wave is layered on the QRS complex
 - C) Negative P wave behind the QRS complex
 - D) PQ interval does not change
 - E) R-R intervals do not change
7. On auscultation: the rhythm is incorrect, different volume of the I tone, arrhythmic pulse, pulse waves of different amplitudes, pulse deficit of about 25 beats. What rhythm disturbance is most likely in the patient?
- A) **Atrial fibrillation**
 - B) Atrial flutter
 - C) lower atrial rhythm
 - D) Sinus arrhythmia
 - E) Atrioventricular block
8. On the ECG - there are no P waves, instead of them f waves of different amplitudes and durations are better seen in leads II, III, avF, V1-V2. What rhythm disturbance is most likely in the patient?
- A) **Atrial fibrillation**
 - B) Atrial flutter
 - C) Atrioventricular block I degree
 - D) Sinus arrhythmia
 - E) Atrioventricular block II degree
9. On the ECG - there are no P waves, instead of them f waves of different amplitudes and durations are better seen in leads II, III, avF, V1-V2, HRC -170 at 1min. What should be done first?
- A) enteral cordarone
 - B) **cordaron i / v**
 - C) isoptin enterally
 - D) digoxin enterally
 - E) heparin IV
10. On the ECG - atrial fibrillation with the number of cardiac contractions approximately 115-125 per minute / Which of the drugs is best used for continuous administration in order to correct arrhythmia?
- A) **Digoxin**
 - C) Monopril
 - C) Dibazol
 - E) Euphyllin
 - E) Aspirin
11. Characterize ECG and choose one correct answer



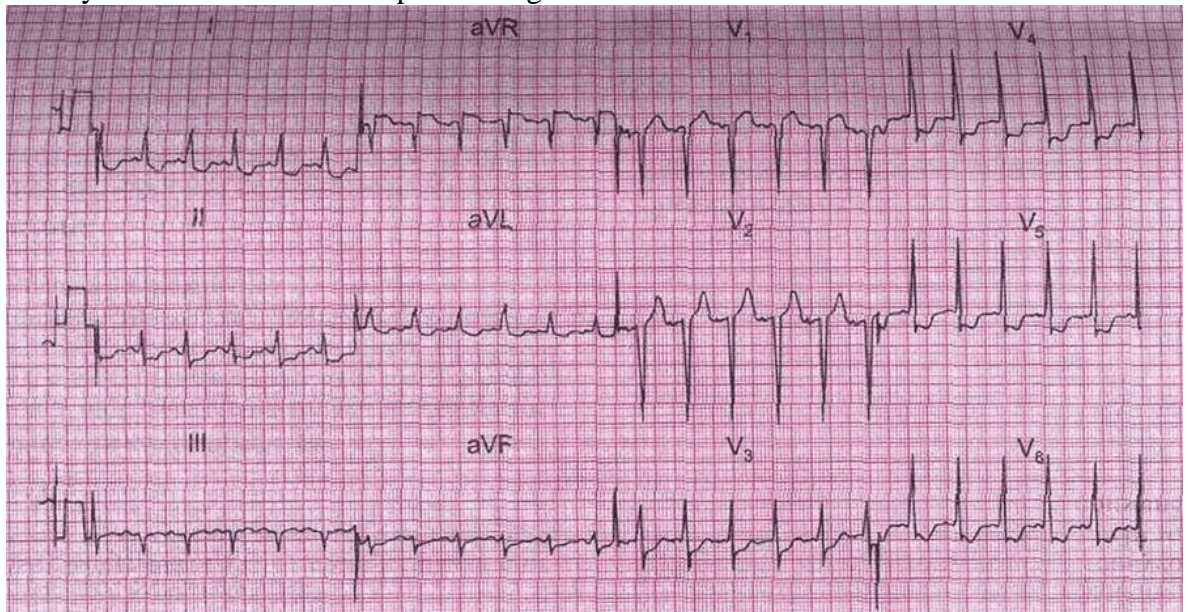
- A. Sinus rhythm with supraventricular extrasystole
- B. Sinus rhythm with ventricular extrasystole
- C. AV rhythm with supraventricular extrasystole
- D. AV rhythm with ventricular extrasystole

12. A 50-year-old man was brought to the reception department with pronounced pain behind the sternum for 18 hours.



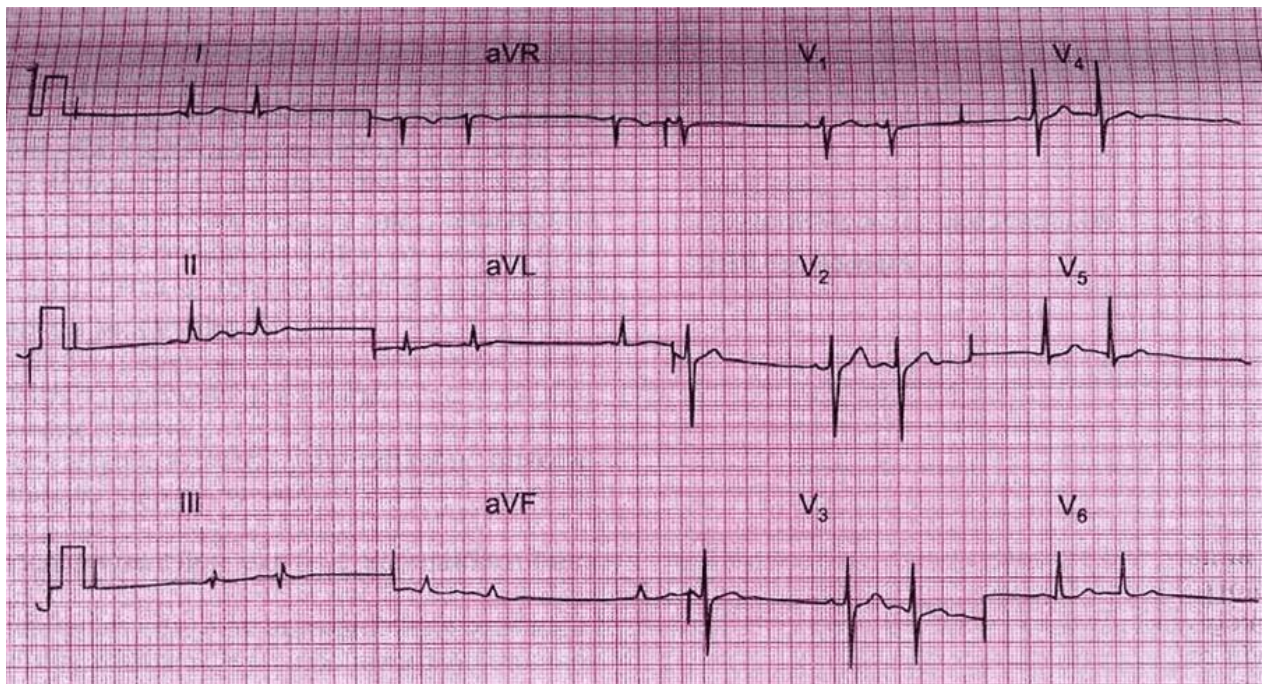
- A. Wolff-Parkinson-White syndrome
- B. Sinus tachycardia
- C. Acute anterior myocardial infarction
- D. AV blockade of the first degree

13. A 55-year-old man with chest pain lasting 6 hours at rest.



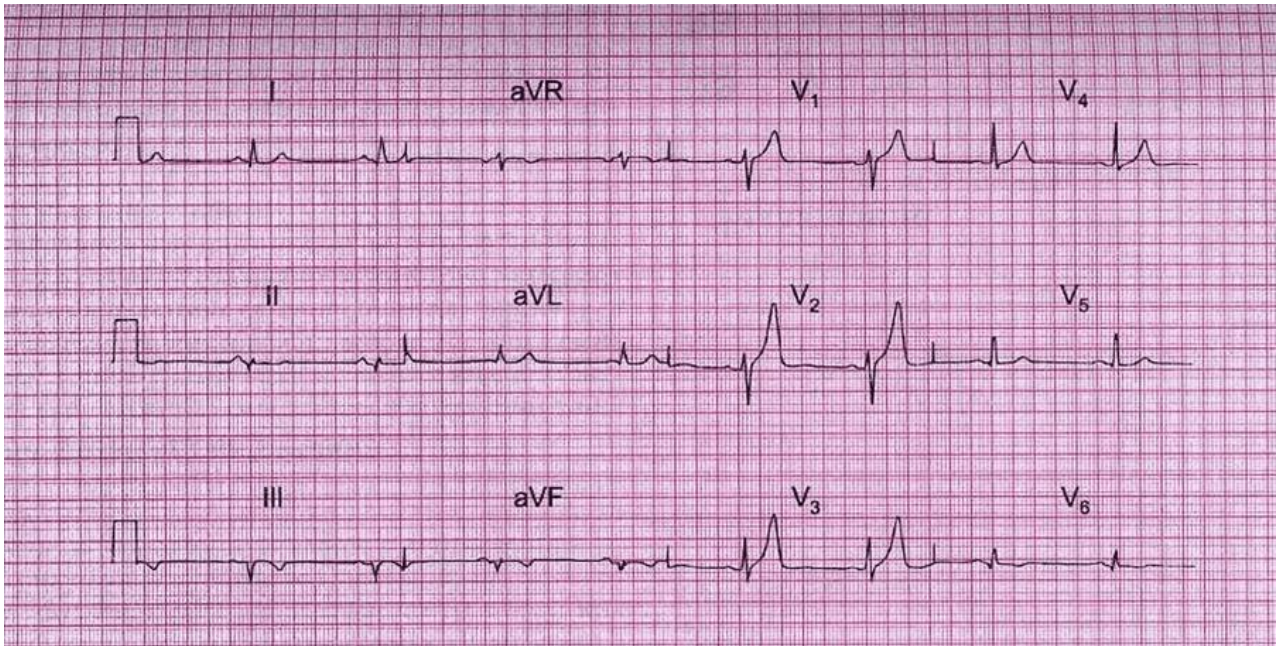
- A. Anterolateral myocardial ischemia
- B. Age norm
- C. AV-blockade II degree

14. Characterize ECG and choose one correct answer



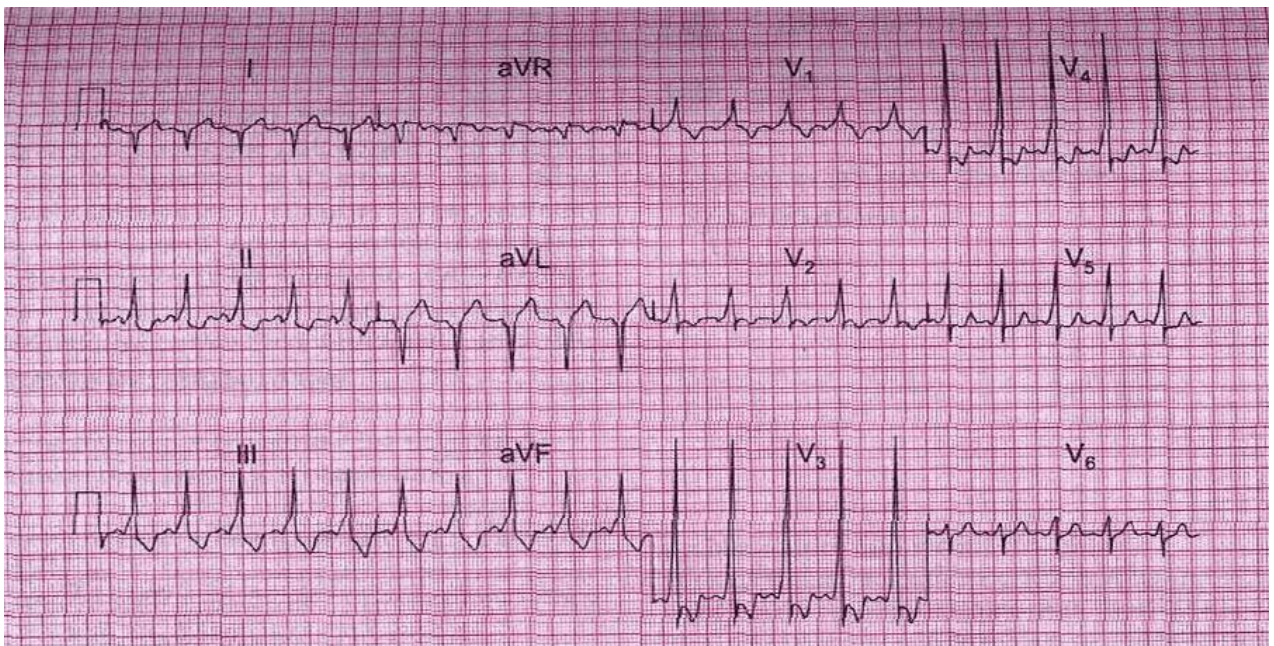
- A. Sinus rhythm. Atrial extrasystole
- B. Bradysystolic form of atrial fibrillation.
- C. AV blockade of the first degree

15. A 50-year-old man was hospitalized with chest pain lasting about 4 hours.



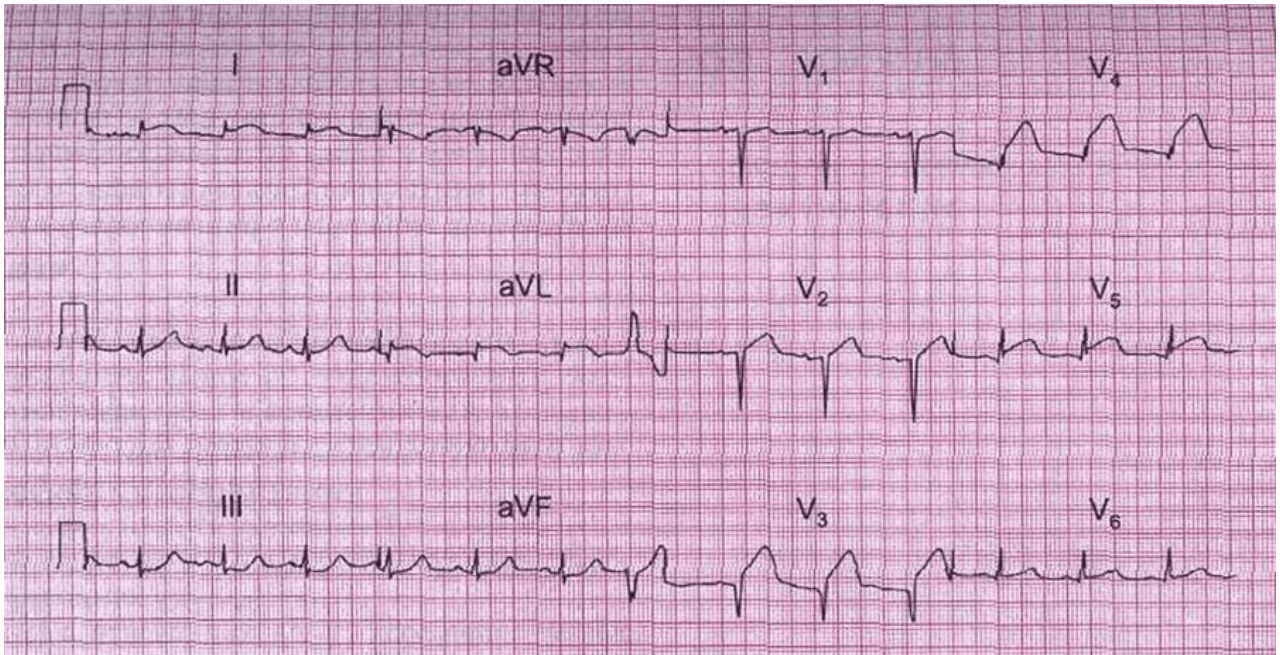
- A. AV block III degree
- B. Variant of the age norm
- C. Acute (lower) myocardial infarction

16. Characterize ECG and choose one correct answer



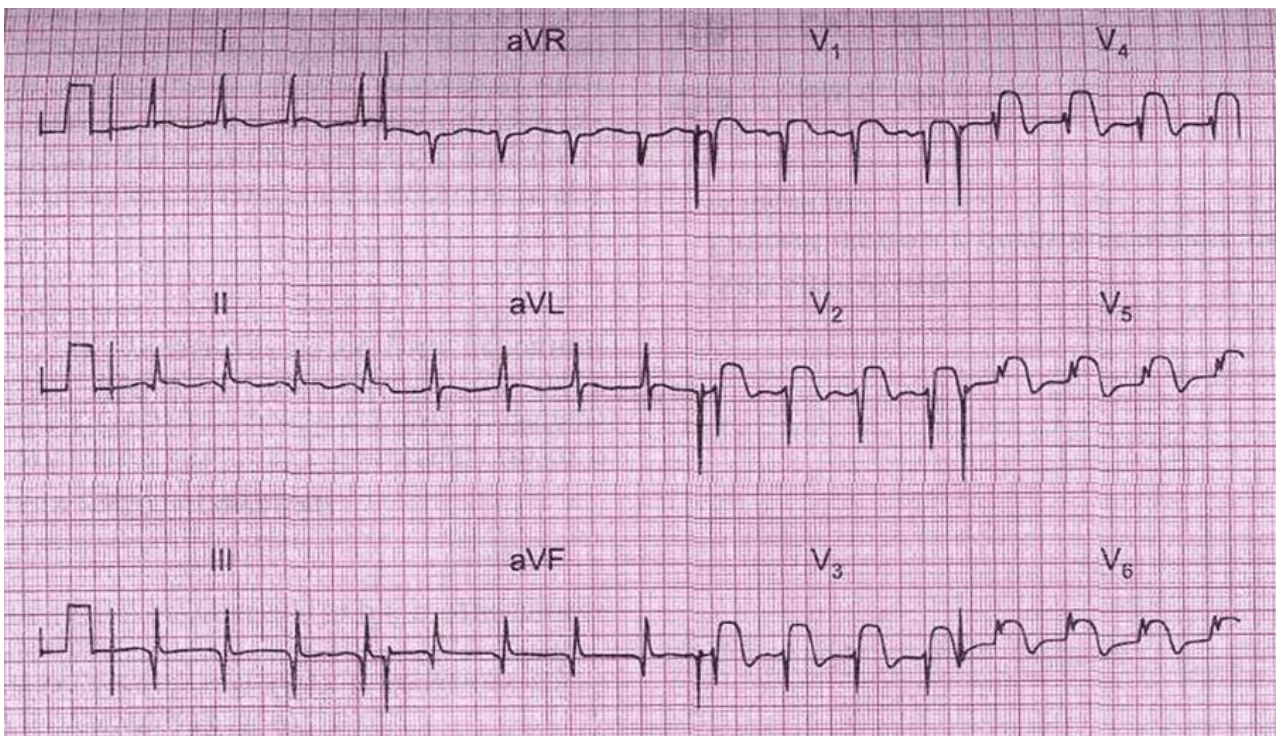
- A. Sinus tachycardia
- B. Atrial fibrillation
- C. Wolff-Parkinson-White syndrome. type A

17. A 60-year-old man with severe chest pain lasting 1 hour.



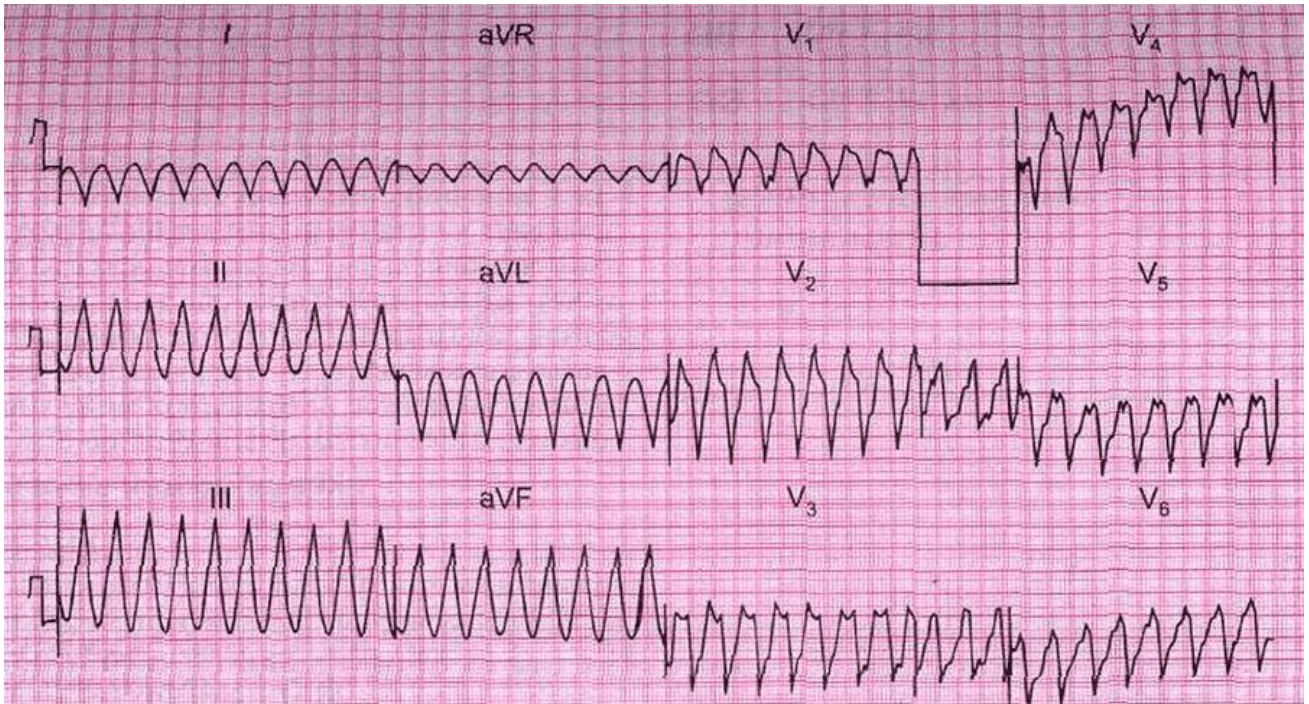
- A. Acute (inferior) myocardial infarction
- B. Acute anterolateral myocardial infarction
- C. Systolic overload of the left ventricle
- D. Systolic overload of the right ventricle

18. Characterize ECG and choose one correct answer



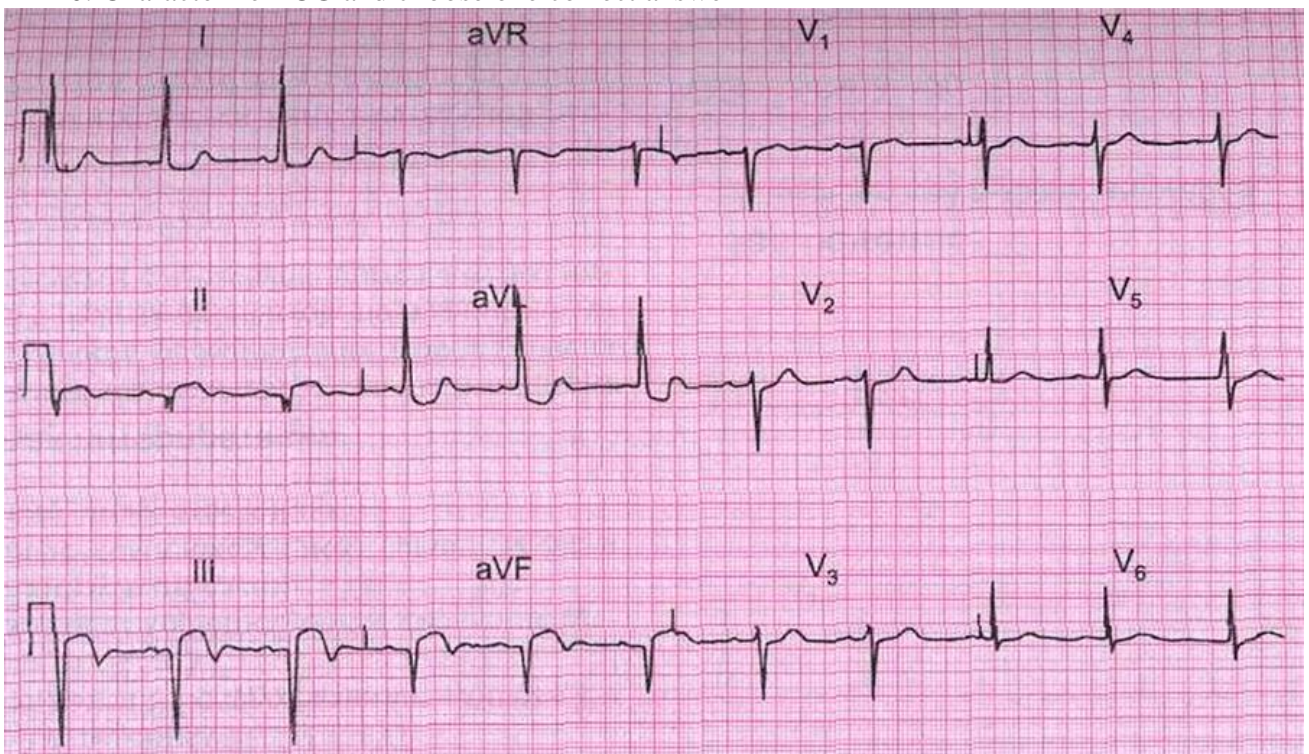
- A. AV block III degree
- B. The most acute phase of a posterior diaphragmatic myocardial infarction
- C. Complete blockade of the left leg of the bundle of His
- D. Old inferior and acute anterior myocardial infarction

19. Characterize ECG and choose one correct answer



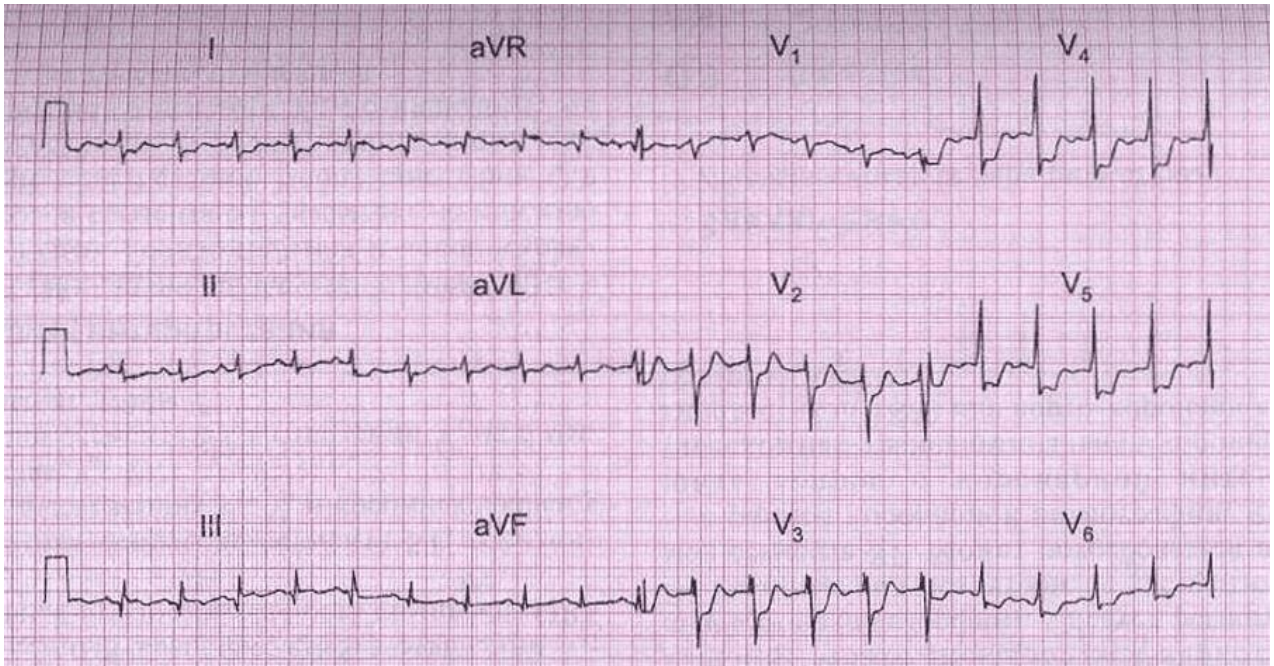
- A. Atrioventricular blockade of the 1st degree. Blockade of the left leg of the bundle of His
- B. Atrial tachycardia
- C. Atrial fibrillation
- D. Ventricular tachycardia

20. Characterize ECG and choose one correct answer



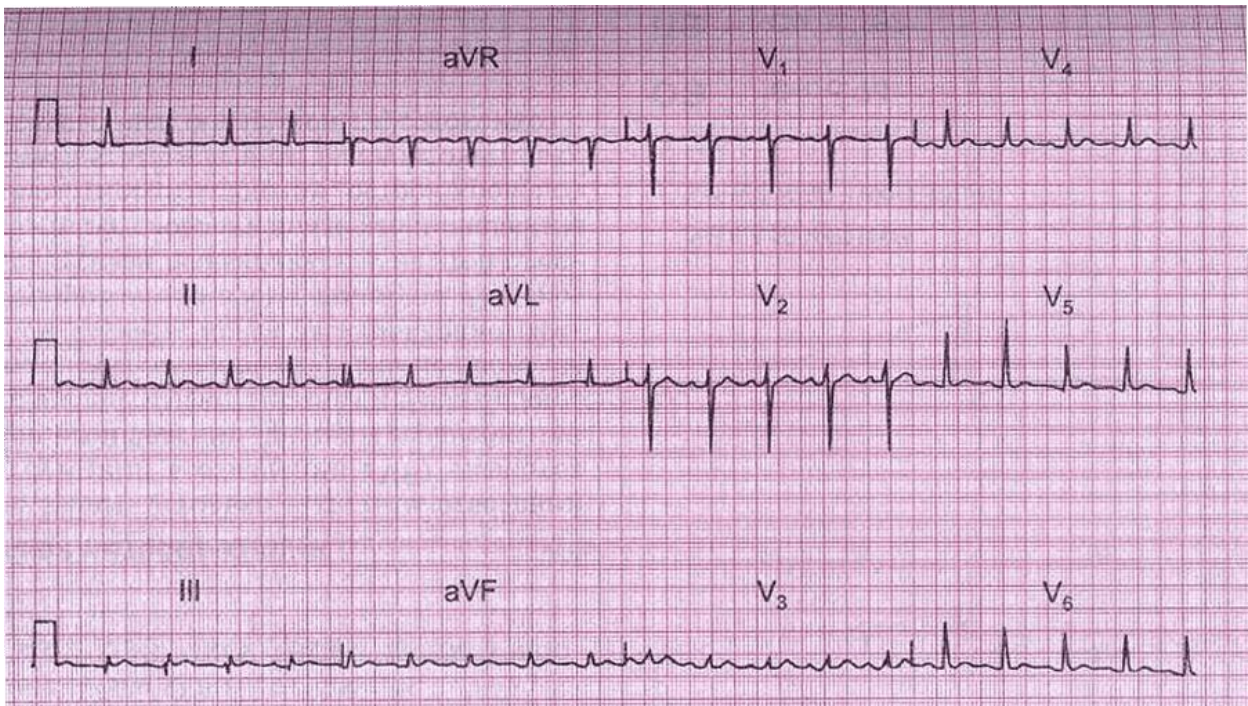
- A. AV blockade II degree
- B. Acute lower myocardial infarction
- C. Blockade of the left leg of the bundle of His

21. A 50-year-old man, who has been experiencing chest pain during physical exertion for several months, was admitted to the emergency department complaining of pain behind the sternum for an hour.



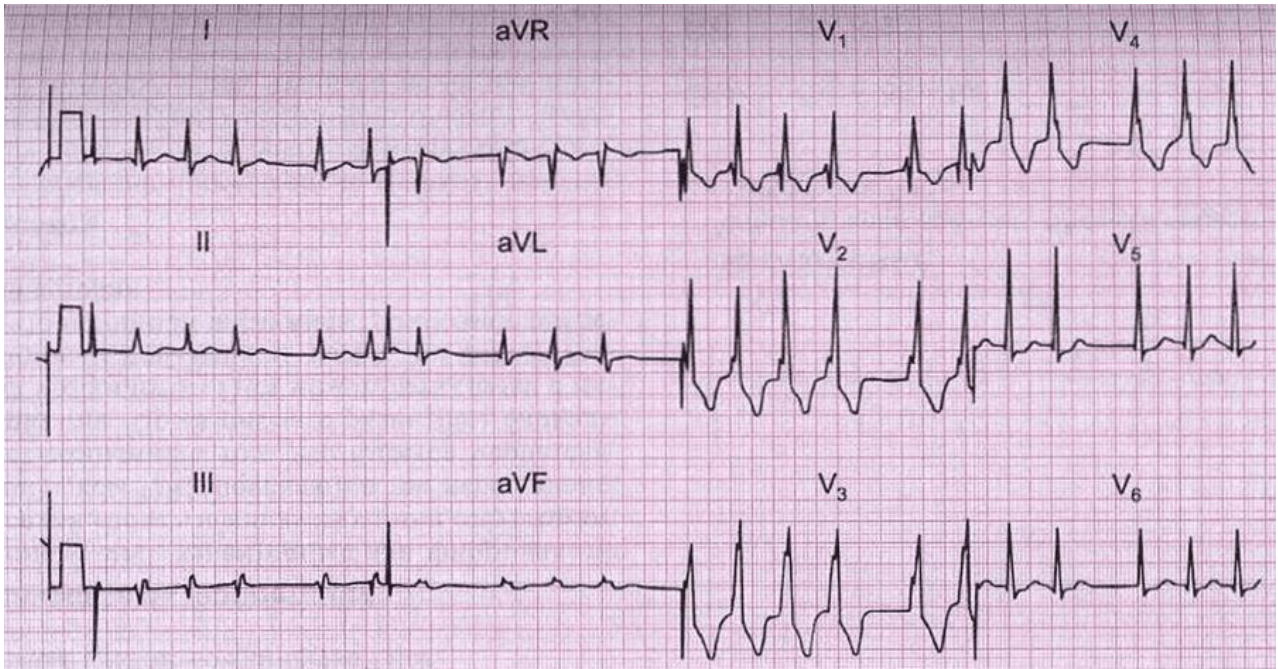
- A. Ischemia of the anterior wall of the myocardium
- B. AV - blockade of the III degree
- C. Blockade of the left leg of the bundle of His

22. Characterize ECG and choose one correct answer



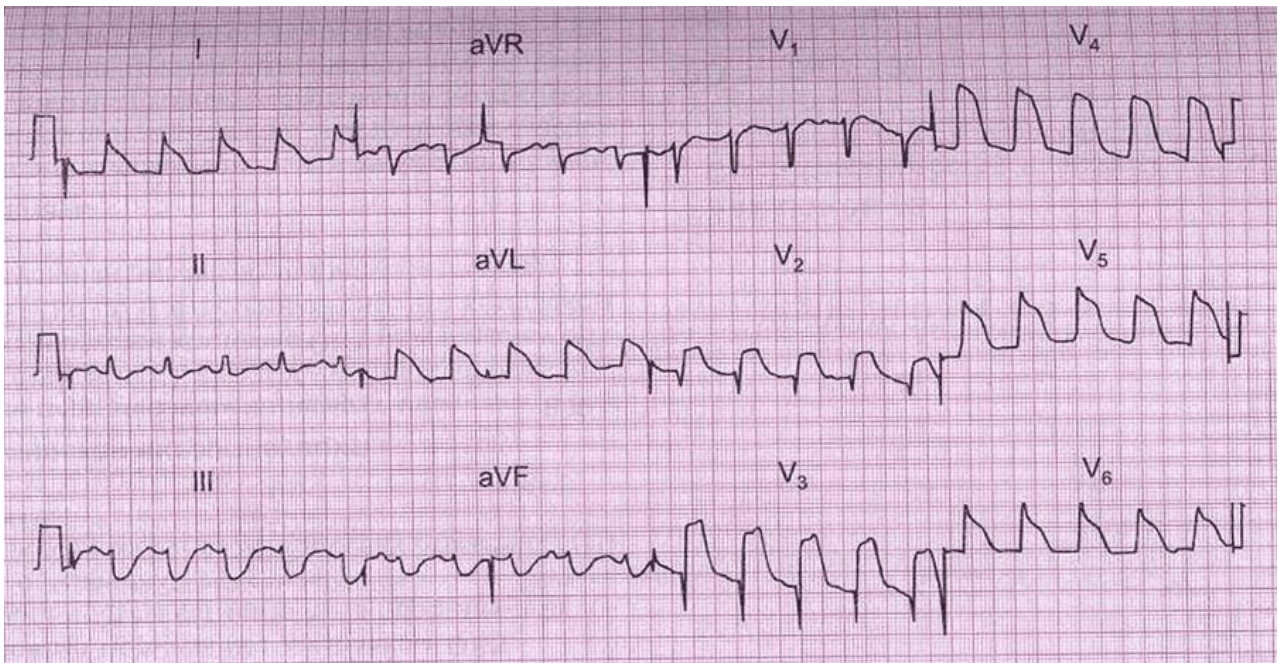
- A. Ventricular tachycardia
- B. Sinus tachycardia
- C. Atrial fibrillation

23. Characterize ECG and choose one correct answer



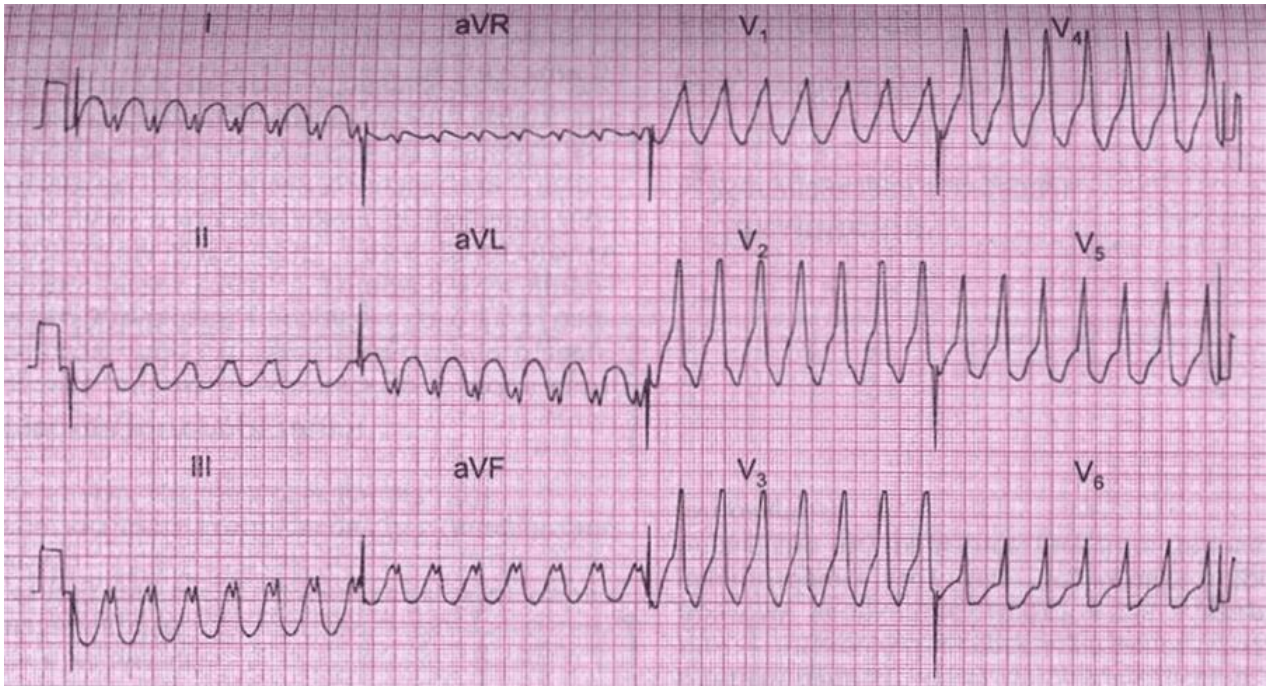
- A. Acute anterior myocardial infarction
- B. Atrial fibrillation, right bundle branch block
- C. Hypertrophy of the right ventricle
- D. Complete blockade of the left leg of the bundle of His

24. Characterize ECG and choose one correct answer



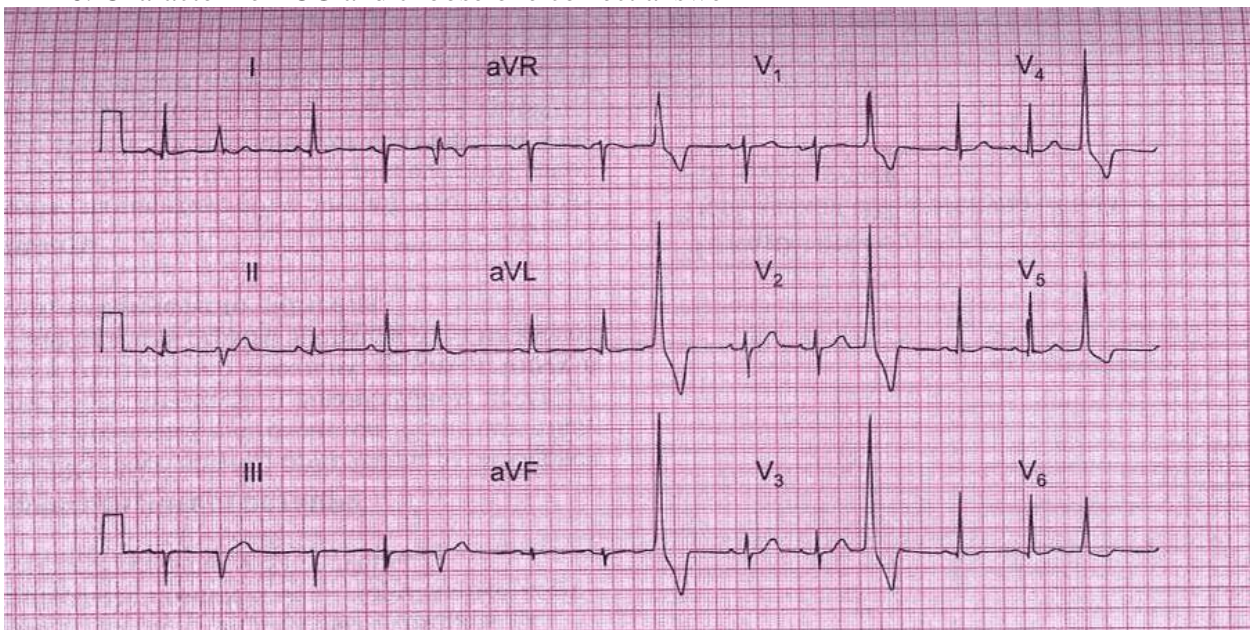
- A. Supraventricular tachycardia
- B. Acute anterolateral myocardial infarction
- C. Complete blockade of the left leg of the bundle of His

25. Characterize ECG and choose one correct answer



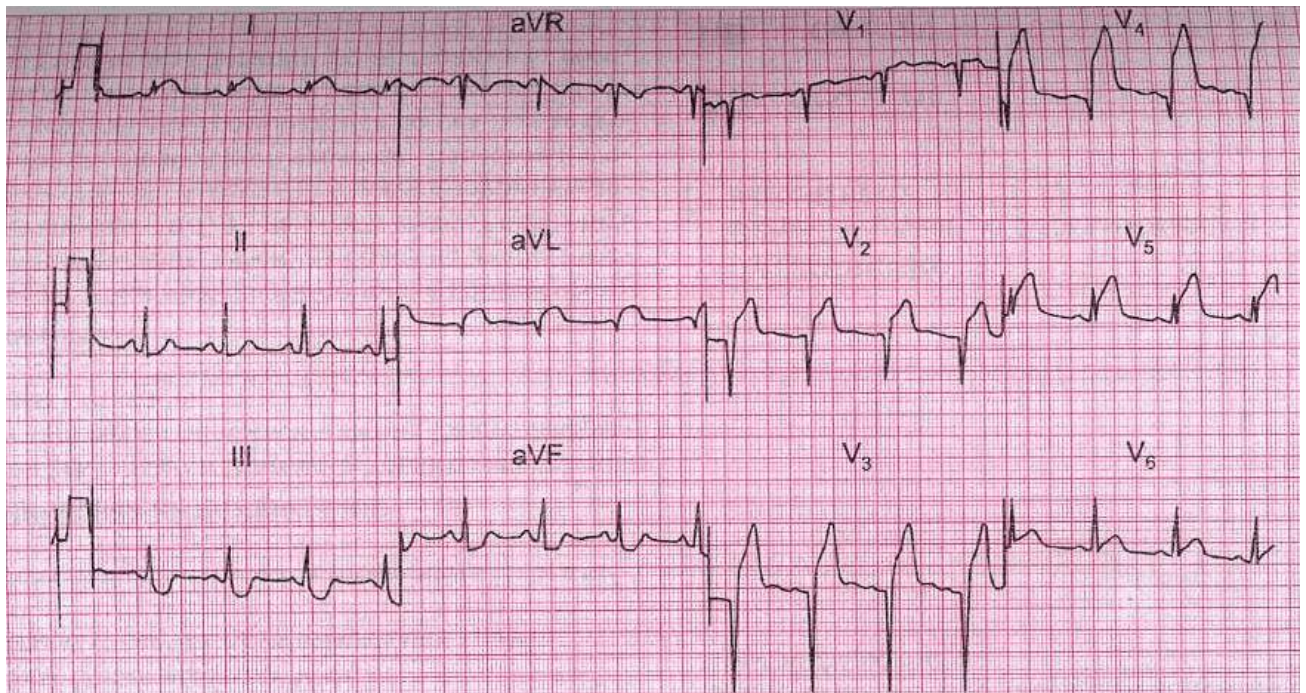
- A. Ventricular tachycardia
- B. Supraventricular extrasystole
- C. Atrial fibrillation

26. Characterize ECG and choose one correct answer



- A. Sinus rhythm with blockade of the left leg of the bundle of His
- B. Normal ECG with ventricular extrasystole
- C. Atrial fibrillation
- D. Blockade of the left leg of the bundle of His. Supraventricular extrasystole

27. Characterize ECG and choose one correct answer



- A. Complete blockade of the left leg of the bundle of His
- B. Acute anterior myocardial infarction and lower ischemia
- C. Acute anterior myocardial infarction without Q waves

4. Discussion of theoretical issues:

1. ECG-criteria of ischemia.
2. ECG diagnosis of myocardial infarction (MI).
3. Violation of the heart rhythm on ECG.
4. Sinus bradycardia.
5. Sinus tachycardia.
6. Sinus arrhythmia.
7. ECG criteria for diagnosing atrial fibrillation (AF), atrial flutter.
8. ECG criteria for diagnosis of extrasystoles and ventricular arrhythmias (ventricular tachycardia, ventricular fibrillation,).
9. WPW syndrome

Note. The discussion of theoretical issues can take place in the form of answers to the questions, debates, discussions, presentations with reports, abstracts, discussion of reports and abstracts, review of the answers of higher education graduates, etc.

7. Topics of reports/abstracts:

Complications of MI on ECG.

WPW syndrome (type A, type B)

Note. When preparing a report, abstract, analytical review, etc., students of higher education can, along with this, prepare didactic visual materials in the form of tables, code diagrams, slides, drawings, drug schemes, etc.

8. Summary.

9. List of recommended literature (main, additional, electronic information resources):

Main:

1. The ECG in Practice, John R. Hampton 6th edition 2018
2. The ECG Made Practical, John R. Hampton 6th edition 2020
3. Davidson's "Principles of Practice of Medicine" 23rd edition, 2018
4. Harrison's "Principles of internal medicine", 19th edition, 2019.

5. Unified clinical protocol of primary, secondary (specialized), tertiary (highly specialized) medical care for atrial fibrillation. Order of the Ministry of Health of Ukraine of June 15, 2016 No. 597.
6. Zoni-Berisso, M; Lercari, F; Carazza, T; Domenicucci, S (2014). "Epidemiology of atrial fibrillation: European perspective." 4.2016 ACC/AHA Clinical Performance and Quality Measures for Adults With Atrial Fibrillation or Atrial Flutter

Additional:

L. Brent Mitchell , MD, Libin Cardiovascular Institute of Alberta, University of Calgary Last full review/revision Jan 2021| Content last modified Sep 2022.

Ranya N. Sweis , MD, MS, Northwestern University Feinberg School of Medicine; Arif Jivan , MD, PhD, Northwestern University Feinberg School of Medicine. Last full review/revision Jun 2022| Content last modified Sep 2022

Electronic information resources:

1. <https://www.msdmanuals.com/professional/cardiovascular-disorders/coronary-artery-disease/overview-of-coronary-artery-disease>
2. <https://www.msdmanuals.com/professional/cardiovascular-disorders/coronary-artery-disease/overview-of-acute-coronary-syndromes-acs>
3. <https://www.msdmanuals.com/professional/cardiovascular-disorders/coronary-artery-disease/unstable-angina>
4. <https://www.msdmanuals.com/professional/cardiovascular-disorders/coronary-artery-disease/acute-myocardial-infarction-mi?query=ecg>
5. <https://www.msdmanuals.com/professional/cardiovascular-disorders/coronary-artery-disease/complications-of-acute-coronary-syndromes>
6. <https://www.msdmanuals.com/professional/cardiovascular-disorders/arrhythmias-and-conduction-disorders/overview-of-arrhythmias>
7. <https://www.msdmanuals.com/professional/cardiovascular-disorders/arrhythmias-and-conduction-disorders/reentrant-supraventricular-tachycardias-svt-including-wolff-parkinson-white-syndrome>
8. <https://www.msdmanuals.com/professional/cardiovascular-disorders/arrhythmias-and-conduction-disorders/atrial-fibrillation>
9. <https://www.msdmanuals.com/professional/cardiovascular-disorders/arrhythmias-and-conduction-disorders/atrial-flutter>
10. <https://www.msdmanuals.com/professional/cardiovascular-disorders/arrhythmias-and-conduction-disorders/ventricular-fibrillation-vf>
11. <https://www.msdmanuals.com/professional/cardiovascular-disorders/arrhythmias-and-conduction-disorders/ventricular-tachycardia-vt>

Practical lesson № 3

Topic: Conduction disorders: ECG diagnosis of SA-, AV-, intraventricular blockades. Cardiac conduction disorders: diagnostic criteria for intraventricular blocks (LBBB, RBBB).

Purpose: to explain the essence of the ECG diagnosis of SA-, AV-, intraventricular blockades. Diagnostic criteria for intraventricular blocks.

Key words: SA-, AV-, intraventricular blockades, intraventricular blocks (LBBB, RBBB).

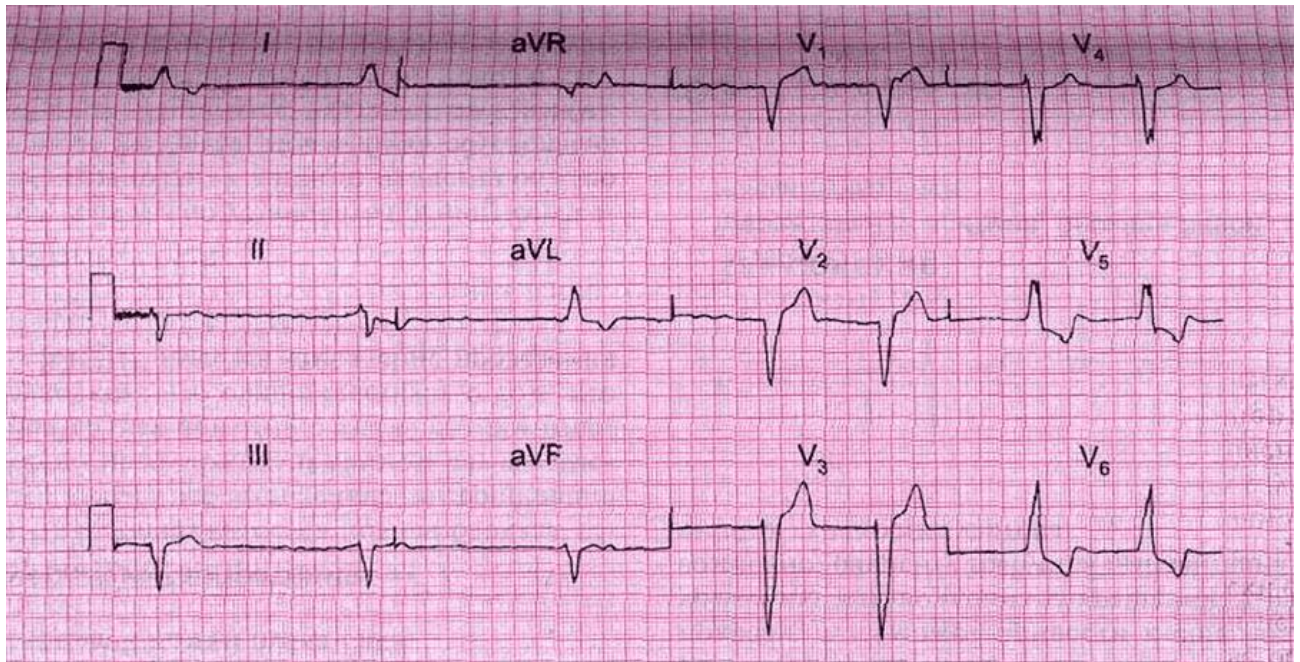
Equipment: laptop with a presentation, a multimedia projector, individual assignments on the topic of a practical lesson

Plan of the practical lesson

1. Organizational measures (greetings, verification of present students, messages of the topic and purpose of the lesson, motivation of students to study the topic)
2. Control of basic knowledge (written work, written test, frontal survey, etc.) (if necessary)
3. Questions (tests) to test basic knowledge of the topic of the lesson:

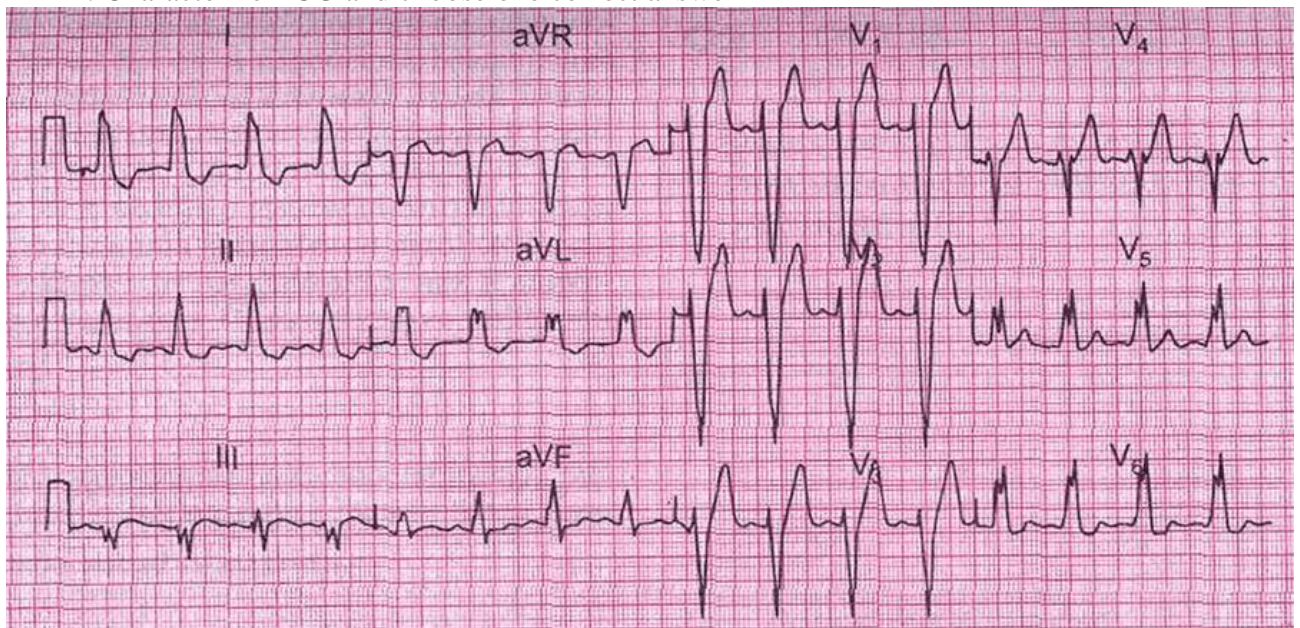
1. On the ECG, the duration of the PQ interval is more than 0.20 s. This is typical for:
 - a) complete atrioventricular block;
 - b) incomplete atrioventricular block of the 1st degree;**
 - c) blockade of the legs of the bundle of His;
 - d) sinoauricular block;
 - e) migration of the pacemaker through the atria.
2. On the ECG, the negative P wave is located after the premature, but unchanged QRS complex. It:
 - a) atrioventricular extrasystole;**
 - b) atrial premature beats;
 - c) ventricular premature beats;
 - d) slip-out reduction;
 - e) the rhythm of the coronary sinus
3. On the ECG, the duration of the PQ interval is longer - from 0.12 to 0.20 s. This could be:
 - a) sinus rhythm;
 - b) atrial rhythm;
 - c) sinus arrhythmia;**
 - d) all of the above.
4. On the ECG, the duration of the PQ interval is more than 0.20 s. This is typical:
 - a) for complete atrioventricular block;
 - b) for incomplete atrioventricular block of the 1st degree;**
 - c) for blockade of the bundle branch
5. ECG shows sinus rhythm, R-R - 0.95 sec, P-Q - 0.22 sec, QRS - 0.09 sec. After physical loads: R-R - 0.65 s, P-Q - 0.18 s, QRS - 0.09 s. Conclusion:
 - a) incomplete atrioventricular block of the 1st degree due to vagotonia;**
 - b) violation of intracardiac conduction;
 - c) violation of sinoatrial conduction.
6. Electrocardiographic signs of Wolff-Parkinson-White syndrome are:
 - a) the width of the QRS complex, exceeding 0.10 s;
 - b) P-Q interval 0.11 s;
 - c) the presence of a d-wave;
 - d) all of the above**
7. Electrocardiographic signs of Fredericx's syndrome are:
 - a) irregular ventricular rhythm;
 - b) atrial fibrillation and flutter;
 - c) complete atrioventricular block;
 - d) all of the above;
 - e) b and c are true.**
8. On the ECG, the intervals between the QRS complexes of adjacent cycles differ no more than than 0.10 s; P waves (in leads I, II, AVF) are positive before each complex QRS. We can assume:
 - a) regular sinus rhythm;**
 - b) sinus rhythm is irregular;
 - c) atrial fibrillation;
 - d) the rhythm of the atrioventricular junction, regular;
 - e) the rhythm of the atrioventricular junction, irregular;
9. ECG signs of sinoatrial block are:
 - a) periodic loss of individual cardiac cycles (PQRST);**
 - b) periodic loss of the QRST complex;
 - c) increase in duration QRS complex more than 0.12 s;
 - d) an increase in the duration of the P wave by more than 0.11 sec.
10. For ventricular extrasystole, all of the listed signs are characteristic, except:
 - a) premature extraordinary appearance of the altered ventricular complex QRS;
 - b) discordant displacement of the ST segment and the T wave extrasystoles;
 - c) the presence of a P wave in front of the QRS complex of the extrasystole; G)**
 - d) the presence of a full compensatory pause.**

11. Characterize ECG and choose one correct answer



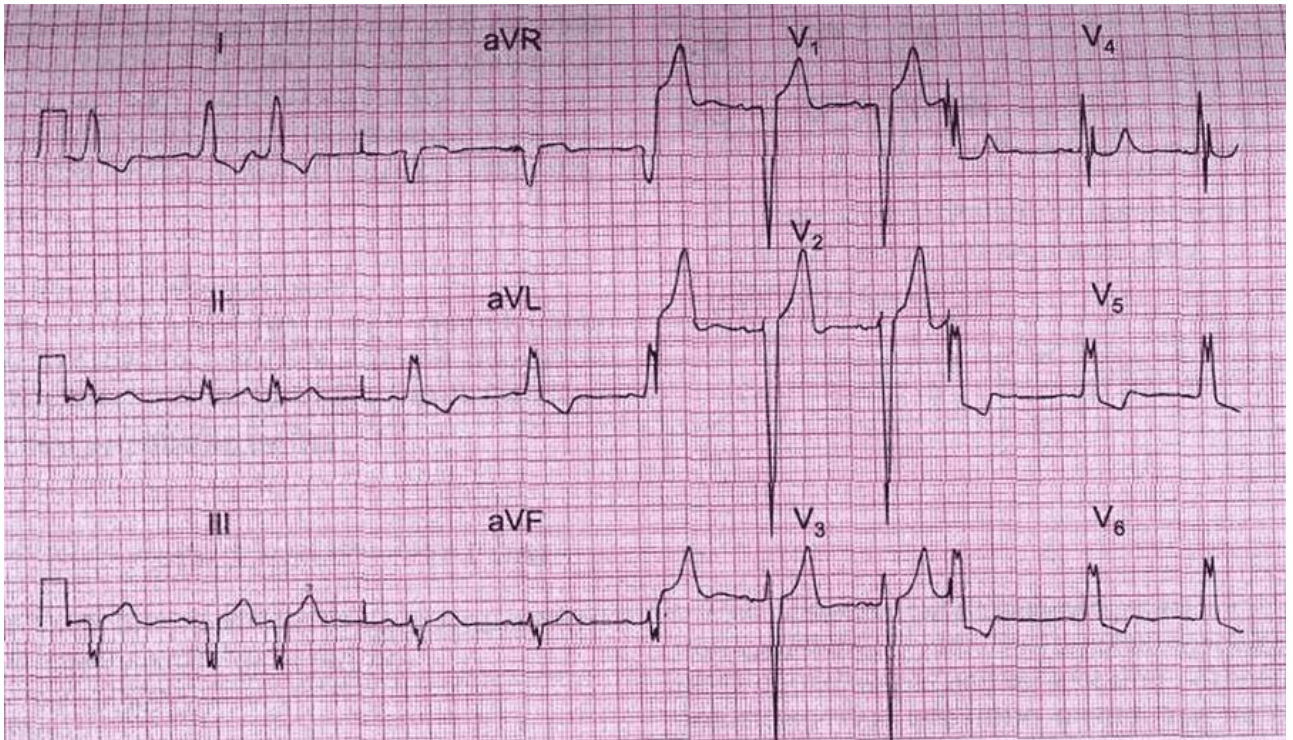
- A. Sinus bradycardia
- B. Bradysystolic form of atrial fibrillation. Blockade of the left leg of the bundle of His
- C. AV blockade of the first degree

12. Characterize ECG and choose one correct answer



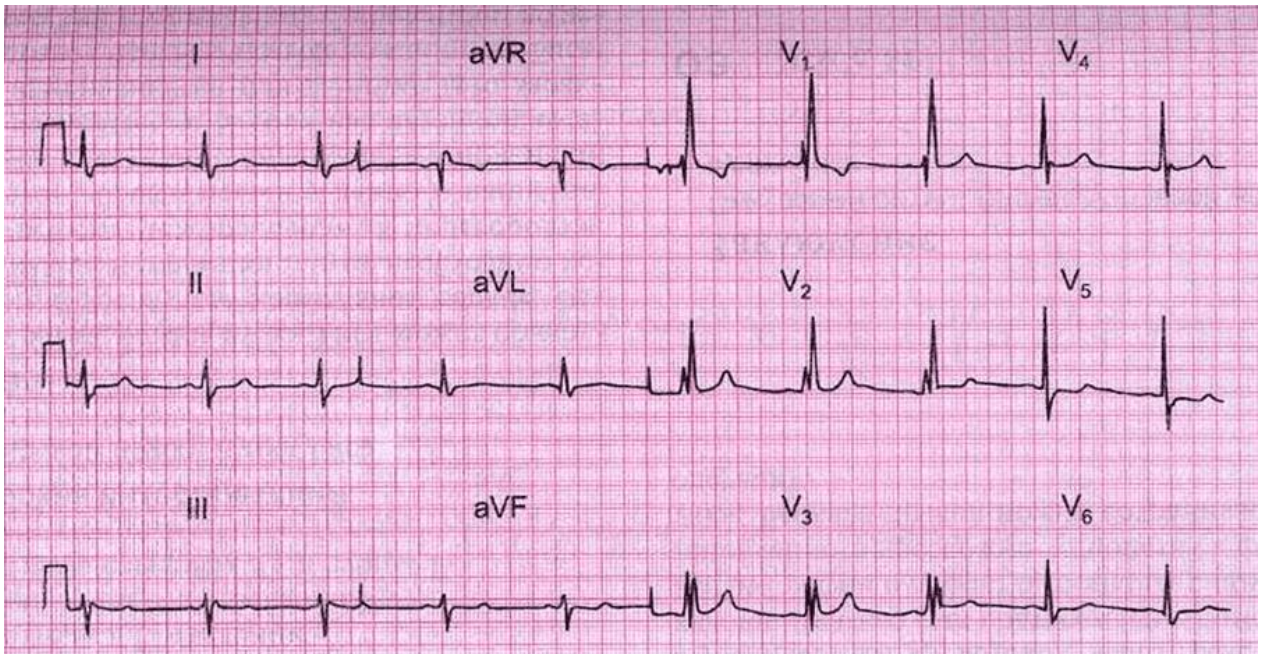
- A. Sinus rhythm with blockade of the left leg of the bundle of His
- B. AV blockade of the first degree
- C. Atrial fibrillation
- D. Blockade of the right leg of the bundle of His

13. Characterize ECG and choose one correct answer



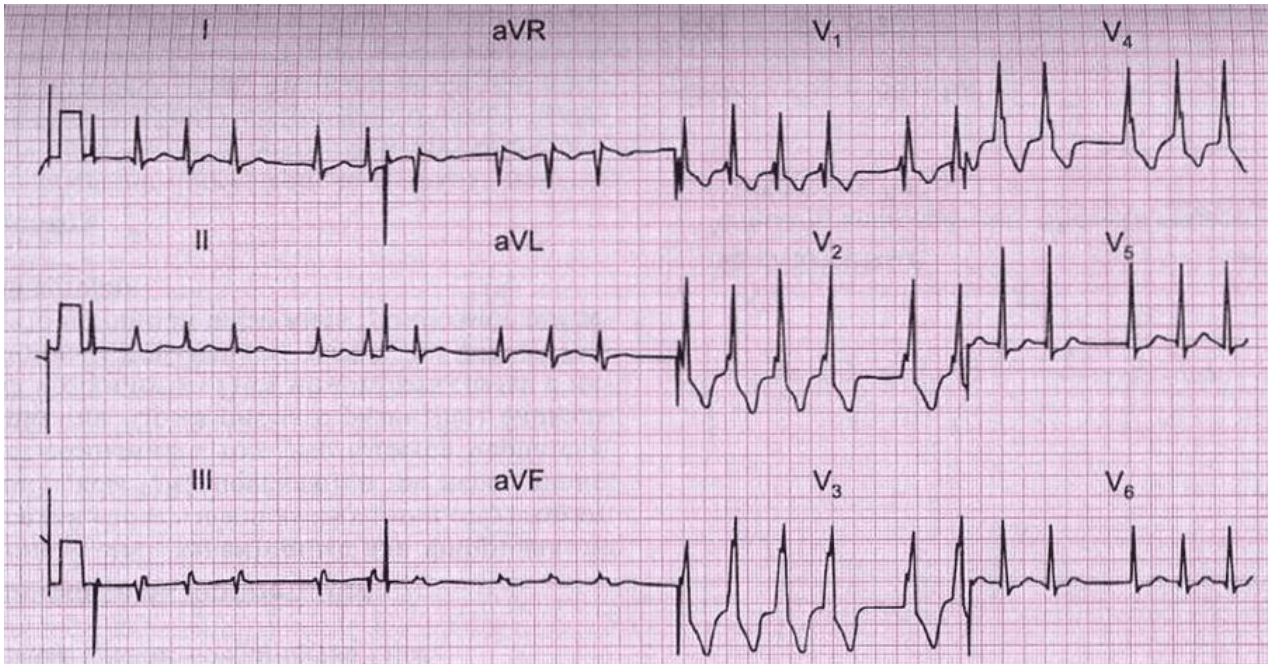
- A. Blockade of the left leg of the bundle of His. supraventricular extrasystole
- B. Complete blockade of the right leg of the bundle of His
- C. AV blockade of the first degree
- D. Anterolateral myocardial infarction. The most acute phase

14. Characterize ECG and choose one correct answer

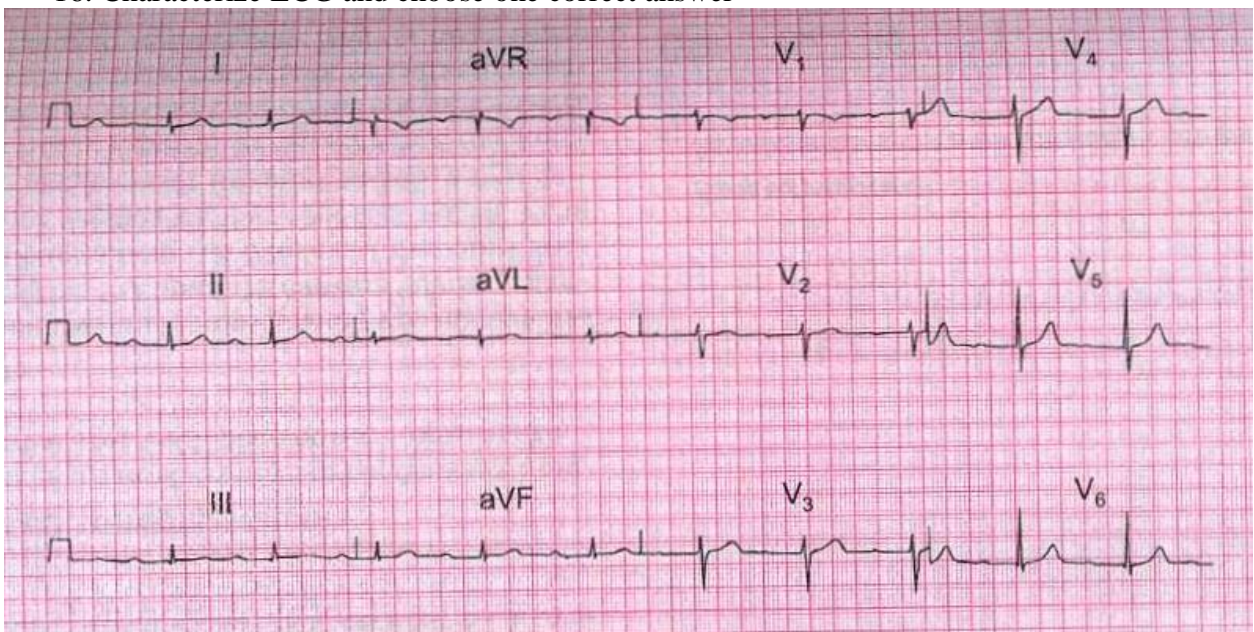


- A. Sinus rhythm with blockade of the left leg of the bundle of His
- B. Sinus rhythm with right bundle branch block
- C. Normal ECG

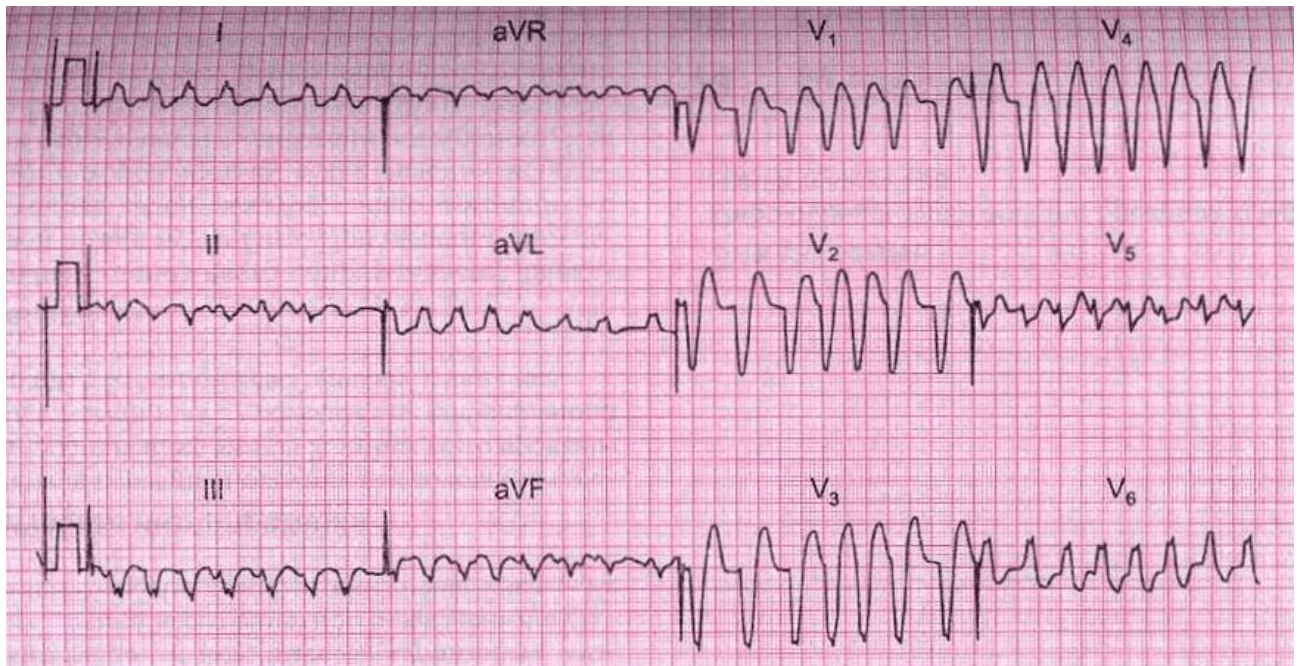
15. Characterize ECG and choose one correct answer



- A. Hypertrophy of the right ventricle
 - B. Acute anterior myocardial infarction
 - C. Atrial fibrillation, right bundle branch block
 - D. Complete blockade of the left leg of the bundle of His
16. Characterize ECG and choose one correct answer



- A. Blockade of the left leg of the bundle of His
 - B. Atrioventricular blockade of the 1st degree
 - C. III-degree AV block
 - D. AV block II degree (2:1)
 - E.
17. Characterize ECG and choose one correct answer



- A. Ventricular tachycardia
- B. Supraventricular extrasystole
- C. Atrial fibrillation with blockade of the left leg of the bundle of His
- D. Supraventricular tachycardia

4. Discussion of theoretical issues:

1. Ventricular tachycardia
2. Atrial fibrillation
3. Atrial flutter
4. Ventricular extrasystole

Note. The discussion of theoretical issues can take place in the form of answers to the questions, debates, discussions, presentations with reports, abstracts, discussion of reports and abstracts, review of the answers of higher education graduates, etc.

Topics of reports/abstracts:

- Sinus rhythm
- Atrial flutter
- Atrial fibrillation
- Ventricular extrasystole
- Ventricular tachycardia

Note. When preparing a report, abstract, analytical review, etc., students of higher education can, along with this, prepare didactic visual materials in the form of tables, code diagrams, slides, drawings, drug schemes, etc.

Summary.

List of recommended literature (main, additional, electronic information resources):

Main:

5. The ECG in Practice, John R. Hampton 6th edition 2018
6. The ECG Made Practical, John R. Hampton 6th edition 2020
7. Davidson's "Principles of Practice of Medicine" 23rd edition, 2018
8. Harrison's "Principles of internal medicine", 19th edition, 2019.

Additional:

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Electronic information resources:

<https://www.msdmanuals.com/professional/cardiovascular-disorders/arrhythmias-and-conduction-disorders/atrioventricular-block>

<https://www.msdmanuals.com/professional/cardiovascular-disorders/arrhythmias-and-conduction-disorders/bundle-branch-block-and-fascicular-block>