

CVS-Physiology

Archive

Lecture 1

Physiology of cardiac
muscle 1

هذه الأسئلة ليست أرشيف و إنما أسئلة خارجية
لعدم توافر أرشيف لهذه المحاضرة

Corrected By :

kareem obeidallah

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Lecture 1

1- The cardiac muscle fibers:

- A- are unstriated muscle fibers.
- B- Form true syncytium.
- C- Have low resistance bridges and tight gap junctions.
- D- poor in mitochondria.

Answer: C

2- Sympathetic stimulation causes all of the following in the heart except:

- a- increases heart rate.
- b- decreases the slope of the prepotential.
- c- decreases the conduction time in the AVN.
- d- increase the excitability of the heart.

Answer: B

3- About the pacemaker potential, all of the following are true except:

- A- Its RMP is about -80 or -90 mV.
- B- It is unstable during rest.
- C- The firing level is at a potential difference of about -45 mV.
- D- Repolarization is one slow phase.

Answer: A

4- The phase of the cardiac cycle at which the heart is not responsive is:

- A- Absolute refractory period.
- B- Relative refractory period.
- C- shorter than that of the skeletal muscle.
- D- extends all through the action potential.

Answer: A

5- Parasympathetic stimulation of the heart:

- a- increases excitability of the SAN.
- b- decreases the rate of the AN junctional fibers.
- c- prevents idioventricular rhythm.
- d- has no effect on atrial conduction.

Answer: b

6- In the heart, all of the following statements are true except:

- a- The excitation wave cannot spread directly from the atria to the ventricles.
- b- contraction normally begins in the right atrium.
- c- The ventricle contract almost simultaneously.
- d- There is more muscle in the left atrium than the right atrium.

Answer: d

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7- Stimulation of the cardiac sympathetic nerves:

- a- decreases the slope of the pace maker potential.
- b- causes reduction in the coronary blood flow.
- c- slows the rate of conduction in the AVN.
- d- stimulates B1 adrenergic receptors.

Answer: D

8-Regarding the ARP in the heart, all of the following are true except:

- a- It lasts approximately as long as the cardiac contraction.
- b- It is longer than the ARP of the skeletal muscle.
- c- It corresponds to the whole time of the action potential.
- d- during it, the heart cannot be stimulated.

Answer: C

9-The importance of the vagal tone is mainly to:

- a- increase the arterial blood pressure
- b- increase the intestinal secretion.
- c- decrease the breathing rate.
- d- decrease the cardiac activity.

Answer: d

10-In the heart, all of the following statements are correct except:

- a- The pacemaker tissue has unstable RMP.
- b- The AV nodal delay is prolonged by vagal stimulation.
- c- Xanthines are negative bathmotropic
- d- Alkalosis is positive drommotropic.

Answer: C

11-Regarding syncytial function in the heart, which of the following statements is correct?

- a- The heart consists of right and left syncytia.
- b- Cardiac muscle fibers contract as one unit due to very rapid nerve fibers.
- c- Gap junctions are present between adjacent cardiac cells.
- d- The heart consists of true syncytia.

Answer: c

12-Regarding pacemaker potential, which of the following is correct?

- a- It consists of 5 phases.
- b- Phase 0 is due to rapid Na⁺ influx.
- c- Phase 4 is due to Na⁺ influx through funny Na⁺ channels
- d- Phase 3 is due to Ca⁺⁺ influx.

Answer: C

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Lecture 1

13-Which of the following normally has slowly depolarizing prepotential? (Ganong)

- a- SAN
- b- Atrial muscle fibers.
- c- Bundle of HIS
- d- Pirkinji fibers.
- e- Ventricular muscle cells.

Answer: A

14-Currents caused by opening of which of the following channels contribute to the repolarization phase of the action potential of ventricular muscle fiber? (Ganong)

- a- Na⁺ channels
- b- Cl⁻ channels
- c- Ca⁺⁺ channels
- d- K⁺ channels
- e- HCO₃⁻ channels

Answer: D

15-Which of the following factors is negative bathmotropic?

- A- sympathomimetics
- B- fever
- C- hypokalemia
- D- hypercalcemia

Answer: D

16-Which of the following factors is positive dromotropic?

- a- acidosis
- b- ischemia
- c- thyroxin
- d- digitalis

Answer: C

17-Which of the following factors is positive chronotropic?

- a- Calcium channel blocker.
- b- Marked acidosis
- c- Digitalis
- d- hypokalemia

Answer: D

19-Which of the following factors is positive bathmotropic?

- a- Hyperkalemia
- b- Hypercalcemia
- c- Xanthines
- d- Acetylcholine

Answer: C

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Lecture 1

20-Regarding AV nodal conduction:

- a- it is characterized by rapid conduction of impulses.
- b- It has few gap junctions.
- c- It can transmit impulses in both directions.
- d- Its fibers are large in size

Answer: B

21-Which of the following statements is correct regarding the conductive system of the heart?

- a- Bundle of His is the normal pacemaker of the heart.
- b- The fastest conduction is present in Purkinji fibers.
- c- Alkalosis decreases the rate of conduction.
- d- Size of fibers in Purkinji fibers is small

Answer: B

22-Vagal tone:

- a- means continuous inhibitory discharge to the SAN
- b- Ventricles have no vagal supply.
- c- fixes the heart rate at 110 BPM
- d- prevent the heart from cardiac arrest.

Answer: a

35. Phase 0 of cardiac contraction includes (archive)
entrance of Ca^{++} *

(most important electrolytes in cardiac contraction Na or Ca)

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Gender

Address

Date of call

Surname

Date of birth

Age

Sex

Profession

Marital status

Religion

Education

Occupation

Address

City

Country

Phone

Signature

Date

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Lecture 2

Physiology of cardiac
muscle 2

اسئلة الارشيف محدد بجانبها (archive)

Corrected By :

kareem obeidallah

1-Regarding cardiac conductivity, all of the following are true except:

- A- Maximal in Purkinji fiber.
- B- Slowest in the AVN
- C- Decreased by sympathetic stimulation.
- D- It occurs through modified cardiac muscle fibers

Answer: C

2-Fibers of the A-V bundle and its branches:

- A- conduct impulses very slowly.
- B- are modified muscle fibers.
- C- are highly contractile.
- D- Are nerve fibers.

Answer: B

3-SAN is the normal pacemaker of the heart because of its:

- A- rate of impulse discharge.
- B- Location in the atrium.
- C- Neural control.
- D- Muscular structure.

Answer: A

4-When the pacemaker is located in the ventricular wall:

- A- The sequence of atrial and ventricular contractions is unaltered.
- B- The heart still pumps with less efficiency.
- C- The atria don't beat.
- D- AVN must be non-functioning.

Answer: B

5-The main function of the cardiac Purkinji system is to:

- A- coordinate the valve movements with myocardial contraction.
- B- Delay the systole until the ventricles fill.
- C- prevent premature beats.
- D- Enable all parts of the ventricle to contract simultaneously.

Answer: D

6-About Purkinji fibers, all of the following are true except:

- A- They are confined to the ventricles.
- B- They conduct the impulses very fast.
- C- They excite the interventricular septum before the walls.
- D- They are mainly strong contractile cells.

Answer: D

7-The SAN:

- A- but not the AVN receives parasympathetic supply.
- B- is connected by thin bands of Purkinji fibers to the AVN.
- C- is a secondary pacemaker.
- D- has a faster rate of depolarization at 39°C than at 37°C

Answer: D

8-The Purkinji system has the ability to:

- A- amplify the cardiac impulses.
- B- speed the conduction of the cardiac impulses
- C- increase the force of cardiac contractility.
- D- block the conduction of AVN.

Answer: b

9-The junctional area includes:

- A- SAN
- B-AVN
- C- Purkini fibers
- D- Bacmann's bundle

Answer: B

10-The right fibrous trigone is the connective tissue bridge between:

- A- Aortic and pulmonary valve rings.
- B- Tricuspid and mitral valve rings.
- C- pulmonary and aortic valve rings.
- D- Aortic and tricuspid valve rings.

Answer: D

11-The fibrous skeleton of the heart contains a hole. This hole is for passage of:

- A- Bachmann's bundle
- B- Inter-nodal bundles
- C- Bundle of His.
- D- Right and left bundle branches.

Answer: C

12-Regarding the contractile cells of the heart, all of the following are true except::

- A- They can be autorhythmic.
- B- Cell to cell spread occurs through them.
- C- The least abundant type of cells in the heart.
- D- Can be the origin of some types of arrhythmia.

Answer: C

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Lecture 2

13-The fastest depolarizer in the heart is:

- A- SAN
- B- AVN
- C- Bundle of His
- D- Purkinji cells

Answer: A

14-The normal pacemaker of the heart is:

- A- SAN
- B- AVN
- C- Bundle of His
- D- Purkinji cells

Answer: A

15-Which of the following is correct regarding SAN?

- A- It is directly connected to the AVN.
- B- It can be easily damaged due to its superficial positioning.
- C- It doesn't receive parasympathetic supply.
- D- It is present in the left atrium.

Answer: B

16-Which of the following is not true regarding electrophysiology of the heart?

Select one:(Archive)

- a. Extrinsic cardiac conduction system
- b. Automaticity
- c. Nodal cells generates rhythm or the base
- d. Contractile cells generates pumping action of the heart
- e. SA node is the primary sinus rhythm

Answer: A

36. Absolute Refractory Period of cardiac contraction includes: (archive)

- A. The entire SA node phases
- B. start of phase 0 → till the end of Phase 3
- C. Begins from the slope of phase 3 till the end of the phase
- D. From phase 0 till the middle of phase 3

.Answer: D

46. Contraction of muscle concide any phase?

- A. depolarisation
- B. platue
- C. rapid replorization

answer:a

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36. Absolute Refractory Period of cardiac contraction includes: (archive)

- A. The entire SA node phases
- B. start of phase 0 → till the end of Phase 3
- C. Begins from the slope of phase 3 till the end of the phase
- D. From phase 0 till the middle of phase 3

.Answer: D

46. Contraction of muscle coincide any phase? (archive)

- A. depolarisation
- B. plateau
- C. rapid repolarization

answer:a

All of the following is INCORRECT about myxomatous mitral Valve except ? (archive)

- A- MYXOMATOUS MITRAL VALVE common feature of marfan syndrome
- b- histologically , thinning and proliferation of the spongiosa with pooling of glycosaminoglycan that expands to the fibrosa
- C- happens in aortic valve

answer:a

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lecture 3

**Pumping action of the
heart**

Corrected By :

Malak Alzaidaneen

1. Which of the following is not true?

Select one:

- a. As you start to move from arterioles to capillaries the cross-sectional area and velocity are going to start rising
- b. Increase the preload would increase the stroke volume and thus the perfusion blood pressure
- c. Turbulent blood flow observed in both pathological and physiological conditions
- d. Hypertension would increase afterload and thus decrease stroke

Answer: A

2. In heterometric auto regulation?

End diastolic volume increase

3. All are true except?

cardiac muscle can't be stimulated in relative refractory period

4. Which of the following matched pairs regarding contraction of the cardiac muscle are not true , select one :

- a. Calcium-Calmodulin
- b. Calcium bind to ryanodine receptor type2- Calcium outflow from sarcoplasmic reticulum
- c. Calcium bind to C troponin- Move tropomyosin away from the myosin head
- d. Functional syncytium - Very slow synchronized contraction between nodal and myocardial cells
- e. Cross bridge between actin and myosin- Heart pumping

Answer: D

5. Which of the following matched pairs are not true regarding cardiac muscles ? MW

Select one:

- a. Repolarization of the cardiac muscle- Calcium proton ATPase
- b. Repolarization of cardiac muscle- Sodium calcium exchanger
- c. Refractory period- Cannot be tetanized
- d. Phase 3- Only potassium channels are open
- e. Relative refractory period - Phase 1 midway through phase

Answer: E

42. Electrolyte that plays an important/ main role in the contractility is:

- A. Na⁺
- B. k⁺
- C. Ca⁺⁺
- D. Cl⁻

Answer: C



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lecture 4

Cardiac Cycle

Corrected By :

Malaak

Alzaidaneeyen

1. Aortic valve closure in which phase?

isometric relaxation

2. Second heart sound in which phase?

isometric relaxation

3. First heart sound in which phase?

isometric contraction

4. Second heart sound differ from first heart sound ?

Higher frequency

5. Diastolic filling of ventricles produces what sound?

Third heart sound

6. Rushing of blood into aorta and pulmonary trunk produces what sound?

Second component of 1st sound

7. Sounds of the heart are Mainly due to :

closure of valves

8. Regarding cardiac cycle :

Has 8 phases

9. Filling of ventricles occurs in :

Atrial systole, maximum and minimum filling phases

10. Which of the following is true about cardiac cycle :

Increasing heart rate decreases duration

11. Valves of heart are closed during :

Isometric relaxation and isometric contraction

12. Rushing of blood in the aortic and pulmonary arteries causes? MW Select one:

- a. First component of 1st heart sound.
- b. Second component of 1st heart sound
- c. Second heart sound.
- d. Third heart sound.

answer:b

13. Coronary blood flow occurs mainly in? Select one:

- a. Isometric contraction phase.
- b. Isometric relaxation phase.
- c. Maximum filling phase.
- d. Reduced filling phase.
- e. Atrial contraction phase.

answer:b

14. Which of the following is true about diastole?

- a. Ventricles rest
- b. Complete coronary filling
- c. Ventricles filling
- d. Ventricle rest and filling
- e. All of the above are true

answer:e

15. With respect to cardiac cycle? Select one:

- a. It reflects the electrical activity of the heart.
- b. Its duration equals 8 seconds.
- c. It consists of 8 phases.
- d. It consists of 8 phases and its duration equals 8 seconds.
- e. It starts by ventricular systole.

answer:c

16. With respect to first heart sound, all are true, except? Select one:

- a. It is of low pitch.
- b. Occurs in isometric relaxation phase.
- c. Occurs in isometric contraction and first part of maximum ejection phase.
- d. Longer in duration than second one.
- e. It is of mitral and tricuspid components.

answer:a

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Lecture 4

17. The early filling of ventricles occurs in? Select one:

- a. Reduced filling phase.
- b. Maximum filling phase.
- c. Atria Systole.
- d. in both Reduced filling phase and Maximum filling phase.
- e. In both Maximum filling phase and Atrial systole.

Answer : B

18. Ventricular filling occurs in :

- a. Maximum filling.
- b. Reduced filling.
- c. ??
- d. In A. B and c
- e. Both a and b

Answer : E

19. Sounds of the heart :

- a. Mainly produced by closure of valves.
- b. Opening of the valves produces inaudible sounds.
- c. Heard by phonocardiograph.
- d. Recorded by stethoscope only.
- e. We have only two of them.

Answer : A

20. Which of the following is not true :

- a. Perfusion pressure is equal the Mean arterial blood pressure minus Central Venous pressure
- b. Systolic pressure on average is 120mmHg
- c. Diastolic pressure on average is 80mmHg
- d. If a patient's blood pressure is 83 mm Hg/50 mm Hg. his MAP would be 50 mm Hg
- e. Mean arterial blood pressure determines the actual pressure by which will propel the substances out of the capillary beds into the tissues

Answer : A

21. All cardiac valves are closed in _ phases?

- A. Isometric relaxation and contraction
- B. Maximum ejection and filling
- C. Minimum ejection and filling
- D. Isometric contraction and maximum ejection
- E. Isometric relaxation and minimum ejection

Answer : A

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Lecture 4

17. The early filling of ventricles occurs in? Select one:

- a. Reduced filling phase.
- b. Maximum filling phase.
- c. Atria Systole.
- d. in both Reduced filling phase and Maximum filling phase.
- e. In both Maximum filling phase and Atrial systole.

Answer : B

Regarding the diastolic period of the heart ?

- A.it is the ventricular filling with blood
- B. Complete coronary filling occurred during it.
- C. it is a period for ventricular rest.
- D Maximum ventricular pressure occurs during it.
- E. It is the period of ventricular rest and filling with blood.

Answer : D

Second heart sound in which phase ?

Answer: isometric relaxation

-First heart sound in which phase?

isometric contraction

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lecture 5

Heart Rate & Its Regulation

Corrected By :

Raneem Bashtawi

1. Which of the following inhibits Vaso motor center? Select one:

- a. Mild hypercapnia WM
- b. Moderate hypoxia
- c. Left ventricular baroreceptors
- d. Peripheral chemo receptors
- e. Central chemoreceptors

Answer: C

2. One liter of blood was lost. What possibly happened?

- A. Increase in firing of discharge from baroreceptors
- B. Chemoreceptors have no role
- C. Increase in activity of the vasomotor center
- D. Slight decrease in heart rate

Answer: C

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Lecture 6

Normal ECG

Collected by:

Mohammad Mousa

1. T wave of a normal ECG corresponds to ? Select one:

- a. Ventricular depolarization.
- b. Ventricular repolarization
- c. Atrial depolarization.
- d. Atrial systole.
- e. Papillary muscle repolarization.

Answer: B

2. An ECG revealed no P waves in any lead, this indicates damage of? Select one:

- a. Sino atrial (SA) node
- b. Bundle of His.
- c. Purkinje fibers.
- d. Left bundle branch.
- e. Right bundle branch.

Answer: A

3. QRS complex indicates? Select one:

- a. Atrial depolarization
- b. Ventricular depolarization
- c. Atrial repolarization
- d. Ventricular repolarization
- e. Papillary muscle repolarization.

Answer: B

4. Electrical ventricular systole is called?

- a. QT segment
- b. QT interval
- c. ST interval
- d. PR interval

Answer: B

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Lecture 7

**Cardiac output and it's
regulation**

Collected by:

Mohammad Mousa

1. Cardiac output in L/min divided by heart rate is?

- a. Stroke volume
- b. Ejection fraction
- c. Cardiac index
- d. Pulse pressure

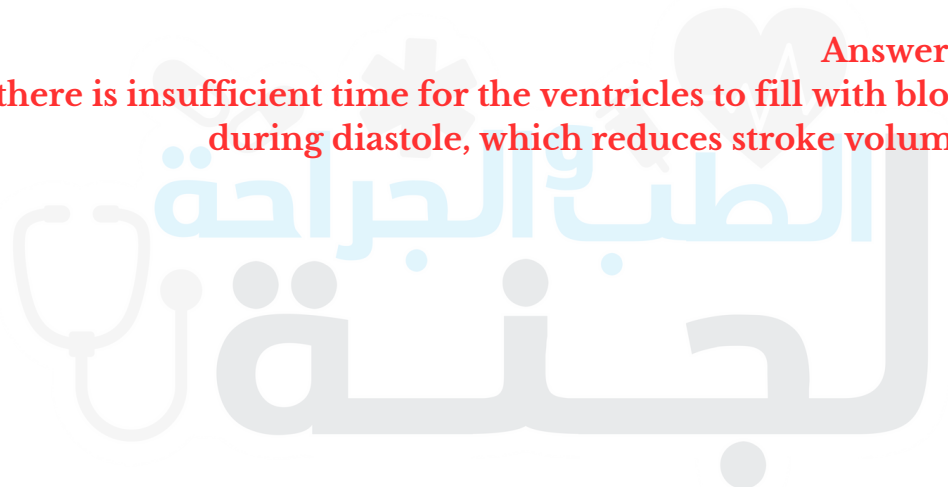
Answer: A

2. Cardiac output is decreased in? Select one:

- a. Exercise.
- b. Eating.
- c. Marked tachycardia.
- d. Pregnancy.
- e. increased venous return.

Answer: C

(At very high heart rates, there is insufficient time for the ventricles to fill with blood during diastole, which reduces stroke volume)



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Lecture 8

**Hemodynamics of blood
flow**

Corrected by:

Malaak Al Zaidaneeyen

1- the total peripheral resistance increasing ?

hyperproteinemia

2- the total peripheral resistance Decreasing ?

muscular exercise

3- What is not true about mean arterial blood pressure?

Equals systolic pressure minus diastolic pressure

4- Arterioles are?

Resistance vessels

5- Which of the following is not matched regarding auto-regulation mechanisms?

Increased metabolic demand increase resistance

6- The blood flow increase in exercise in all the following except:

A- muscles

B. Heart

C. Lungs

D. Kidneys

E. None of the above

answer = D. Kidneys

7- Velocity of blood equals blood flow/___

A. Pressure gradient

B. Cross sectional area

C. Resistance

D. Blood vessel length

Answer: B. Cross sectional area

8- Which of the following is not true?

Select one:

a. Perfusion pressure is equal the Mean arterial blood pressure minus Central Venous pressure

b. Systolic pressure on average is 120mmHg

c. Diastolic pressure on average is 80mmHg

d. If a patient's blood pressure is 83 mm Hg/50 mm Hg. his MAP would be 50 mm Hg

e. Mean arterial blood pressure determines the actual pressure by which will propel the substances out of the capillary beds into the tissues.

answer: A

9- Which of the following is not true? Select one:

- a. As you start to move from arterioles to capillaries the cross-sectional area and velocity are going to start rising
- b. Increase the preload would increase the stroke volume and thus the perfusion blood pressure
- c. Turbulent blood flow observed in both pathological and physiological conditions
- d. Hypertension would increase afterload and thus decrease stroke
- e. Polycythemia would decrease perfusion blood pressure

Answer= A

Increase peripheral resistance?

Hyperproteinemia

