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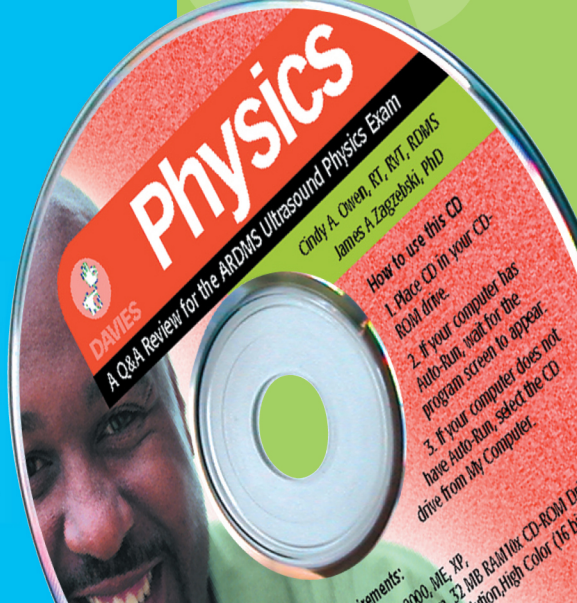

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ANATOMY, PHYSIOLOGY, AND CLINICAL INDICATIONS

1.0 The American Society of Echocardiography adopted the "leading edge" method of measurement because:

A. People were turning up the gain too much.
B. The nature of the interaction between ultrasound and anatomical interfaces makes this advisable.
C. The advent of gray scale M mode made this possible.
D. It produces the most consistent and reproducible measurements.

1.1 The term *basilar area of the ventricle* refers to the:

A. Ventricular myocardium at the apex.
B. Mid segments of the ventricle.
C. Ventricular myocardium at the atrioventricular valves.
D. None of the above.

1.2 The infundibulum is related to the area of the right ventricle called the:

A. Inflow tract.
B. Outflow tract.
C. Apical area.
D. Subvalvular area.

1.3 The three primary branches of the aortic arch include all of the following EXCEPT the:

A. Innominate artery.
B. Right subclavian artery.
C. Left common carotid artery.
D. Left subclavian artery.

1.4 The term *tunica adventitia* refers to:

A. The inner lining of the arterial wall.
B. The outer lining of the arterial wall.
C. Transverse arterial muscle fibers.
D. The intimal wall.
E. The middle layer of the arterial wall.

1.5 The term *tunica intima* refers to which of the following:

A. The inner lining of the arterial wall.
B. The outer lining of the arterial wall.
C. Transverse arterial muscle fibers.
D. Longitudinal muscle fibers.
E. The middle layer of the arterial wall.

1.6 Dextracardia indicates:

A. Enlargement of all cardiac chambers.
B. An abnormal conduction system.
C. Heart located in the right side of the chest.
D. Dual chambers of the right ventricle.

1.7 You are asked to pay particular attention to the semilunar valves. These valves are the:

A. Mitral and aortic valves.
B. Mitral and tricuspid valves.
C. Pulmonic and tricuspid valves.
D. Aortic and pulmonic valves.

1.8 The great vessels of the heart are the:

A. Inferior vena cava and superior vena cava.
B. Inferior vena cava and subclavian artery.
C. Aorta and subclavian artery.
D. Aorta and pulmonary artery.

1.9 Name and label each point on the anterior mitral valve leaflet:

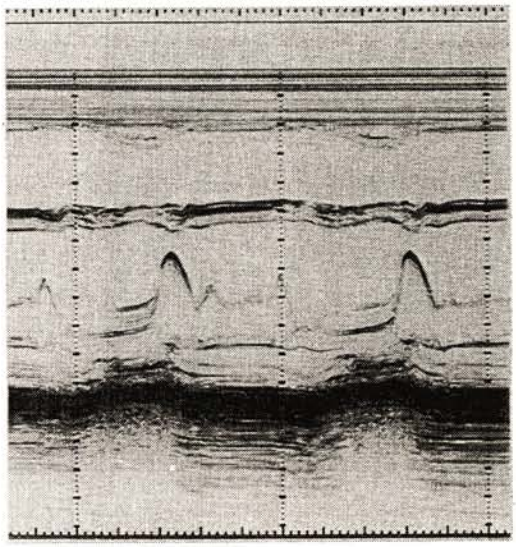

Figure 1

1.10 Name and label the three walls transected by the transducer at midventricular level:

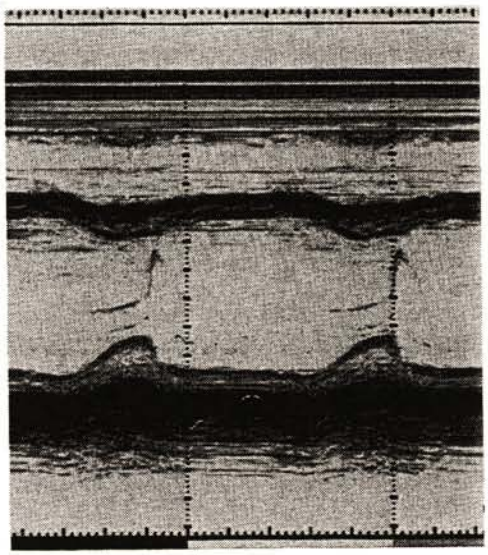

Figure 2

1.11 Name and label all structures and chambers transected by the M-mode ultrasound beam directed through the base of the heart:

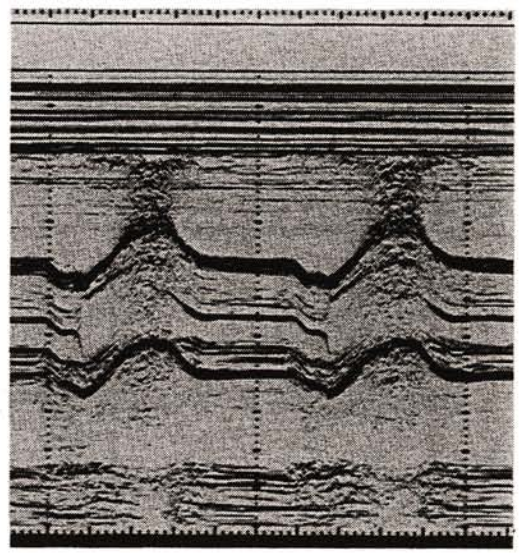

Figure 3

1.12 In M mode, the structure used to pinpoint end systole for measurement is:

A. The R wave of the ECG.
B. Maximum anterior motion of the left ventricular posterior wall.
C. Maximum posterior motion of the interventricular septum.
D. The Q wave of the ECG.

1.13 The motion of the septum should be evaluated by M mode at the:

A. Basal level.
B. Mitral level.
C. Midventricular level.
D. Apical level.

1.14 The coronary sinus returns blood to the left atrium.

True or False

1.15 The ostium of the coronary arteries may sometimes be visualized in a short-axis two-dimensional echo view at the level of the aortic valve.

True or False

1.16 Since phases of the cardiac cycle are discussed in terms of systole and diastole of the ventricle, what phase would be occurring during atrial filling?

A. Diastole.
B. Systole.
C. Insovolumic phase.

1.17 In the ECG cycle, late ventricular filling occurs after the:

A. P wave.
B. Q wave.
C. R wave.
D. T wave.

If a patient presents with an early diastolic murmur you would concentrate interest on the: (True or False)

1.18 Aortic valve.
1.19 Mitral valve.
1.20 Tricuspid valve.
1.21 Pulmonic valve.

1.22 Which valve would you suspect to be abnormal if auscultation revealed an Austin-Flint murmur?

A. Aortic valve.
B. Mitral valve.
C. Tricuspid valve.
D. Pulmonic valve.

1.23 Most authors consider the major components of the first heart sound to be:

A. Closure of the semilunar valves.
B. Closure of the atrioventricular valves.
C. Opening of the semilunar valves.
D. Opening of the atrioventricular valves.

1.24 The heart sound most often associated with mitral valve prolapse is:

A. Gallop rhythm.
B. Ejection sounds.
C. Opening snap.
D. Systolic click.

1.25 The heart sound associated with mitral and/or tricuspid stenosis is:

A. Ejection sound.
B. Gallop rhythm.
C. A friction rub.
D. Opening snap.

1.26 Early diastolic murmurs are due to aortic or pulmonic insufficiency.

True or False

Myxomas are the most common type of cardiac tumor. They comprise half of all reported cases. Which of the following statements are true? (True or False)

1.27 These tumors can be located either inside or outside the heart.
1.28 Approximately 40% of patients with left atrial myxomas have systemic emboli to the brain or extremities.
1.29 Myxomas occur only in the left atrium.
1.30 Females are affected slightly more often than males.

Symptoms associated with pericarditis include: (True or False)

1.31 A severe, sharp pain located precordially that may radiate into the shoulders and neck.
1.32 Ankle swelling.
1.33 Changing positions and taking deep breaths increases the pain.
1.34 The pain is dull and radiates into the jaw.

Symptoms noted with mitral valve prolapse syndrome include: (True or False)

1.35 Palpitations and sharp pain unrelated to exercise.
1.36 Lower back pain and headache.
1.37 Fatigue and dyspnea.
1.38 Palpitations and dizzy spells.

1.39 A pseudonym for mitral valve prolapse syndrome is:

A. Ebstein's anomaly.
B. Barlow's syndrome.
C. Crohn's disease.
D. Prinzmetal angina.

1.40 The term *trepopnea* is the sensation of dyspnea or palpitation, or an uncomfortable feeling that may occur when patients with cardiac diseases lie on their left side.

True or False

1.41 The term *dyspnea* refers to the condition of:

A. Difficulty in digesting food.
B. Difficulty in breathing.
C. Rapid breathing.
D. Deep breathing.

1.42 If a patient awakens in the night with shortness of breath, 1 to 2 hours after falling asleep, what disease might be suspected?

A. Angina pectoris.
B. Mitral valve prolapse.
C. Constrictive pericarditis.
D. Congestive heart failure.

1.43 Anemia or cyanosis may be a manifestation of serious underlying heart disease.

True or False

Palpation of arterial pulses is a method used to help determine the presence or absence of diagnostic physical signs for certain cardiac diseases. Which of the following statements is/are correct? (True or False)

1.44 Heart failure, obstruction of flow by valvular stenosis, and constrictive pericarditis can cause a diminished stroke volume.
1.45 Normal peripheral pulses arrive later than the carotid pulse.
1.46 Pulsus alternans implies impaired ventricular function and is often present in massive pericardial effusion, particularly pericardial tamponade.
1.47 Aortic regurgitation and carotid atherosclerosis cause a large stroke volume, wide pulse pressure, and lowered peripheral resistance with resultant bounding hyperkinetic pulses.

1.48 Dextrocardia can be detected by chest x-ray, percussion, ECG examination, auscultation, and asking the patient.

True or False

Which of the following signs are indicative but not diagnostic of heart disease? (True or False)

1.49 Sharp chest pains.
1.50 Cyanosis.
1.51 Clubbing.
1.52 Obesity.

1.53 Which one of the following is most likely to cause a decrease in cardiac output?

A. A decrease in peripheral resistance.
B. Hyperemia.
C. Decrease in left ventricular stroke volume.
D. Increase in heart rate.
E. Hypertension.

1.54 A decrease in left ventricular contractility secondary to acute myocardial infarction will:

A. Increase cardiac output (Q) by increasing resistance (R).
B. Decrease cardiac output (Q) by decreasing pressure (delta P).
C. Increase velocity of flow in the aorta.
D. Decrease delta P with no effect on cardiac output (Q).

1.55 If all other factors remain constant, you would expect a reduction in vessel diameter to:

A. Increase velocity.
B. Decrease the likelihood of turbulence.
C. Decrease viscosity.
D. Decrease kinetic energy.
E. Increase flow.

1.56 Which one of the following is most likely to cause turbulent flow of blood in the aorta ?

A. An increase in cardiac output from 5 L/min to 20 L/min.
B. An increase in hematocrit.
C. A decrease in cardiac output to one-half of normal.
D. An increase in arterial pressure of 5 mm Hg.
E. A hypertensive episode.

Which of the following are characteristics of turbulent flow? (True or False)

1.57 It can be predicted by Reynold's number.
1.58 It is responsible for murmurs, bruits and thrills.
1.59 It increases pressure downstream.
1.60 It occurs where there are abrupt variations in vessel diameter.
1.61 It is affected by velocity.

1.62 During an experiment, a laboratory animal suddenly develops 2:1 heart block, effectively reducing heart rate by one-half. Which ONE of the following responses would account for pressure being maintained at the same level as before the heart block?

A. Peripheral resistance decreased by one-half.
B. Massive vasodilatation of the arterial sphincters.
C. Peripheral resistance doubled.
D. Arteriovenous shunting.
E. Peripheral resistance unchanged.

1.63 A subject has a cardiac output of 5 L/min at a heart rate of 75 beats/min. If stroke volume remains constant, what will be the effect of an increase in heart rate to 150 beats per minute?

A. Cardiac output would increase to 22.5 L/min.
B. Cardiac output would increase to 25 L/min.
C. Cardiac output would increase to 10 L/min.
D. Nothing; cardiac output is independent of heart rate.
E. Cardiac output would triple.

1.64 Which ONE of the following statements is True regarding the term *blood pressure?*

A. It is reported in cm H_2O unless otherwise specified.
B. It represents the force exerted by the blood against any unit area of the vessel wall.
C. It is constant throughout the cardiac cycle.
D. It represents and can be used interchangeably with *flow.*
E. It is the same as hydrostatic pressure.

1.65 The minimal pressure in the arterial system during a cardiac cycle is termed:

A. Systolic pressure.
B. Pulse pressure.
C. Diastolic pressure.
D. Mean pressure.
E. Mean pulse pressure.

1.66 In measuring human blood pressure, the first sound was heard at 130 mmHg, the second at 105, the third at 100, and the last at 95. What is the estimated *mean* blood pressure?

A. 118 mmHg.
B. 115 mmHg.
C. 122 mmHg.
D. 107 mmHg.
E. 104 mmHg.

1.67 Which ONE of the following is a correct statement describing transmission of the arterial pressure wave?

A. It originates at the level of the arterioles.
B. It slows with increasing age.
C. It slows with increasing calcification of the vessels.
D. It is caused in part by the inertia of blood in the aorta.

1.68 In laminar flow, the velocity of the blood is:

A. Directly proportional to the cross-sectional area of the vessel.
B. Lowest when kinetic energy is highest.
C. Lowest at the center of the vessel.
D. Zero at the vessel wall.
E. Highest at the vessel wall.

1.69 The principal site of peripheral resistance in the vascular bed is determined to be in the arterioles because:

A. The blood pressure does not change across these vessels.
B. The blood flow is slowest in the arterioles.
C. The pressure drop across these vessels is greatest.
D. These vessels have thick muscular coats.
E. The blood pressure is highest here.

1.70 As the arterial pressure wave moves toward the periphery, all of the following occur *except*:

A. The pulse amplitude is increased by the presence of reflected waves.
B. Speed of propagation diminishes.
C. Pulsatile changes in arterioles and capillaries are "dampened" owing to vascular distensibility and resistance.
D. Speed of propagation increases.

1.71 The incisura on the aortic pressure wave:

A. Indicates closure of the AV valves.
B. Occurs when the aortic valve opens.
C. Is inscribed just after the aortic valve closes.
D. Occurs during rapid ventricular filling.
E. Result from aortic valve malfunction.

1.72 Starling's law of the heart can best be expressed by which one of the following?

A. As heart rate increases, ventricular contractility also increases.
B. Increasing the arterial pressure decreases the stroke volume.
C. Within limits, an increase in venous return results in an increase in stroke volume.
D. The product of heart rate and stroke volume equals the cardiac output.

1.73 Which ONE of the following best describes the role of the heart as a pump ?

A. Regulating cardiac output.
B. Forcing blood from the venous to the arterial circulation, restoring energy necessary for the blood flow.
C. Suctioning blood from the venous circulation.
D. Removing carbon dioxide from venous blood and supplying oxygen.