

YR 2 PATHOPHYSIOLOGY: CARDIOVASCULAR UNIT

**I. DIRECTIONS (Items 1-6): Questions 1-6 refer to the attached photographs.**

1. This mitral valve would most likely be associated with:
  - a. a systolic click followed by a late systolic murmur at the apex
  - b. a Grade III/VI holosystolic murmur at the apex
  - c. eccentric left ventricular hypertrophy and an opening snap followed by a diastolic rumble
  - d. CHF due to systolic dysfunction
  
2. The most likely diagnosis for this section of myocardium is:
  - a. viral myocarditis
  - b. myocardial infarct one year ago
  - c. myocardial infarct 2-3 weeks ago
  - d. amyloidosis
  - e. longstanding essential hypertension
  
3. This cross-section of a heart (with an LV thickness = 1.1 cm) is most likely from a patient with:
  - a. severe aortic stenosis
  - b. severe mitral stenosis
  - c. acute aortic regurgitation
  - d. acute mitral regurgitation
  - e. dilated cardiomyopathy
  
4. The most likely mechanism of death in this patient was:
  - a. malignant hypertension
  - b. acute mitral regurgitation
  - c. cardiac tamponade
  - d. constrictive pericarditis
  - e. pump failure
  
5. Which clinical scenario best correlates with this photomicrograph of a coronary artery?
  - a. a young woman with vasculitis due to systemic lupus
  - b. a 75-year-old male with chronic stable angina
  - c. a 55-year-old post-menopausal smoker with unstable angina
  - d. 30-year-old with alcoholic cardiomyopathy and an acute MI due to thromboembolism
  - e. an elderly male with tertiary syphilis
  
6. Which of the following lesions is most likely to result in the pathology represented in this photo of myocardium:
  - a. mitral stenosis
  - b. aortic stenosis
  - c. chronic aortic regurgitation
  - d. amyloidosis
  - e. systemic hypertension

II. DIRECTIONS (Items 7-40): Each of the numbered items or incomplete statements in this section is followed by answers or completions of the statements. Select ONE lettered answer or completion that is BEST in each case and fill in the circle containing the corresponding letter on the answer sheet.

7. A 50-year-old physician arrives at his office in the morning and is seized with crushing substernal chest pain accompanied by diaphoresis. A sublingual nitroglycerin tablet does not relieve his symptoms so he asks his nurse to drive him to the ER. She pulls into the ER ramp entrance when her boss suddenly gasps and arrests. He is dead on arrival. The most likely cause of his death is:

- a. cardiogenic shock
- b. ventricular arrhythmia
- c. myocardial rupture
- d. heart block
- e. papillary muscle rupture

8. A 50-year-old male comes to your office complaining of chest pain and shortness of breath, 3 weeks after a myocardial infarction due to a proximal left anterior descending artery occlusion treated successfully with PTCA. He has loud systolic and diastolic murmurs; pleural effusions on chest x-ray; and ST elevation on ECG. The most likely diagnosis is:

- a. post-MI angina
- b. LAD re-stenosis
- c. Dressler's syndrome
- d. congestive heart failure
- e. ruptured papillary muscle

9. A 70-year-old man is admitted for an acute transmural inferior wall MI. On day 5, he suddenly develops pulmonary edema and a new Grade III/VI systolic murmur. Which of the following would be the most useful in establishing a diagnosis?

- a. ECG
- b. serum cardiac enzymes
- c. coronary arteriography
- d. chest x-ray
- e. right heart catheterization and oximetry

10. Which contractile protein inhibits the interaction of actin and myosin?

- a. troponin C
- b. troponin T
- c. troponin I
- d. caldesmon
- e. none of the above

11. In a patient presenting with aortic stenosis, which of the following would be most helpful in establishing a diagnosis of congenital bicuspid valve as the etiology?
- age
  - systolic ejection click
  - calcified leaflets
  - commissural fusion on ECHO
  - negative history for rheumatic fever
12. A diagnosis of myocardial infarction can be made best by:
- history of severe chest pain
  - elevated CK enzymes
  - an akinetic area of LV wall motion on ECHO
  - ST elevation on ECG
  - evolution of Q waves on ECG
13. The manifestation of transmural ischemia ( injury ) on ECG is:
- tall T waves
  - T wave inversion
  - ST segment depression
  - ST segment elevation
  - Q waves
14. Which of the following is true regarding the coronary circulation?
- Coronary blood flow within a normal range of blood pressure is primarily determined by perfusion pressure.
  - The vasodilatory reserve of the epicardium and endocardium is equivalent under normal physiologic conditions.
  - Increased myocardial O<sub>2</sub> demand is met primarily by increasing O<sub>2</sub> extraction.
  - Coronary blood flow is independent of myocardial oxygen consumption due to autoregulation.
  - Adenosine is the most important mediator of metabolic vasodilation.
15. Which of the following complications portends the worst prognosis post-MI in the first 5 days in the hospital?
- post-MI angina
  - cardiogenic shock
  - ventricular fibrillation
  - ruptured ventricular septum
  - CK > 3,000 units

16. Myocardial stunning:
- refers to an area of systolic dysfunction due to chronic high grade coronary stenosis
  - refers to systolic dysfunction in an area of non-viable myocardium
  - refers to post-ischemic systolic dysfunction can be expected to reverse immediately upon restoration of coronary perfusion
  - is associated with Q waves on ECG corresponding to the area of systolic dysfunction
17. In which of the following situations would digoxin be most useful?
- Atrial fibrillation with a fast ventricular response.
  - Congestive heart failure due to diastolic dysfunction.
  - Acute myocardial infarction.
  - Mitral stenosis with sinus tachycardia.
  - Acute mitral regurgitation with pulmonary edema.
18. A 30-year-old IV drug abuser develops acute aortic regurgitation from endocarditis. Which of the following is least likely to be found?
- hypotension
  - decrecendo diastolic murmur
  - mitral valve pre-closure
  - peripheral vasodilatation
  - decreased cardiac output
19. Elevation of which of the following serum enzyme markers would be most useful in diagnosing a myocardial infarction in a patient who comes to your office 3 days after an episode of severe and prolonged substernal chest pain?
- LDH isoenzymes
  - CK-MB
  - Troponin-I
  - myoglobin
  - enzyme markers are no longer useful 3 days after an MI
20. A young woman in her 3<sup>rd</sup> trimester of pregnancy has a blood pressure of 160/100 on routine exam. Her mean arterial pressure is:
- 100 mm Hg
  - 110 mm Hg
  - 120 mm Hg
  - 140 mm Hg
  - can not be determined without knowing the heart rate

21. A 45-year-old runner develops chest pain and collapses while jogging. He arrives in the ER within an hour. He is awake and is given a sublingual nitroglycerin tablet which reduces his discomfort. His rhythm is sinus at 90 bpm; BP 120/85. An ECG shows 3 mm of ST segment depression in leads II, III, AVF, V<sub>5</sub> and V<sub>6</sub>. The best next step is:
- admission with initiation of ASA,  $\beta$ -blocker, and heparin therapy
  - thrombolysis with tPA
  - cardiac catheterization and percutaneous transluminal coronary angioplasty
  - an exercise stress test to rule out ischemia as the cause of his symptoms
  - re-assurance and discharge
22. Of the following interventions for coronary risk factor modification, which is the most effective in reducing the risk of myocardial infarction?
- medical therapy to lower LDL below 100
  - post-menopausal estrogen replacement therapy
  - weight loss to achieve ideal body weight
  - smoking cessation
  - reduction of diastolic blood pressure from 100 to 90 mm Hg
23. In a normal heart, the oxygen saturation of a sample of blood taken from a catheter in the pulmonary capillary wedge position should be equal to a sample from the:
- right atrium
  - right ventricle
  - pulmonary artery
  - femoral artery
  - coronary sinus
24. An echocardiogram shows a dilated left ventricular cavity with the remainder of the other chamber sizes normal. The most likely diagnosis is:
- mitral stenosis
  - mitral regurgitation
  - aortic stenosis
  - aortic regurgitation
  - hypertensive heart disease
25. Distention of neck veins during inspiration is most likely to be found in:
- a normal physical exam
  - cardiac tamponade
  - constrictive pericarditis
  - dilated cardiomyopathy
  - myocarditis

26. Angina due to an imbalance between O<sub>2</sub> supply and demand without atherosclerosis would most likely be seen in which of the following?
- a. tricuspid regurgitation
  - b. pulmonary regurgitation
  - c. right heart failure
  - d. cardiac tamponade
  - e. aortic regurgitation
27. Which of the following has contributed most to the decline in coronary artery disease rates over the last 3 decades in the United States?
- a. aspirin therapy
  - b. beta blocker therapy
  - c. coronary arterial bypass grafting
  - d. angioplasty
  - e. lifestyle changes (e.g. diet and smoking cessation)
28. You are asked to see a patient in the ICU who is short of breath and tachycardic to rule out a cardiac cause of her symptoms. A right heart catheter reveals that the mixed venous O<sub>2</sub> saturation is 70%; the pulmonary capillary wedge O<sub>2</sub> saturation is 97%. The hemoglobin is normal and the patient is afebrile. You are able to tell the doctors that:
- a. her heart is normal
  - b. her cardiac output is decreased
  - c. her cardiac output is normal
  - d. she has high-output failure
  - e. she is in shock due to a non-cardiac cause
29. Which one of the following statements is true:
- a. coronary collaterals refer to indirect anastomotic connections (i.e. through capillaries) between segments of the same vessel or between different vessels
  - b. approximately 50% of coronary blood flow to the left ventricle occurs during systole
  - c. under normal resting conditions, the vascular tone in the subendocardium is lower than in the subepicardium
  - d. autoregulation of coronary blood flow only exists in the subepicardial layer of the left ventricle
  - e. adenosine is the only metabolic substance important in regulation of coronary blood flow

**Questions 30-31 refer to this paragraph:**

You are a first year Pathology resident at a major academic medical center. On your first day of work, you are asked to examine a heart which your attending tells you came from a patient with a known history of atherosclerotic coronary artery disease who suffered an acute myocardial infarct approximately 5 days prior to death. After careful sectioning of the coronary arteries, you determine that the posterior descending coronary artery arises from the right coronary artery. On additional sectioning, you find that the right coronary artery contains diffuse atherosclerotic coronary artery disease and you find a thrombotic occlusion in the proximal portion of the artery.

30. Which of the following represents the most likely gross findings involving the left ventricle of this heart?
- a. a subendocardial infarct involving the posterior 1/3 of the interventricular septum and a portion of the posterior wall of the left ventricle
  - b. a transmural infarct involving the anterior wall of the left ventricle and the anterior 2/3 of the interventricular septum
  - c. a subendocardial infarct involving the anterior wall of the left ventricle and the anterior 2/3 of the interventricular septum
  - d. a transmural infarct involving the posterior 1/3 of the interventricular septum and a portion of the posterior wall of the left ventricle
  - e. none of the above
31. Which of the following represents the most likely microscopic findings present associated with the above infarct?
- a. normal myocardium
  - b. significant amounts of collagen deposition associated with pigment-laden macrophages and early ingrowth of capillary buds
  - c. a large influx of neutrophils associated with degeneration of necrotic myocytes and edema
  - d. dense scar formation with a few scattered pigment-laden macrophages
  - a. hypertrophic myocytes with interspersed hemorrhage

32. Which of the following statements regarding myocardial infarction is false?
- a. the diagnosis of acute non-transmural myocardial infarction cannot reliably be made on the basis of a single ECG
  - b. uncommon causes of myocardial infarction include cocaine, arteritis, and emboli
  - c. most transmural myocardial infarcts result from plaque rupture and consequent complete thrombotic occlusion of a coronary artery
  - d. infarct extension can reliably be detected using ECG and history together
  - e. myocardial infarction is a leading cause of death in the United States
33. Which of the following statements regarding acute pericarditis is false?
- a. causes include idiopathic, rheumatoid arthritis, acute myocardial infarction, and uremia
  - b. it usually resolves with the formation of constricting adhesions
  - c. it uncommonly results in cardiac tamponade
  - d. it often responds dramatically to non-steroidal anti-inflammatory agents
  - e. findings may include positional chest pain, fever, and a friction rub
34. Which of the following statements about atherosclerotic aneurysms is false:
- a. most commonly occur in the thoracic aorta
  - b. occur more commonly in males
  - c. risk of rupture is directly related to the size of the lesion
  - d. definitive therapy is surgical repair
  - e. risk factors include smoking, hypertension, and high serum cholesterol levels
35. Which of the following statements is most correct regarding vascular tumors:
- a. granuloma pyogenicum is a malignant vascular lesion
  - b. in infants, nearly all cavernous hemangiomas require surgical therapy
  - c. most patients with the epidemic form of Kaposi s sarcoma die of their disease
  - d. glomangioma is a benign painful tumor located in the distal fingers and toes
  - e. angiosarcoma has been linked to alcohol consumption

36. Eisenmenger's physiology will result from an unoperated:
- small ventricular septal defect
  - tetralogy of Fallot
  - large patent ductus arteriosus
  - coarctation of the aorta
  - pulmonary stenosis
37. Complete transposition of the great arteries is best described as:
- atrioventricular discordance with ventricular-arterial discordance
  - atrioventricular concordance with ventricular-arterial concordance
  - atrioventricular discordance with ventricular-arterial concordance
  - atrioventricular concordance with ventricular-arterial discordance
  - normally related great vessels
38. An asymptomatic 4-year-old is referred to you for a heart murmur. By exam and echocardiogram, the right heart is enlarged and there is a soft systolic ejection murmur at the upper left sternal border with a widely split, fixed second heart sound. This patient has a:
- large ventricular septal defect
  - severe pulmonary valve stenosis
  - large patent ductus arteriosus
  - severe aortic stenosis
  - large atrial septal defect
39. Complete atrioventricular septal defects:
- are seen frequently in patients with trisomy 21.
  - include a coronary sinus atrial septal defect
  - include a perimembranous ventricular septal defect
  - frequently have aortic valve insufficiency
  - have a normal mitral valve structure
40. A large, malalignment ventricular septal defect is seen in which of the following:
- tricuspid atresia
- truncus arteriosus
  - complete transposition of the great arteries
  - total anomalous pulmonary venous return
  - hypoplastic left ventricle syndrome

III. DIRECTIONS (Items 41-70): Each of the questions in this section is negatively phrased, as indicated by a capitalized word such as NOT, LEAST, or EXCEPT. Select ONE letter answer of completion that is BEST and fill in the corresponding circle on the answer sheet.

41. In a patient with diastolic dysfunction due to the hypertensive heart disease, you would expect symptoms of congestion to be worsened by all except:

- a. anemia
- b. exercise
- c. atrial fibrillation
- d. bradycardia
- e. dopamine

42. A young woman with mitral valve prolapse and normal LV function presents with acute mitral regurgitation from ruptured chordae. You may expect to find all of the following except:

- a. elevated pulmonary capillary wedge pressure
- b. decreased cardiac output
- c. decreased ejection fraction
- d. pulmonary edema on chest x-ray
- e. atrial fibrillation on ECG

43. Each of the following is typical of angina pectoris except:

- a. relief of symptoms with sublingual NTG in 10-15 minutes
- b. provocation of symptoms by a large meal
- c. radiation of symptoms to the neck and jaw
- d. substernal burning
- e. discomfort after smoking a cigarette

44. In a patient with right ventricular infarction, which of the following is least likely to be seen?

- a. low pulmonary capillary wedge pressure
- b. elevated jugular venous pressure
- c. proximal right coronary artery occlusion
- d. hypotension
- e. pulmonary congestion on chest x-ray

45. All of the following would be expected to be increased in chronic congestive heart failure except:

- a. beta-adrenergic receptors
- b. renin levels
- c. norepinephrine levels
- d. atrial natriuretic peptide levels
- e. BUN: creatinine ratio

46. Angiotensin converting enzyme inhibitors (ACE-I) would be expected to be useful in the treatment of all of the following except:
- a. dilated cardiomyopathy
  - b. mitral stenosis
  - c. mitral regurgitation
  - d. aortic regurgitation
  - c. acute myocardial infarction
47. Which of the following findings is least likely in hypertensive heart disease?
- a. increased QRS voltage on ECG
  - b. increased left atrial size
  - c. increased left ventricular mass
  - d. increased left ventricular end diastolic volume
  - d. increased left ventricular end diastolic pressure
48. An elderly woman presents with right heart failure due to chronic lung disease. Which of the following would you least expect to find?
- a. enlarged congested liver
  - b. holosystolic murmur at the left sternal border that augments with inspiration
  - c. elevated pulmonary capillary wedge pressure
  - d. elevated pulmonary artery pressure
  - e. peripheral edema
49. All of the following are typical complications of long-standing mitral stenosis except:
- a. atrial fibrillation
  - b. right ventricular hypertrophy
  - c. thromboembolic events
  - d. symptoms of low cardiac output
  - e. left ventricular dysfunction
50. Increased coronary artery disease risk is least correlated with
- a. elevated total cholesterol levels
  - b. elevated LDL levels
  - c. elevated HDL levels
  - d. elevated Lipoprotein (a) levels
  - e. elevated triglyceride levels

51. All of the following may be expected on physical exam in aortic stenosis except:
- a. systolic ejection murmur
  - b. S3
  - c. S4
  - d. *pulsus parvus* and *tardus*
  - e. decreased A2
52. All of the following vasodilators may be useful in a patient with congestive heart failure due to dilated cardiomyopathy except:
- a. nitroprusside
  - b. hydralazine
  - c. captopril
  - d. verapamil
  - e. nitroglycerin
53. Transient physical findings during an episode of angina pectoris due to myocardial ischemia may likely include all except:
- a. bradycardia
  - b. pulmonary rales
  - c. Grade II/VI diastolic murmur at the left sternal border
  - d. Grade II/VI holosystolic murmur at the apex
  - e. S4
54. All of the following are true regarding medical management of angina pectoris except:
- a. Nitrates work primarily by dilating epicardial arteries and thereby increasing O<sub>2</sub> supply
  - b. Aspirin is the most effective oral drug for preventing plaque instability and unstable angina
  - c. Beta-blockers decrease effort angina primarily by decreasing heart rate
  - d. Calcium channel blockers are particularly useful in preventing coronary vasospasm
  - e. Heparin is useful in unstable angina to prevent clot propagation
55. All of the following are characteristics of hibernating myocardium except:
- a. high grade coronary artery stenosis
  - b. imbalance between O<sub>2</sub> supply and demand
  - c. viable myocardium despite reduced contractility
  - d. regional left ventricular systolic dysfunction
  - e. immediate restoration of normal wall motion after revascularization

56. All of the following are common complications of RCA occlusion with resultant inferior wall MI except:
- a. right ventricular infarction
  - b. heart block
  - c. proximal anterior ventricular septal rupture
  - d. papillary muscle rupture
  - e. acute mitral regurgitation
57. The following findings are consistent with pericardial tamponade except:
- a. muffled heart sounds
  - b. bradycardia
  - c. elevated jugular venous pressure
  - d. decreased stroke volume
  - e. hypotension
58. All of the following are examples of restrictive cardiomyopathy except:
- a. amyloidosis
  - b. hemochromatosis
  - c. viral myocarditis
  - d. hypereosinophilic syndrome
  - e. myocardial scarring
59. A 40-year-old male with a bicuspid aortic valve is lost to follow-up after childhood. He presents to the ER with a broken leg. Pre-op evaluation reveals an enlarged cardiac silhouette on chest x-ray and a loud prolonged diastolic murmur on exam. All of the following may be expected except:
- a. decreased pulse pressure
  - b. left ventricular dilatation
  - c. increased stroke volume
  - d. early peaking systolic ejection murmur
  - e. peripheral vasodilatation
60. Stroke (cerebral vascular accident) is least likely to occur as a result of:
- a. tricuspid valve endocarditis
  - b. anterior myocardial infarction
  - c. aortic dissection
  - d. mitral stenosis
  - e. dilated cardiomyopathy
61. Common causes of aortic regurgitation include all except:
- a. aortic dissection
  - b. endocarditis
  - c. Marfan s syndrome
  - d. myocardial infarction
  - e. bicuspid aortic valve

62. Signs of coronary reperfusion following thrombolytic therapy for acute myocardial infarction include all except:
- a. early CK wash-out
  - b. pain relief
  - c. ventricular arrhythmias
  - d. early evolution of Q waves on ECG
  - e. return of ST segments on ECG to baseline
63. Using the Gorlin formula, all of the following are required to determine the valve area of a patient with aortic stenosis except:
- a. systolic ejection period
  - b. heart rate
  - c. pulmonary capillary wedge pressure
  - d. central aortic systolic pressure
  - e. cardiac output
64. All of the following statements regarding angina pectoris are true except:
- a. it reflects myocardial ischemia
  - b. atherosclerotic coronary artery disease is usually an important underlying factor
  - c. in most patients it is elicited by situations which increase oxygen demand of the myocardium
  - d. it can be diagnosed reliably by physical exam
  - e. it may occur in the absence of coronary artery disease
65. All of the following statements are true except:
- a. In the majority of humans, the posterior descending coronary artery arises from the right coronary artery.
  - b. The arteriole that supplies the sinus node is equally likely (approximately 50%) to arise from the right or the left coronary artery.
  - c. A right dominant coronary arterial system means that the right coronary artery supplies the majority of the myocardium.
  - d. Branches of the left anterior descending coronary artery include septal branches and diagonal branches.
  - e. The anterior and posterior papillary muscles are supplied by branches of both the left and right coronary artery.

66. All of the following statements regarding cardiac tamponade are true except:
- Causes include dissecting aortic aneurysm, thoracic neoplasms, and complicated myocardial infarction.
  - The rate of pericardial fluid accumulation influences whether an effusion produces tamponade.
  - Tamponade results in diastolic compression of the cardiac chambers.
  - Physical findings include narrow pulse pressure and distended neck veins.
  - Pulsus paradoxus* is accentuated by hypovolemia.
67. Severe myocarditis is least likely to be associated with which of the following?
- normal LV ejection fraction
  - a lymphocytic infiltrate associated with myocyte necrosis
  - systemic emboli
  - apical holosystolic murmur
  - congestive heart failure
68. A 41-year-old female presents with increasing fatigue and exertional dyspnea. The cardiac exam reveals a loud S1 and a faint mid-diastolic murmur. Which of the following is least likely?
- an enlarged, dilated left atrium
  - a remote history of a streptococcal throat infection
  - a heart weight of 400 grams
  - a mitral valve area of  $< 2.0 \text{ cm}^2$
  - absence of an S3
70. Aortic dissection is least likely to be associated with which of the following
- pericardial tamponade
  - severe chest pain
  - aortic atherosclerosis
  - an initial tear in the proximal 10 cm of the aorta
  - hypertension

- IV. DIRECTIONS (Items 70 - 100): Each set of matching questions consists of a list of options followed by several numbered items. For each numbered item, select the ONE lettered option which is most closely associated with it and fill in the corresponding circle on the answer sheet. Each lettered option may be selected once, more than once or not at all.

(70-74) Match the clinical/pathophysiological features in the following questions with the BEST choice from the list of vasculitides below

- a. Polyarteritis nodosa
- b. Temporal arteritis (giant cell arteritis)
- c. Wegner s granulomatosis
- d. Kawasaki s disease
- e. Buerger s disease

- 70. fever, bilateral non-purulent conjunctivitis, and palmar erythema
- 71. C-ANCA present in 95%; male > female
- 72. transmural acute necrotizing inflammation
- 73. most common of the arteritides; female > male
- 74. peripheral vascular insufficiency in young male smokers

(75-80) Match the most characteristic heart sound with each of the clinical scenarios:

- a. systolic ejection click
- b. holosystolic apical murmur
- c. diastolic rumble
- d. blowing decrescendo diastolic murmur
- e. continuous murmur
- f. S3

- 75. a renal failure patient with an AV fistula for hemodialysis access
- 76. a 5 year old with a dysplastic pulmonary valve
- 77. a 70 year old male with a history of hypertension who comes to the ER with tearing chest pain
- 78. a 24 year old pregnant woman with a childhood history of arthritis and chorea
- 79. a 19 year old competitive swimmer
- 80. a 30 year old drug abuser with mitral valve endocarditis

(81-85) Match the most likely ECG finding with each of the following clinical settings:

- a. ST elevation in ECG leads V<sub>1-4</sub>
- b. ST segment depression in leads II, III, AVF
- c. diffuse ST segment elevation
- d. chaotic atrial activity with irregular fast ventricular response
- e. normal ECG

- 81. a 30 year old woman with mitral stenosis and palpitations
- 82. a 55 year old male in the ER with chest pain and a proximal LAD occlusion
- 83. a 70 year old female with exertional angina and an 80% RCA stenosis
- 84. a 20 year old athlete with pleuritic chest pain, fever, and a "rub"
- 85. a 60 year old male with heart failure and a left ventricular aneurysm

(86-90) Match each statement with the BEST choice from the list below.

- a. typical angina pectoris
- b. variant angina (Prinzmetal s angina)
- c. unstable angina
- d. myocardial infarct
- e. none of the above

- 86. exacerbation of symptoms with inspiration and recumbency
- 87. usually associated with severe chest pain, diaphoresis, and nausea
- 88. associated with stable high grade coronary stenosis
- 89. associated with episodic inappropriate coronary vasomotor tone
- 90. most commonly associated with plaque rupture and non-occlusive thrombosis

(91-94) Match each of the following lesions with the most likely oxygen saturation profile:

<u>O<sub>2</sub> saturation:</u>	Right atrium	Right ventricle	Pulmonary artery	Left ventricle
a.	70	70	70	97
b.	45	45	45	92
c.	50	80	80	94
d.	65	70	70	80
e.	80	80	80	98

- 91. Eisenmenger s syndrome secondary to patent ductus arteriosus
- 92. ventricular septal defect secondary to anterior myocardial infarction
- 93. dilated cardiomyopathy with severe congestive heart failure
- 94. bicuspid aortic valve

(95-100) Match each of the following disease states with the most appropriate emodynamic profile:

Pressures (mm Hg)	Right atrium	Pulmonary artery	Pulmonary capillary wedge	Left ventricle	Central aorta
a.	8	28/16	18	190/20	120/70
b.	10	85/30	6	120/6	120/70
c.	9	48/24	22	110/7	110/65
d.	20	28/21	22	85/22	85/70
e.	20	25/19	6	85/5	85/60
f.	10	45/23	25	80/26	80/65
g.	6	30/18	16	200/18	200/120

95. cardiac tamponade from a stab wound
96. right ventricular infarction secondary to inferior MI
97. mitral stenosis
98. primary pulmonary hypertension
99. cardiogenic shock
100. calcific aortic stenosis