1 A 50-year-old man experiences episodes of severe substernal chest pain every time he performs a task that requires moderate exercise. The episodes have become more frequent and severe over the past year, but they can be relieved by sublingual nitroglycerin. On physical examination, he is afebrile, his pulse is 78/min and regular, and there are no murmurs or gallops. Laboratory studies show creatinine, 1.1 mg/dL; glucose, 130 mg/dL; and total serum cholesterol, 223 mg/dL. Which of the following cardiac lesions is most likely to be present?

- □ (A) Rheumatic mitral stenosis
- □ (B) Serous pericarditis
- □ (C) Restrictive cardiomyopathy
- □ (D) Calcific aortic stenosis
- □ (E) Coronary atherosclerosis
- □ (F) Viral myocarditis

Answer: E Stable angina is associated with Coronary atherosclerosis

asymptomatic < 70%

Stable angina > 70%

unstable angina > 90%

4 A 12-year-old boy was brought to the physician with a sore throat and fever 3 weeks ago, and a throat culture was positive for group A β-hemolytic streptococcus. On the follow-up examination, the child is afebrile. His pulse is 85/min, respirations are 18/min, and blood pressure is 90/50 mm Hg. On auscultation, a murmur of mitral regurgitation is audible, and there are diffuse rales over both lungs. The child is admitted to the hospital and over the next 2 days has several episodes of atrial fibrillation accompanied by signs of acute left ventricular failure. Which of the following pathologic changes occurring in this child's heart during hospitalization is most likely to be the cause of the left ventricular failure?

- □ (A) Amyloidosis
- □ (B) Endocardial fibroelastosis
- □ (C) Fibrinous pericarditis
- □ (D) Fibrosis of mitral valve with fusion of commissures
- □ (E) Myocarditis
- □ (F) Tamponade
- □ (G) Verrucous endocarditis

Answer: E ⟹ Rheumatic fever results in Pancarditis myocarditis because it's one of the first signs to appear and it produces mitral regurgitation unlike Verrucous endocarditis.

6 A 68-year-old man with a history of diabetes mellitus had chest pain and an elevated serum troponin I level 1 year ago. He was treated in the hospital with antiarrhythmic agents for 1 week. An echocardiogram showed an ejection fraction of 28%. He now has markedly reduced exercise tolerance. On physical examination, his temperature is 37°C, pulse is 68/min, respirations are 17/min, and blood pressure is 130/80 mm Hg. Diffuse crackles are heard on auscultation of the lungs. The representative gross appearance of the heart is shown in the figure. Which of the following complications of this disease is the patient most likely to develop?

- □ (A) Atrial myxoma
- □ (B) Cardiac tamponade
- □ (C) Constrictive pericarditis
- □ (D) Hypertrophic cardiomyopathy
- □ (E) Infective endocarditis
- □ (F) Systemic thromboembolism

Answer: F ⇒ Ejection fraction < 40% wich means its dilated cardiomyopathy

DCM ⇒ Mural thrombi ⇒ thromboembolism

8 A 10-year-old girl who is normally developed has chronic progressive exercise intolerance. On physical examination, temperature is 37.1°C, pulse is 70/min, respirations are 14/min, and blood pressure is 100/60 mm Hg. A chest radiograph shows cardiomegaly and mild pulmonary edema. An echocardiogram shows severe left ventricular hypertrophy and a prominent interventricular septum. The right ventricle is slightly thickened. During systole, the anterior leaflet of the mitral valve moves into the outflow tract of the left ventricle. The ejection fraction is abnormally high, and the ventricular volume and cardiac output are both low. Which of the following is the most likely cause of the cardiac abnormalities in this patient?

- □ (A) Mutations in β-myosin heavy chain
- □ (B) Autoimmunity against myocardial fibers
- □ (C) Excessive iron accumulation
- □ (D) Deposition of amyloid protein
- □ (E) Latent enterovirus infection

Answer: A ⇒ hypertrophic Cardiomyopathy

13 One week ago, a 72-year-old woman had an episode in which she became disoriented, had difficulty speaking, and had weakness on the right side of the body. On physical examination, she is afebrile with pulse of 68/min, respirations of 15/min, and blood pressure of 130/85 mm Hg. On auscultation, the lungs are clear, the heart rate is irregular, and there is a midsystolic click. An echocardiogram shows nodular deposits with the density of calcium around the mitral valve. One leaflet of the mitral valve appears to balloon upward. The ejection fraction is estimated to be 55%. Laboratory findings show Na^+, 141 mmol/L; K^+, 4.1 mmol/L; Cl^-, 98 mmol/L; CO_2, 25 mmol/L; glucose, 77 mg/dL; creatinine, 0.8 mg/dL; calcium, 8.1 mg/dL; and phosphorus, 3.5 mg/dL. Which of the following is the most likely diagnosis?

- □ (A) Carcinoid heart disease
- □ (B) Hyperparathyroidism
- □ (C) Infective endocarditis
- □ (D) Infiltrative cardiomyopathy
- □ (E) Mitral annular calcification
- □ (F) Rheumatic heart disease
- □ (G) Senile calcific stenosis

Answer: E . why not G? Senile calcific stenosis is only aortic valve specific.

17 A 68-year-old man has had progressive dyspnea for the past year. On physical examination, extensive rales are heard in all lung fields. An echocardiogram shows that the left ventricular wall is markedly hypertrophied. A chest radiograph shows pulmonary edema and a prominent left-sided heart shadow. Which of the following conditions has most likely produced these findings?

- (A) Centrilobular emphysema
- (B) Systemic hypertension
- (C) Tricuspid valve regurgitation
- (D) Chronic alcoholism
- (E) Silicosis

Answer : B

21 A 59-year-old man has experienced chronic fatigue for the past 18 months. On physical examination, he is afebrile. A chest radiograph shows bilateral pulmonary edema and a prominent border on the left side of the heart. The representative gross appearance of the heart is shown. Laboratory studies show serum glucose, 74 mg/dL; total cholesterol, 189 mg/dL; total protein, 7.1 g/dL; albumin, 5.2 g/dL; creatinine, 6.1 mg/dL; and urea nitrogen, 58 mg/dL. What is the most likely diagnosis?

- (A) Chronic alcoholism
- (B) Systemic hypertension
- (C) Pneumoconiosis
- (D) Hemochromatosis
- (E) Diabetes mellitus

Answer : B → hypertension → Left sided hypertrophy → Pulmonary Congestion and edema

25 A 60-year-old man has experienced angina on exertion for the past 6 years. A coronary angiogram performed 2 years ago showed 75% stenosis of the left anterior descending coronary artery and 50% stenosis of the right coronary artery. For the past 3 weeks, the frequency and severity of the anginal attacks have increased, and pain sometimes occurs even when he is lying in bed. On physical examination, his blood pressure is 110/80 mm Hg, and pulse is 85/min with irregular beats. Laboratory studies show serum glucose, 188 mg/dL; creatinine, 1.2 mg/dL; and troponin I, 1.5 ng/mL. Which of the following is most likely to explain these findings?

- (A) Hypertrophy of ischemic myocardium with increased oxygen demands
- (B) Increasing stenosis of right coronary artery
- (C) Fissuring of plaque in left coronary artery with superimposed mural (partial) thrombosis
- (D) Sudden complete thrombotic occlusion of right and left coronary arteries
- (E) Reduction in oxygen-carrying capacity owing to pulmonary congestion

Answer : C → Patient has unstable angina which is developed by fissuring of plaques.

EC₅ damage ⇒ Calcification

27 A 77-year-old woman sees her physician for a routine health maintenance examination. On physical examination, she is afebrile. Her pulse is 66/min, respirations are 14/min, and blood pressure is 125/85 mm Hg. On auscultation, a systolic ejection murmur is heard. There are a few crackles over the lung bases posteriorly. From the representative gross appearance of the aortic valve shown in the figure, which of the following most likely contributed to the development of this lesion?

- (A) Chromosomal aneuploidy
- (B) Aging
- (C) Tertiary syphilis
- (D) Atherosclerosis
- (E) Systemic lupus erythematosus

Answer: B

28 A 32-year-old woman who lives in Pensacola, Florida, goes to the physician because of increasingly severe dyspnea, orthopnea, and swelling of the legs for the past 2 weeks. She has no previous history of serious illness or surgery. On physical examination, her temperature is 37.8°C, pulse is 83/min, respirations are 20/min, and blood pressure is 100/60 mm Hg. An ECG shows episodes of ventricular tachycardia. An echocardiogram shows right and left ventricular dilation, but no valvular deformities. An endomyocardial biopsy shows focal myocyte necrosis and lymphocytic infiltrate. Which of the following organisms most likely caused the infection?

- (A) *Trypanosoma cruzi*
- (B) Viridans streptococci
- (C) Coxsackievirus A
- (D) *Toxoplasma gondii*
- (E) *Staphylococcus aureus*
- (F) *Mycobacterium kansasii*

Answer: C → Coxsackie + Adenovirus Produce Dilated Cardiomyopathy

Staph. aureus: acute IE

Viridins: subacute IE

32 A 60-year-old man visits the physician because of worsening cough and orthopnea. On physical examination, he has dullness to percussion at the lung bases and diffuse crackles in the upper lung fields. He is afebrile. Echocardiography shows marked left ventricular hypertrophy and severe aortic stenosis. The remaining cardiac valves are normal. A coronary angiogram shows no significant coronary arterial narrowing. Which of the following conditions best accounts for these findings?

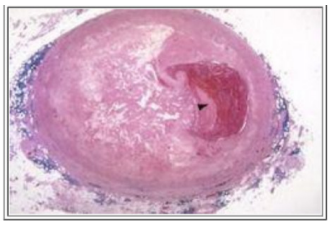
- (A) Diabetes mellitus
- (B) Marfan syndrome
- (C) Bicuspid aortic valve
- (D) Systemic hypertension
- (E) Infective endocarditis

Answer: C Bicuspid AV: asymptomatic but with age it gets severly calcified

35 A 10-year-old girl develops subcutaneous nodules over the skin of her arms and torso 3 weeks after a bout of acute pharyngitis. She manifests choreiform movements and begins to complain of pain in her knees and hips, particularly with movement. A friction rub is heard on auscultation of the chest. Which of the following serum laboratory findings is most characteristic of the disease affecting this patient?

- (A) Elevated cardiac troponin I level
- (B) Positive ANA test
- (C) Elevated creatinine level
- (D) Positive rapid plasma reagin test
- (E) Elevated antistreptolysin O level

Answer: E



36 A 37-year-old woman dies suddenly. Investigation of the scene of death in her bedroom at home and external examination of the body show no evidence of trauma. The microscopic appearance of the proximal left anterior descending artery at autopsy is shown in the figure. Which of the following conditions is most likely to be the underlying cause of death?

- (A) Marfan syndrome
- (B) Acute leukemia
- (C) Polyarteritis nodosa
- (D) Diabetes mellitus
- (E) Chronic alcoholism

Answer: D => DM Produces atherosclerosis

43 A 44-year-old, previously healthy man has experienced worsening exercise tolerance accompanied by marked shortness of breath for the past 6 months. On physical examination, he is afebrile. His pulse is 78/min, respirations are 22/min, and blood pressure is 110/70 mm Hg. He has diffuse rales in all lung fields and pitting edema to the knees. Laboratory studies show serum sodium, 130 mmol/L; potassium, 4 mmol/L; chloride, 102 mmol/L; CO_2, 25 mmol/L; creatinine, 2 mg/dL; and glucose, 120 mg/dL. A 100-mL urine sample is collected. There is 1.3 mmol of sodium and 40 mg of creatinine in the urine sample. A chest radiograph shows cardiomegaly and pulmonary edema with pleural effusions. An echocardiogram shows four-chamber cardiac dilation and mitral and tricuspid valvular regurgitation, with an ejection fraction of 30%. A coronary angiogram shows less than 10% narrowing of the major coronary arteries. Which of the following is the most likely diagnosis?

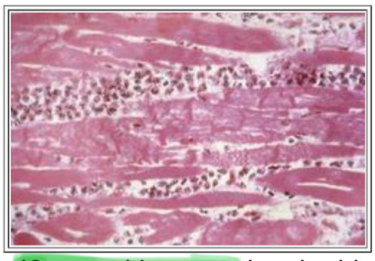
- (A) Rheumatic heart disease
- (B) Hereditary hemochromatosis
- (C) Chagas disease
- (D) Diabetes mellitus
- (E) Idiopathic dilated cardiomyopathy

Answer: E

45 An 86-year-old man has had increasing dyspnea and reduced exercise tolerance for the past 7 years. On physical examination, he is afebrile and has a blood pressure of 135/85 mm Hg. An irregularly irregular heart rate averaging 76/min is audible on auscultation of the chest. Crackles are heard at the bases of the lungs. A chest radiograph shows mild cardiomegaly and mild pulmonary edema. Echocardiography shows slight right and left ventricular wall thickening with reduced left and right ventricular wall motion, reduced left ventricular filling, and an ejection fraction estimated to be 25%. An endomyocardial biopsy specimen shows amorphous pink-staining deposits between myocardial fibers, but no inflammation and no necrosis. Which of the following is the most likely diagnosis?

- □ (A) Cardiac amyloidosis
- □ (B) Rheumatic heart disease
- □ (C) Constrictive pericarditis
- □ (D) Mitral valve prolapse
- □ (E) Left ventricular aneurysm

Answer : A ⇒ Fatigue with mild hypertrophy ((not hypertrophic)) is resulted by loss of Ventricular Compliance ⇒ Restrictive Cardiomyopathy.



47 A 48-year-old woman has had increasing dyspnea for the past 2 days. She experiences sudden cardiac arrest and cannot be resuscitated. The light microscopic appearance of the left ventricular free wall at autopsy is shown in the figure. Which of the following is the most likely diagnosis?

- □ (A) Viral myocarditis
- □ (B) Myocardial infarction
- □ (C) Acute rheumatic myocarditis
- □ (D) Septic embolization
- □ (E) Restrictive cardiomyopathy

Answer : B ((death of myocytes))

51 A 41-year-old man has had increasing dyspnea for the past week. On physical examination, temperature is 37.3°C, pulse is 85/min, respirations are 20/min, and blood pressure is 150/95 mm Hg. There is dullness to percussion over the lung bases. A chest radiograph shows large bilateral pleural effusions and a normal heart size. Laboratory findings include serum creatinine, 3.1 mg/dL; urea nitrogen, 29 mg/dL; troponin I, 0.1 ng/mL; WBC count, 3760/mm^3; hemoglobin, 11.7 g/dL; and positive ANA and anti–double-stranded DNA antibody test results. Which of the following cardiac lesions is most likely to be present in this patient?

- □ (A) Calcific aortic stenosis
- □ (B) Constrictive pericarditis
- □ (C) Ischemic cardiomyopathy
- □ (D) Libman-Sacks endocarditis
- □ (E) Rheumatic mitral valvulitis
- □ (F) Rhabdomyoma

Answer : D ⇒ anti-DNA antibody always accompanied with SLE

53 A 25-year-old man dies suddenly and unexpectedly. At autopsy his heart is enlarged from right ventricular dilation. The

left ventricle is normal. There is no coronary atherosclerosis. Sectioning of the myocardium shows marked thinning of the right ventricle, and microscopic findings include extensive myocardial fatty infiltration and fibrosis, but no inflammation. Which of the following is the most likely cause for his sudden death?

- □ (A) Cardiomyopathy
- □ (B) Chagas disease
- □ (C) Hypertension
- □ (D) Long QT syndrome
- □ (E) Radiation therapy

Answer: A