

# Valvular heart diseases

**MCQs**

- pt. with prev. hx of rheumatic heart disease history but with new murmur what's the cause?  
**strep. Viridins**

- The best description of the physiological cause of a heart murmur are except:

a-turbulant blood flow

b-increase blood flow through a normal valve.

c-increase blood flow through an abnormal valve.

d-occurs in pregnancy and athletes

- Heart sounds are generated by one of the following:-

a-Opening of the valve

**b-closing of the valve xxx**

c-Partially opening of the valve

d-Partially closing of the valve

e-The valve is in the mid position

- You are assisting for 1 month in a cardiology valvular heart disease clinic, detecting a variety of murmurs and associated features. Match the physical findings given below with the most likely valvular heart disorder Harsh systolic crescendo- decrescendo murmur, with low pulse pressure Select one:

a. Mitral stenosis

b. Tricuspid regurgitation

c. Mitral regurgitation

**d. Aortic stenosis**

e. Aortic regurgitation

- the causative organisms in rheumatic fever is?

a. Echo virus

**b. B Haemolytic Streptococcus group A**

c. Streptococcus viridians d. E coli

e. Staph aureus

- A 72-year-old woman is evaluated in the hospital for a 3-month history of increasing shortness of breath. Although she had previously been physically active, her ambulation is now limited to about 50 feet because of shortness of breath. Medical history is significant for rheumatic fever as a child, diverticulosis with gastrointestinal bleeding that required blood transfusions, hypertension, and hyperlipidemia. Medications are chlorthalidone and atorvastatin. On physical examination, the patient is afebrile, blood pressure is 140/70 mm Hg, pulse rate is 83/min, and respiratory rate is 16/min. Oxygen saturation breathing ambient air is 98%. There is no jugular venous distention. Lungs are clear. Cardiac examination reveals a regular rate and a grade 3/6 apical holosystolic murmur that radiates to the axilla. There is no lower extremity edema. Electrocardiogram shows normal sinus rhythm and evidence of left atrial enlargement. Echocardiogram shows severe eccentric mitral regurgitation with marked calcification of the valve leaflets; left ventricular systolic function is normal. Which of the following is the most appropriate treatment?

- a. Bioprosthetic mitral valve replacement
- b. Mechanical mitral valve replacement ??
- c. Oral vasodilator therapy
- d. Percutaneous mitral valvuloplasty ??
- e. Review in 1 year

- 50 year old was found to have a heart murmur. On examination his BP in the right arm is 160/100 and in the right leg 120/80. CXR showed rib notching in the upper ribs. What's the likely Diagnosis?

a-Coarctation of the aorta xxx

b-Supraaortic aortic stenosis

- The best description of the physiological cause of a heart murmur is:

a-turbulent blood flow

b-increase blood flow through a normal valve.

c-increase blood flow through an abnormal valve. ??

d-occurs in pregnancy and athletes

e-all of the above.

- In Systolic murmurs one of the following is true?

a. Murmur occurs between S1 and S2

b. Murmur occurs after S2

c. Murmur occurs before S1

d. Aortic stenosis is a diastolic murmur

e. Murmur of mitral stenosis is a systolic murmur

- **64-year-old man is evaluated for a 6-week history of intermittent red-colored urine. He notes fatigue but otherwise feels well. Medical history includes hypertension, mechanical mitral valve replacement due to myxomatous degeneration, and calcium oxalate nephrolithiasis. He is a current smoker with a 60-pack-year history. Medications are amlodipine, warfarin, and aspirin. On physical examination, temperature is 37.6 °C (99.7 °F), blood pressure is 112/72 mm Hg, and pulse rate is 98/min. BMI is 30. Examination of the heart reveals a metallic click with a grade 2/6 cardiac systolic murmur that radiates to the axilla. The lungs are clear. There is no costovertebral angle tenderness. The remainder of the examination is unremarkable. Urinalysis is dipstick positive for 3+ blood, 1+ protein, and no leukocyte esterase or nitrites; on microscopic examination, there are no cells or casts, although calcium oxalate crystals are seen. Which of the following is the most likely cause of this patient's clinical findings?**

Select one:

- a. Bladder cancer
- b. Glomerulonephritis
- c. Hemoglobinuria**
- d. Rhabdomyolysis
- e. Nephrolithiasis

Answer: C

This patient most likely has hemoglobinuria, possibly due to intravascular hemolysis from his mechanical mitral valve, whose dysfunction is suggested by the finding of mitral regurgitation on physical examination. Fragmentation hemolysis in this setting manifests as a microangiopathic hemolytic anemia with thrombocytopenia and is accompanied by the release of free hemoglobin into the circulation. Free hemoglobin is partially bound by haptoglobin but may also be filtered into the urine, producing a red color. Heme reacts with peroxidase in the urine dipstick, causing a false-positive result for blood. Hemoglobinuria is distinguished from true hematuria by the absence of erythrocytes on urine microscopy. Similar findings on urinalysis will also occur with the release of myoglobin into the circulation, usually from muscle injury (rhabdomyolysis). Myoglobin is a small molecule relative to hemoglobin, is not bound within the circulation by haptoglobin, and is readily filtered through the kidneys,

resulting in red-colored urine. It also reacts with peroxidase in the urine dipstick indicating blood, although microscopic examination will also be negative for erythrocytes. Bladder cancer is a concern in a patient with a significant smoking history presenting with a finding of red urine. However, the urine color change in bladder cancer is due to bleeding into the urinary tract, and erythrocytes would be seen on urinalysis. Glomerulonephritis may be associated with bleeding into the urine and would be suspected if erythrocytes, particularly acanthocytes (dysmorphic erythrocytes), were found on urine microscopic examination. Proteinuria may also be found in glomerulonephritis, although this patient's proteinuria is relatively mild and may result from tubular damage caused by hemoglobin toxicity. Nephrolithiasis often presents with true hematuria in association with acute flank pain radiating to the ipsilateral groin, with or without costovertebral angle tenderness. Despite his history of nephrolithiasis, this patient does not have suggestive clinical symptoms and has no evidence of erythrocytes on urinalysis, making this an unlikely diagnosis.

Hemoglobinuria is distinguished from true hematuria by the absence of erythrocytes on urine microscopy

- **42-year-old woman is evaluated for a routine outpatient medical assessment. She has a ventricular septal defect at age 6 months. Evaluation was performed early in life and observation was recommended. She has no symptoms and is taking no medications. On physical examination, blood pressure is 100/60 mm Hg, pulse rate is 70/min and regular, and respiration rate is 15/min. BMI is 28. The estimated central venous pressure is normal. The apical impulse is normal. There is no parasternal impulse. S1 and S2 are masked by a loud holosystolic murmur noted at the left lower sternal border. The rest of the examination is unremarkable. An electrocardiogram is normal. The heart size is normal on the chest radiograph. An echocardiogram demonstrates normal left ventricular size and function with an ejection fraction of 60%. A membranous ventricular septal defect is noted with a small left-to-right shunt. The right heart chambers and valve function are normal. The estimated pulmonary artery pressure is normal. Which of the following is the most appropriate management?**
- a. Cardiac catheterization
  - b. Cardiac magnetic resonance (CMR) imaging
  - c. Endocarditis prophylaxis
  - d. Follow-up in 3 to 5 years**
  - e. Stress testing to determine exercise capacity

- Diastolic Murmur are all true except?
  - a. Occures after the S2
  - b. It is divided into an early, mid, and late diastolic murmur
  - c. The murmur of tricuspid regurgitation is a diastolic murmur**
  - d. In aortic regurgitation the murmur is called early diastolic
  - e. Murmur of mitral stenosis is a diastolic murmur
  
- The best description of the physiological cause of a heart murmur is:
  - a-turbulent blood flow
  - b- increase blood flow through a normal valve.
  - c- increase blood flow through an abnormal valve.**
  - d-occurs in pregnancy and athletes
  - e-all of the above.
  
- In evaluation of a murmur all are true except :
  - a- timing either systolic or diastolic.
  - b-duration of the murmur.
  - c-radiation of the murmur.
  - d-location of the maximal intensity
  - e-presence or absence of a click.**
  
- 30-year old man has, on heart auscultation, loud first heart sound, rumbling mid diastolic murmur with opening snap. ONE of the following is most likely diagnosis.
  - a- Pliable (mobile) mitral valve stenosis.\*\*\*\*\***
  - b- (immobile) mitral valve stenosis.
  - c- Mitral valve prolapses.
  - d- Aortic regurgitation
  - e- Mitral regurgitation.
  
- patient is noted to have a crescendo-decrescendo mid-systolic murmur on examination. The murmur is loudest at the left sternal border. The patient is asked to squat, and the murmur decreases in intensity. The patient stands and the murmur increases. Finally, the patient is asked to perform a Valsalva maneuver and the murmur increases in intensity. Which of the following is most likely to be the cause of this murmur? Select one:
  - a. Aortic stenosis
  - b. Chronic mitral regurgitation
  - c. Hypertrophic cardiomyopathy (HOCM)**
  - d. Mitral valve prolapse
  - e. Pulmonic stenosis

- Patient with aortic stenosis frequently develop?

a- Exertional dyspnea and angina

b- Wide pulse pressure

c- Systemic embolization

d- Atrial fibrillation

e- Right ventricular hypertrophy

- One is presentation of hypertrophic cardiomyopathy : sudden death

- Adults AS

- bicuspid aortic valve

- pt with exertional loss of consciousness with crescendo decrescendo murmur?

Aortic stenosis

- In aortic stenosis all are true except:

a. Symptoms occur when aortic valve area is  $\leq 1$  cm<sup>2</sup>.

b. Pressure gradient decreases when LV systolic function declines.

c. Grade 5/6 systolic murmur indicates severe disease.

d. The onset of angina indicates poor prognosis.

e. LV ejection fraction < than 50% is class 1 indication for AVR.

- All are true in Aortic stenosis except?

a. Murmur is ejection systolic

b. Transmitted to the carotid

c. Second heart sound is diminished in intensity

d. Presence of sustained apex

e. Presence of right ventricular heave

- Impaired coronary flow reserve is associated with each of the following conditions except?

a. Severe aortic stenosis

b. Severe systemic hypertension with left ventricular hypertrophy

c. Severe mitral stenosis in the presence of atrial fibrillation

d. A totally occluded coronary artery but with excellent collateral supply from the contralateral coronary artery

e. An isolated 30% diameter stenosis of a coronary artery

- Female with syncopal attacks o 3ndha murmur radiating to the carotids >>  
**aortic stenosis**

- IN idiopathic hypertrophic sub aortic stenosis (IHSS) One is true  
A; it is a type of dilated cardiomyophy  
**B; AN important cause of sudden death in athletes**  
C;Left ventricle is dilated  
D; pulse examination is normal in character  
E:need nitrate for treatment

In idiopathic hypertrophic subaortic stenosis (IHSS), which is now more commonly known as hypertrophic cardiomyopathy (HOCM)

- aortic stenosis poor prognosis : **congestive H F**
- Which of the following is LEAST likely to cause hemoptysis?  
a-Tuberculosis  
b-Acute bronchitis  
c-Pulmonary embolism  
d-Bronchogenic carcinoma  
**e-Aortic stenosis #####**
- Diastolic murmurs occurs in all the following except:  
a-mitral stenosis.  
**b-aortic stenosis xxx**  
c-tricuspid stenosis  
d-aortic regurgitation  
e-pulmonary regurgitation.
- systolic murmurs occurs in all of the following except:  
a-aortic stenosis.  
b-pulmonary stenosis.  
**c-mitral stenosis.**  
d-mitral regurgitation.  
e-aortic regurgitation.

- signs and symptoms of severe aortic stenosis all are true except:

a-angina pectoris

b-syncope

c- heart failure

d- murmur transmitted to the carotid

**e-double apical impulse**

- In Aortic stenosis all are true except:

a) The most Common congenital Anomaly is bicuspid Aortic valve which is about 1-2%.

b) US guidelines do not recommend balloon valvoplasty in adults because of high risk of complications >10%.

c) patients with low cardiac output usually have a small aortic area and small gradient, this can be distinguished by doing Dobutamine stimulation.

d) Degenerative Aortic sclerosis is distinguished from Aortic Stenosis by valvethickening and calcification without obstruction of significant gradient.

**e) In US guidelines severe stenosis valve area is 1-1.5/cm<sup>2</sup> and the mean gradient is 25- 40 mmHg**

**According to US guidelines, severe aortic stenosis is generally defined by a valve area of less than 1 cm<sup>2</sup> and a mean gradient of 40 mmHg or higher.**

- Diastolic Murmur are all true except?

a. Occurs after the S2

b. It is divided into an early, mid, and late diastolic murmur

**c. The murmur of tricuspid regurgitation is a diastolic murmur**

d. In aortic regurgitation the murmur is called early diastolic

e. Murmur of mitral stenosis is a diastolic murmur

- The following statements are true regarding HOCMP except: Select one:

a. Non-dilated LV with systolic anterior motion of the mitral valve.

**b. Tachyarrhythmias are well tolerated in HOCM.**

c. ischemic chest pain in HOCM is multifactorial.

d. Patients with HOCM are usually asymptomatic.

e. Betablockers are important in the management of HOCM

- All increase HOCM except ?

A. Valsalva B. Standing **C. Squatting** D. Exercise E. Nitrate

- In mitral regurgitation. All of the following are true except:
  - a. Mild MR is seen in 80% of normal population.
  - b. The commonest cause of acute MR is acute MI.
  - c. Tachycardia in acute MR is harmful and beta blockers should be used to improve prognosis.
  - d. Myxomatous degeneration is the commonest cause for chronic MR.
  - e. **Both right atrium and left atrium are dilated in chronic MR.**

- All are true in mitral regurgitation except:
  - a) Pansystolic murmur at the apical area
  - b) Transmitted to axilla
  - c) **The murmur may be short ESM**
  - d) Apex is deviated laterally and downwards
  - e) Is common in dilated cardiomyopathy

Mitral regurgitation does not typically present as a short ejection systolic murmur. Instead, it is usually a pansystolic murmur (lasting throughout systole).

- In mitral stenosis one of the following is true Select one:
  - a. The commonest cause is mitral annular calcification.
  - b. Left ventricular dilatation indicates severe disease.
  - c. **Hemoptysis indicates pulmonary hypertension.**
  - d. Longer S2 to opening snap interval indicates severe MS.
  - e. Cardiac catheterization is the gold standard for diagnosis.
- A 66-year-old man has a history of ischemic cardiomyopathy. He undergoes right and left heart catheterization for evaluation of unexplained dyspnea on exertion and an equivocal result on noninvasive cardiac stress testing. Sample tracings from his right and left heart catheterization at rest and during exercise are shown. What abnormality is demonstrated in the pulmonary capillary wedge tracing?

Select one:

- a. Aortic stenosis
- b. Congestive heart failure
- c. Mitral regurgitation
- d. **Mitral stenosis**
- e. Pulmonary arterial hypertension

- A 27 year woman suffers from mitral stenosis and develops atrial fibrillation. She is placed on warfarin treatment. What is the most appropriate target INR range?
  - a- Less than 1.0
  - b- 1.0 -2.0
  - c- 2.0-3.0**
  - d- 3.0-4.0
  - e- More than 5.0
- True regarding mitral stenosis :
  - hemoptysis is due to pulmonary hypertension**
- Wrong about mitral stenosis:
  - a. Atrial fibrillation is associated with presystolic accentuation of the murmur**
  - b. The later the opening snap, the less severe the stenosis**
- What is wrong about mitral stenosis :
  - a-Causes a pansystolic murmur xxx**
  - b-Causes a mid-diastolic murmur
  - c-Most cases are secondary to rheumatic fever.
  - d-May lead to pulmonary congestion
- A 30-year old man has, on heart auscultation, a loud first heart sound, a rumbling mid diastolic murmur with opening snap. ONE of the following is most likely diagnosis.
  - a- Pliable (mobile) mitral valve stenosis.\*\*\*\*\***
  - b- (immobile) mitral valve stenosis.
  - c- Mitral valve prolapses.
  - d- Aortic regurgitation
  - e- Mitral regurgitation.
- You are examining a 63-year old man. You hear a blowing diastolic murmur at the right upper sternal border. What is the probable diagnosis?
  - a-Mitral stenosis
  - b-Mitral regurgitation
  - c-Aortic stenosis
  - d-Aortic regurgitation ####**
  - e-Tricuspid regurgitation

- patient with early diastolic murmur at left sternal area with high volume pulse (water hammer pulse) :  
**Aortic regurgitation**

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# Mini-OSCE

case 1: 48 year old male , on examination , systolic ejection murmur heard on the right upper sternal border , the most likely cause is :

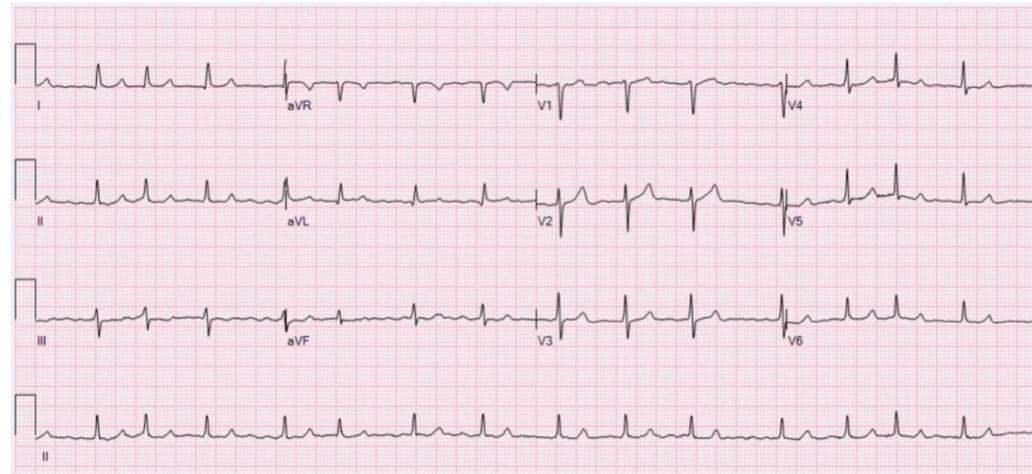
1-senile degenerative stenosis

2-bicuspid aortic valve

3- ventricular wall rupture

4-ventricular pseudoaneurysm

## A case of palpitation



**Q1 \ what is the ECG finding or what is the diagnosis?**

Atrial fibrillation

**Q2 \ mention 2 possible causes?**

1- hyperthyroidism

2- mitral stenosis

**Q3 \ what is the treatment of choice?**

cardioversion & foci ablation