

MCQS TO ACCOMPANY “BALLOON AORTIC VALVULOPLASTY - INDICATIONS, PATIENT ELIGIBILITY, TECHNIQUE AND CONTEMPORARY OUTCOMES”

Question 1

A 79 year old patient is discussed at the heart team meeting. They have had an echocardiogram demonstrating aortic valve calcification with AV_{\max} of 3.2 m/s, mean peak AV gradient of 34 mmHg, and a calculated valve area of 1.2 cm² with moderate to severe LV systolic impairment. Which of the following tests would be most help in determining if the aortic stenosis is truly severe:

- A – Bruce protocol exercise treadmill test
- B – Exercise echocardiogram
- C – Dobutamine stress echocardiogram
- D – Transoesophageal echocardiogram
- E – Cardio-pulmonary exercise test

Answer – C

Explanation:

Dobutamine stress echocardiography is a useful tool for assessing cases of indeterminate aortic stenosis severity. If cardiac reserve is present increased contractility of the LV in stress may prove severe indices on echocardiography.

Although exercise treadmill testing may be used to determine reserve and symptoms, it is not useful to diagnose severe vs moderate AS. The same applies to exercise echocardiography. A transoesophageal echocardiogram will not add any more information regarding flow across the aortic valve where TTE windows are adequate, and a CPET test is not able to determine aortic stenosis severity.

Question 2

A 64 year old male patient with hypertension is discussed at the heart team meeting. He has been diagnosed with severe aortic stenosis on echocardiography with normal LV systolic function, and a coronary angiogram has demonstrated 70% proximal LAD disease with no other lesions. He is symptomatic with breathlessness on exertion impacting his quality of life. What treatment should he be offered?

- A – Transfemoral TAVI

- B – PCI to LAD
- C – BAV
- D – Surgical AVR with CABG
- E – Medical therapy for heart failure

Answer – D

Explanation:

This gentleman on face value presents as low surgical risk for aortic valve replacement and concomitant CABG, and therefore as per European and North American guidelines should be counselled and offered definitive intervention with surgical aortic valve replacement. It is customary to include coronary artery bypass in this situation in case the lesion is of considerable haemodynamic significance. The rationale is that surgery will only be undertaken once and that weaning from bypass is facilitated when ischaemia is lacking

Question 3

Which of the following complications is not a concern during BAV?

- A – Need for permanent pacing
- B – Bleeding requiring blood transfusion
- C – Stroke
- D – Acute aortic regurgitation
- E – Coronary occlusion

Answer – A

Explanation:

Permanent pacing occurs at a rate of 0.3% following BAV and is therefore not a significant clinical concern.

Question 4

A patient undergoes TAVI after discussion at the heart team meeting. A Medtronic CoreValve of the correct size is implanted in a good location just below the aortic annulus but there is severe paravalvular aortic regurgitation. What is the most appropriate management step?

- A – Secure haemostasis and arrange serial echocardiography and follow up in clinic
- B – Immediate implantation of a second TAVI
- C – Monitor invasively for 30 minutes to assess improvement during valve expansion
- D – Post dilatation with a valvuloplasty balloon
- E – Immediate surgical intervention

Answer – D

Explanation:

Paravalvular leak is associated with poorer outcomes after TAVI, and therefore it is not appropriate to leave this alone. The correct answer is to attempt post dilation with a valvuloplasty balloon sized to 2 – 4 mm below the nominal annular dimension of the TAVI. Although emergency implantation of a second valve is occasionally necessary as a bail out option in TAVI complications this should not be necessary if the valve is implanted in a good position. Surgical intervention is not necessary.

Question 5

A patient in clinic is being counselled for a BAV procedure, having been turned down for TAVI and surgical AVR. Which of the following is true?

- A – the aim of BAV is to improve their life expectancy
- B – BAV will preclude them from any further aortic valve intervention
- C – BAV is risk free
- D – the aim of BAV is to improve symptoms
- E – Results from BAV are permanent

Answer – D

Explanation:

BAV has good data for improving valve area and symptoms in the short term, but early restenosis is common. Therefore any results from BAV will not be permanent and patients should understand this, although it is possible for repeat BAVs to be carried or rarely a decision to offer definitive treatment later on. No invasive procedures are without risk, and BAV has not been shown to improve longevity.

Question 6

An 80 year old patient is found to have severe aortic stenosis at pre-operative assessment for a total hip replacement. They have no cardiovascular symptoms and a normal ECG. Which of the following statements is true?

- A – BAV prior to surgery will reduce operative risk
- B – Hip surgery should be postponed until definitive aortic valve intervention

- C – Hip surgery should be cancelled regardless of valve intervention
- D – There is no firm evidence for BAV prior to surgery to reduce operative risk
- E – A coronary angiogram is indicated

Answer – D

Explanation:

There is no definitive evidence that risks of non-cardiac surgery can be improved in asymptomatic patients with aortic stenosis by performing a BAV prior to surgery, hence D is the correct answer. BAV and other interventions for treatment of AS carry their own risks and intervention needs to be considered on its own merits in situations such as this. Surgery should not be postponed or cancelled as this patient may not require definitive aortic valve treatment. A coronary angiogram is not indicated in this asymptomatic patient.