

ANESTHETIC MANAGEMENT OF PATIENT WITH VALVULAR HEART DISEASE

Sawa University

جامعة ساوة الاهلية

College of health and medical techniques

كلية التقنيات الصحية والطبية

Department of Anesthesia

قسم تقنيات التخدير

4th Stage

المرحلة الرابعة

محاضرة رقم 6

نظري

Lecture No. 6

Theoretical

استاذ المادة : د. زهراء زهير تركي

AORTIC STENOSIS

aortic stenosis (as) remains the most common valvular lesion worldwide.

prevalence is estimated at between 9.2% and 16% in people over 75 years of age

causes of aortic stenosis

1-age-related calcification

2-congenital heart abnormalities like bicuspid valve

3- rheumatic fever

PATHOPHYSIOLOGY

Obstruction of left ventricular ejection.

Concentric hypertrophy of left ventricular muscle.

Decreased compliance of left ventricle making it difficult to fill.

INVESTIGATIONS

- 1-ECG –Evidence of LVH/strain, LBBB or RBBB.
- 2-Echo –Evaluation of severity of valvular lesion and LV function
- 3- Cardiac catheterization–Evaluation of LV function, valve gradient and concurrent CAD.
- 4-Exercise testing –Consider to identify and evaluate coexisting CAD.

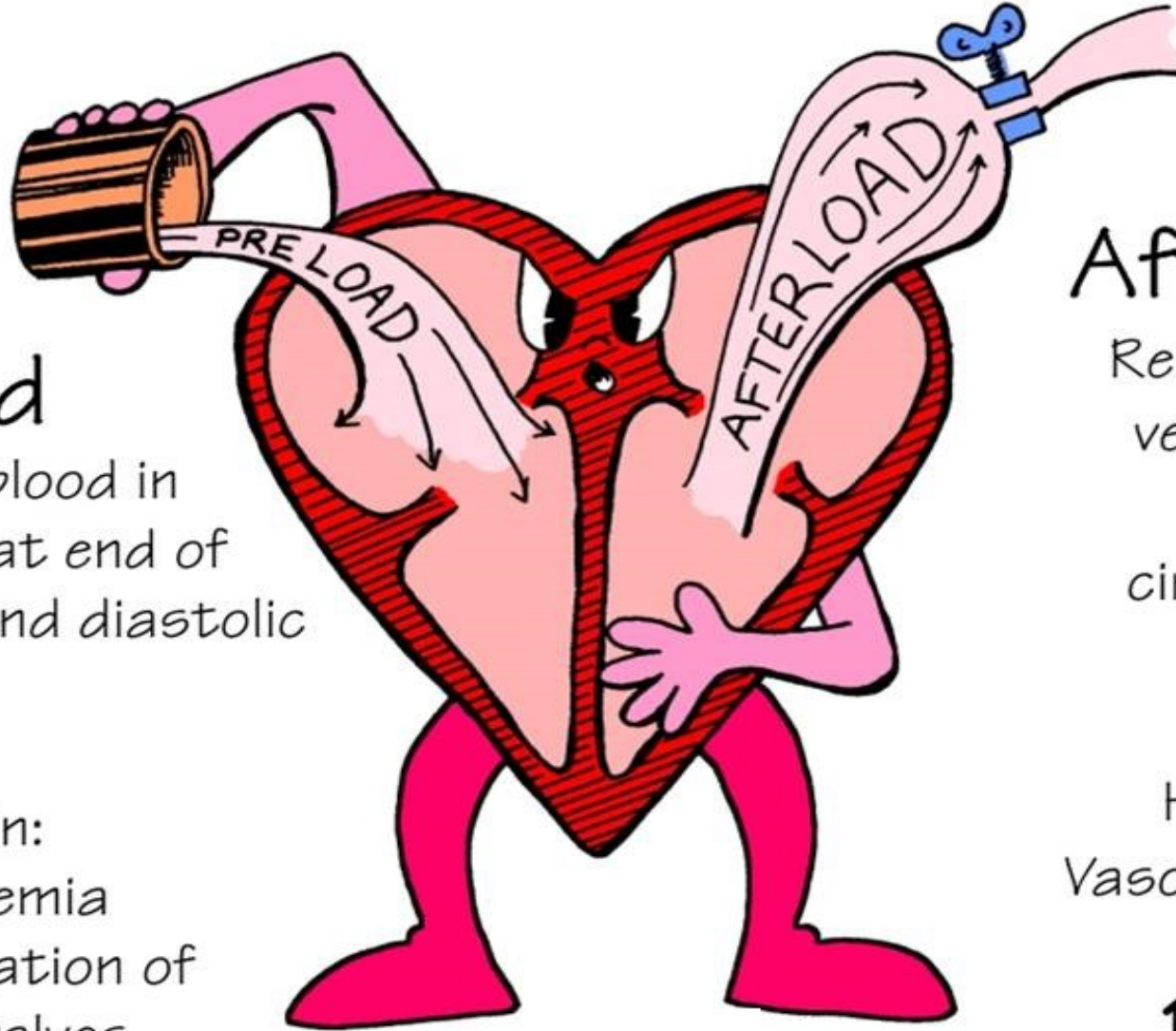
PRELOAD AND AFTERLOAD

Preload

Volume of blood in ventricles at end of diastole (end diastolic pressure)

Increased in:

- Hypervolemia
- Regurgitation of cardiac valves
- Heart Failure



Afterload

Resistance left ventricle must overcome to circulate blood

Increased in:

- Hypertension
- Vasoconstriction

↑ Afterload =
↑ Cardiac workload

OPERATIVE CARE.

Symptomatic patients for elective non-cardiac surgery should have aortic valve replacement first as they are at great risk of sudden death perioperatively (untreated severe symptomatic stenosis has a 50% one year survival).

Asymptomatic patients for major elective surgery associated with marked fluid shifts (thoracic, abdominal, major orthopaedic) with gradients across the valve > 50 mmHg should have valve replacement considered prior to surgery.

Asymptomatic patients for intermediate or minor surgery generally do well if managed carefully.

- 1-(Low) normal heart rate 70-80 bpm
- 2-Maintain sinus rhythm
- 3-Adequate volume loading
- 4-High normal systemic vascular resistance
(Phenylephrine / Metaraminol)
- 5-Mild to moderate AS may tolerate spinal or epidural (epidural preferred)
 - ▣ 6-Spinal and epidural contraindicated in severe AS
 - ▣ 7-High risk of myocardial ischaemia
- 8-Effective analgesia.

Caesarean MANAGEMENT

Caesarean section:

- 1-General anaesthesia with the aid of invasive haemodynamic monitoring. Aggressive maintenance of systemic blood pressure with vasopressors (e.g. phenylephrine).
- 2-Spinal anaesthesia is generally contraindicated.
- 3-There are reports of the successful management of vaginal delivery under carefully introduced and limited epidural analgesia, but this should be restricted to very experienced hands.

PULMONARY STENOSIS

Haemodynamic management: Maintain right ventricular preload, left ventricular afterload and right ventricular contractility.

Avoid hypothermia, hypercarbia, acidosis, hypoxia and high ventilatory pressures.

.Spinal anaesthesia may be associated with an uncontrolled reduction in right ventricular preload and should therefore be avoided in severe cases.

Pregnancy Considerations

Spinal anaesthesia may be associated with an uncontrolled reduction in right ventricular preload and should therefore be avoided in severe cases.

MITRAL STENOSIS

- More than 90% of cases are rheumatic in origin.
- Other causes include severe mitral annular calcification, infective endocarditis inflammatory conditions (SLE and RA),

- **PATHOPHYSIOLOGY**

- Normal ventricular function
- - Obstruction to left atrial emptying decreases cardiac output.
- - Pulmonary congestion from elevations in LA and pulmonary venous pressure
- - Pulmonary hypertension and RVH over time.
-

OPERATIVE CARE

- **Preload** - Enough to maintain flow across stenotic valve so to maintain ventricular feeling, excess fluid may cause pulmonary edema
- **Afterload** – SVR should be maintained.
- ***Avoid increased RV afterload (PVR)**
- **Contractility** - LV usually ok, with longstanding PHTN, RV may be impaired
- **HR** -keep slow to allow time for ventricular filling,
- **Rhythm** - Often atrial fibrillation, control ventricular response
- *Epidural preferred over spinal, phenylephrine preferred over ephedrine

POSTOPERATIVE MANAGEMENT

- 1-Have a low threshold for admission to ICU / HDU
- 2-Meticulous attention must be paid to fluid balance and post operative pain management
- 3-Infusions of vasoconstrictors may be required to maintain haemodynamic Stability

AORTIC REGURGITATION

- characterized by
 - .Chronic volume overload
 - .Ventricular dilatation
 - .Eccentric hypertrophy
- **Preload** - normal to slightly increased to maximize forward cardiac output and maintain BP.
- **Afterload** - Reduction beneficial with anesthetics or vasodilators, increases augment regurgitant flow, avoid sudden increase in afterload
- **Rate** - Modest tachycardia shortens diastolic phase decreases regurgitant fraction and increases cardiac output
- *Most patient tolerate spinal or epidural provided intravascular volume is maintained

MITRAL REGURGITATION

- chronic volume overload similar to AR.
- .Increased ventricular compliance without change in LVEDP
- .May mask signs of impaired ventricular function
- • *same of AR Spinal and epidural well tolerated but avoid bradychardia

Any questions?

*Thank
You*