

Aortic Stenosis – Pediatrics MBBS Final Year Handout

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Introduction to Aortic Stenosis (AS)

Definition: Aortic stenosis is a congenital or acquired condition characterized by narrowing of the aortic valve, which restricts blood flow from the left ventricle to the aorta and subsequently to the rest of the body.

Epidemiology: It accounts for approximately 3-6% of all congenital heart defects in children.

1. Types of Aortic Stenosis

| Type | Cause | Mechanism / Features | Associations |
|-------------------------|---|--|-------------------|
| Valvular (most common) | Congenital malformation, often bicuspid valve | Stiff or fused leaflets restrict opening | - |
| Subvalvular (Subaortic) | Membrane or muscular ridge below valve | Obstruction just below valve | - |
| Supravalvular | Narrowing above valve | Obstruction above valve | Williams syndrome |

2. Clinical Manifestations

Symptoms: Mild cases may be asymptomatic; severe cases present with fatigue, exertional dyspnea, chest pain, syncope, failure to thrive.

Physical Examination: Systolic ejection murmur (right upper sternal border, radiates to neck), ejection click, weak/delayed pulse in severe cases.

3. Diagnosis

Echocardiogram: Gold standard; shows valve anatomy, pressure gradient.

ECG: Left ventricular hypertrophy.

Chest X-ray: LV enlargement, post-stenotic dilatation.

Cardiac Catheterization: Measures exact pressure gradient.

4. Treatment

Medical: Beta-blockers, calcium channel blockers, activity restriction.

Interventional: Balloon valvuloplasty in pediatric cases.

Surgical: Aortic valvotomy, Ross procedure, valve replacement.

5. Long-Term Follow-Up

Growth monitoring, periodic echocardiograms, surgical follow-up for valve function and complications.

6. Prognosis

Mild cases: Good outcomes.

Severe cases: Risk of heart failure or sudden death if untreated. Timely surgery improves survival.

Summary

Aortic stenosis in pediatric patients can range from mild to severe. Early diagnosis and appropriate management improve outcomes.