

Chronic Rheumatic Heart Disease

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The diagnosis of heart disease must be

* Etiological: → (Congenital - Rheumatic)

* Anatomical: → (VSD - TOF - MR - MS)

* Functional: → HF {decompensated}

OR

no HF {compensated}

* Complication: →

rheumatic activity - infective endocarditis - PH -
arrhythmia - chest infection

RHEUMATIC HEART DISEASE

- Occurs in **severe** cardiac involvement during initial or recurrent attacks of ARF

- Left - sided heart valves are most often affected, (**mitral** followed by the **aortic** valves)
- Mitral regurge is the commonest lesion in children and adolescent with RHD

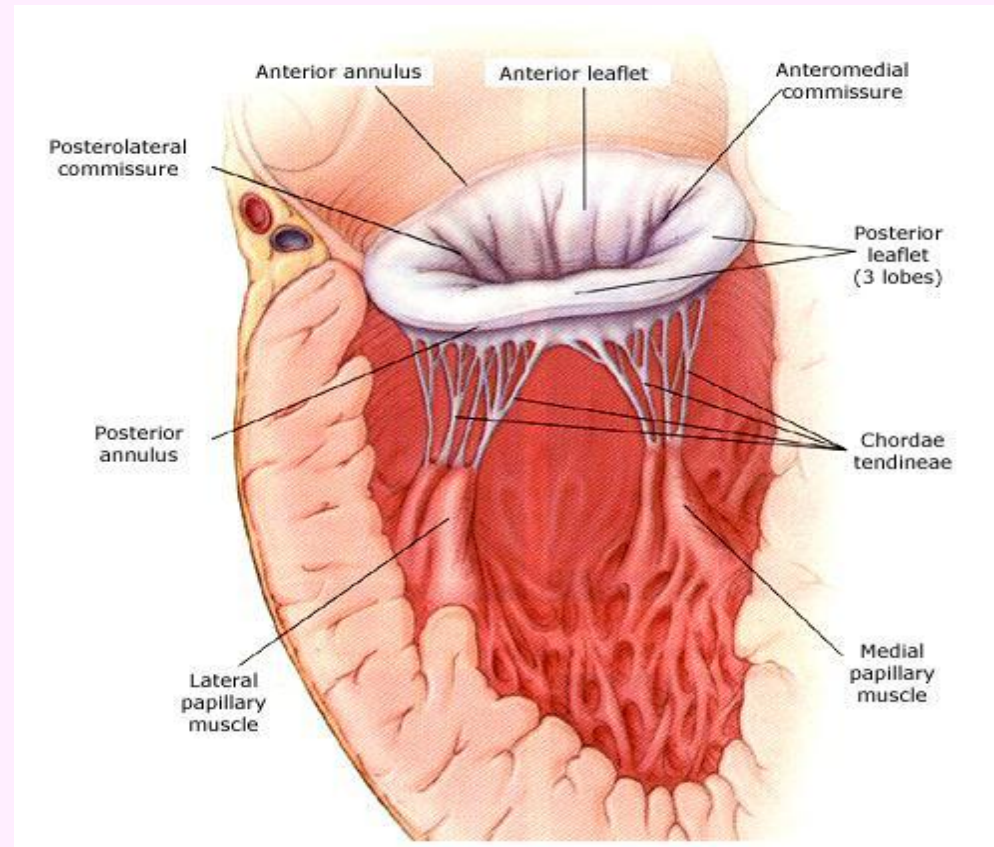


MITRAL REGURGE

(MR, Insufficiency, Regurgitation, Incompetence)

The mitral valve consists of:

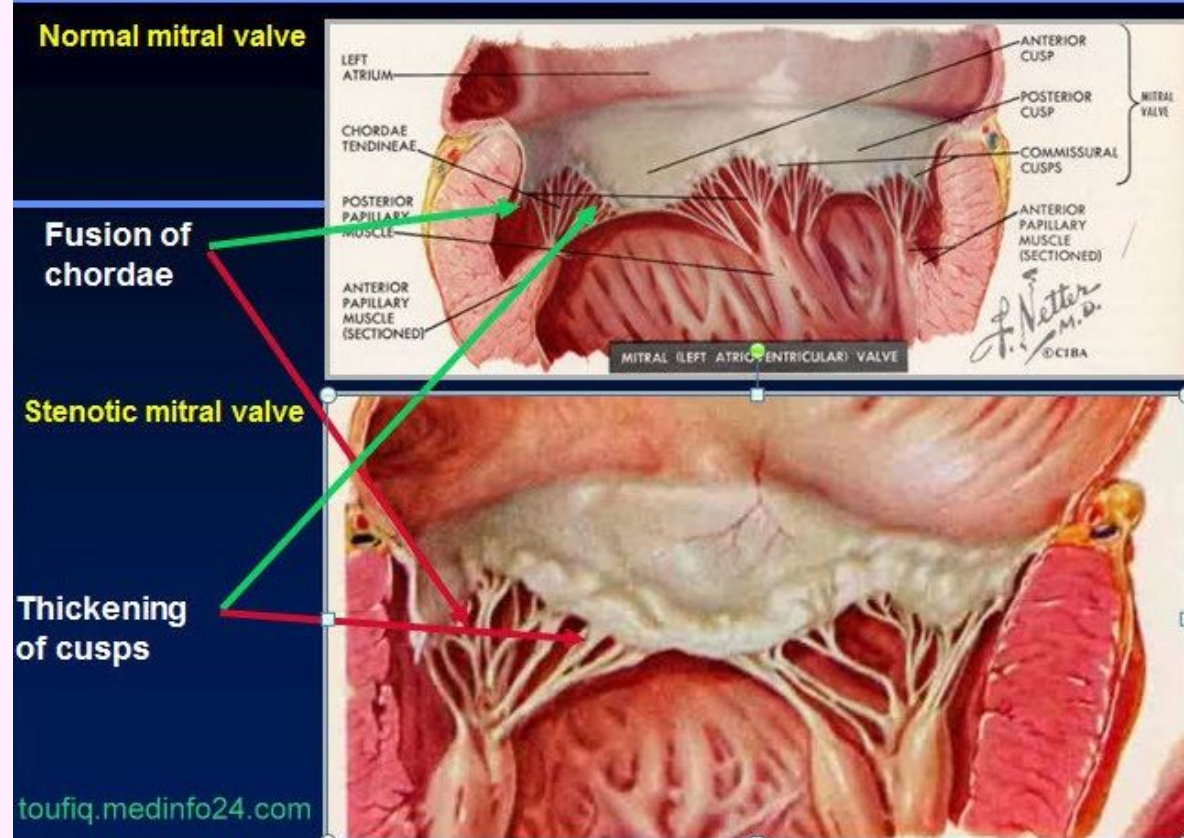
- an annulus
- 2 leaflets
(anterior & posterior)
- chordae tendinea
- 2 papillary muscles



Pathophysiology

Healing of ARF results in

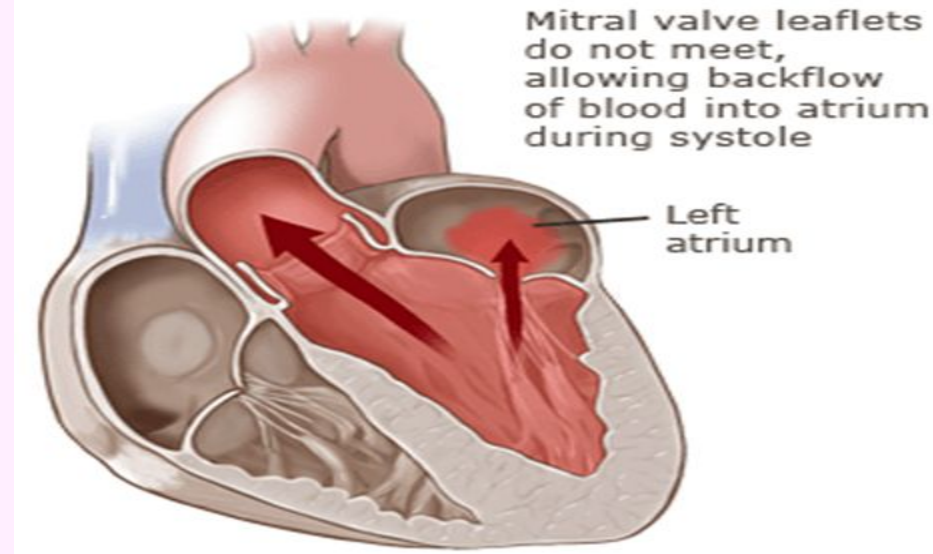
- Fibrosis & contracture of leaflets
- Shortening & thickening of chordae tendinea.
- Leaflets cannot coapt and separated
- LA and LV volume overload and enlargement.
- Pulmonary venous congestion, PH, RVH



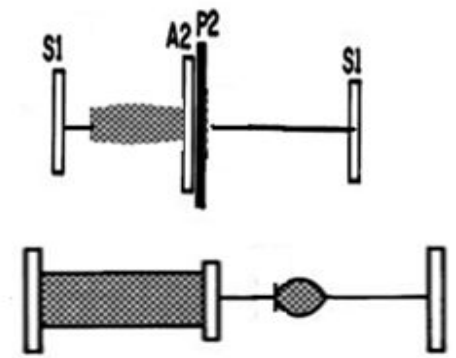
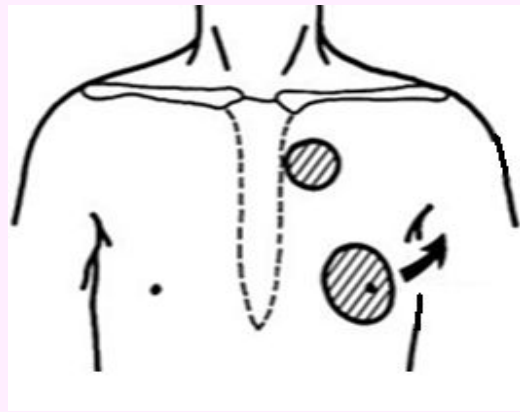
Clinical Manifestations:

Symptoms

- Mild MR → no symptoms
 - Severe MR → Symptoms of HF, pulmonary congestion, pulmonary edema
- dyspnea - orthopnea - paroxysmal nocturnal dyspnea



Signs:

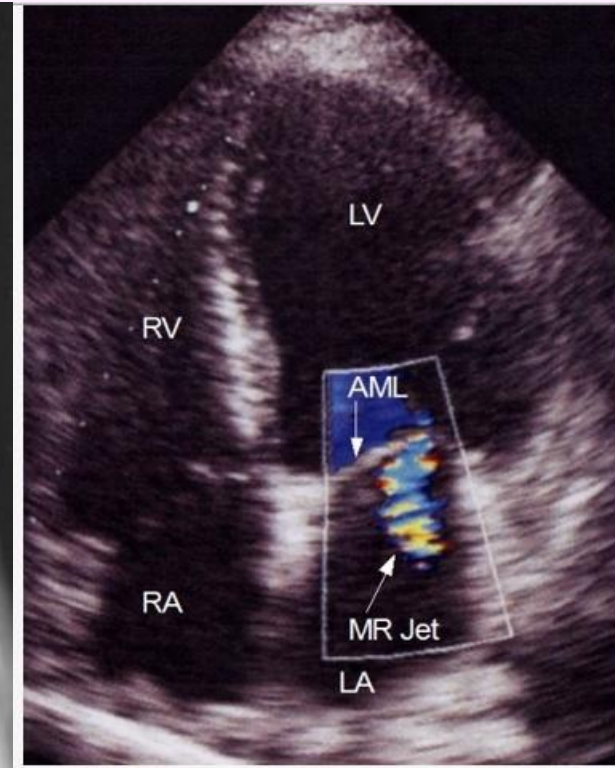


- ❑ **Apex** → (LV apex), shifted **downward**, localized, forcible, hyperdynamic (ill sustained) with **systolic thrill**.
- ❑ **S1** is usually **normal**
- ❑ **S2** is usually **normal** except in PH
- ❑ **Pansystolic murmur** maximal intensity at the apex, radiating to the axilla.
- ❑ **Short middiastolic murmur** over the apex may be heard (functional MS)
- ❑ **Ejection systolic murmur** on 2nd Lt ics (PH)

Mitral regurge CXR



Mitral regurge Echocardiography



Mitral regurgitation jet by color Doppler echo

Differential Diagnosis of MR

1- VSD:

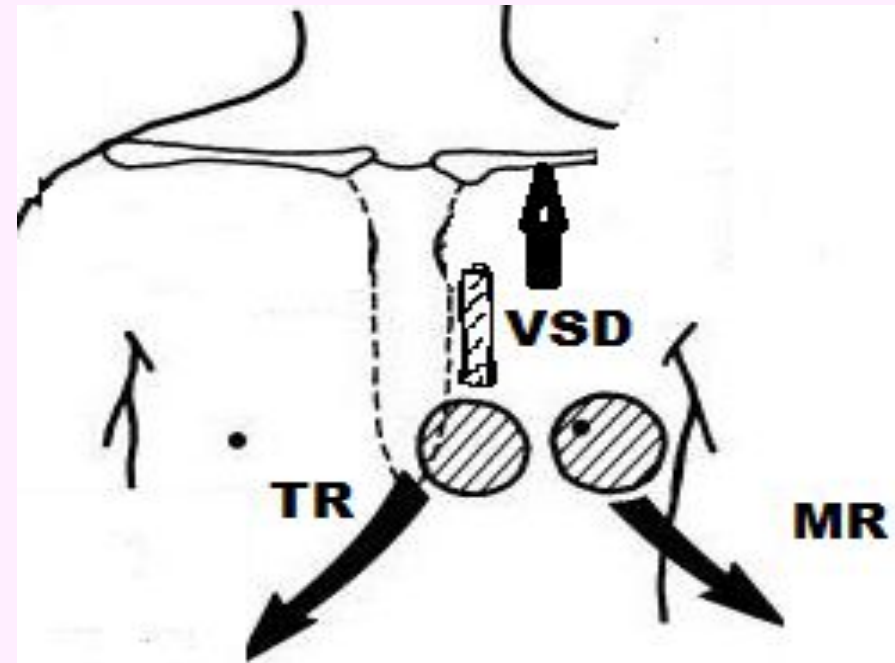
- maximal intensity over the 3rd & 4th left intercostal spaces
- propagated in fan manner

2- Tricuspid regurge:

- maximal intensity on lower left sternal border
- increases in intensity during inspiration.

3- Mitral regurge of Carditis:

- maximal intensity on the apex
- soft, musical, not associated with thrill, changeable



Management

- **Prophylaxis**

- Against rheumatic recurrences (LONG ACTING PENECILLIN)

- Against infective endocarditis

- **Medical treatment of**

- heart failure

- arrhythmia

- infective endocarditis

- Captoprile (After load reducing agent)

- **Surgical treatment** (Annuloplasty or valve replacement) is indicated in severe mitral regurge with:

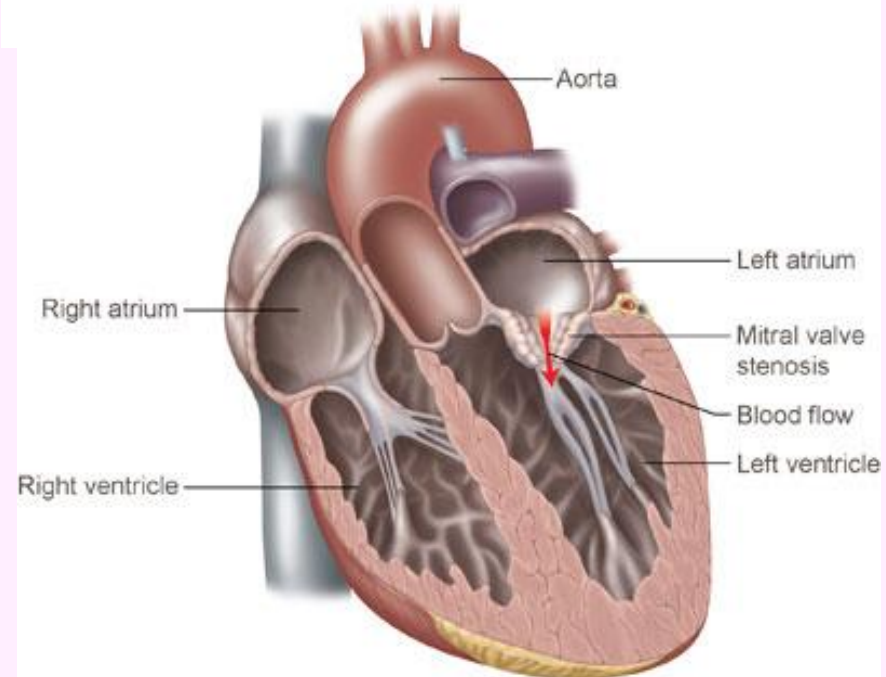
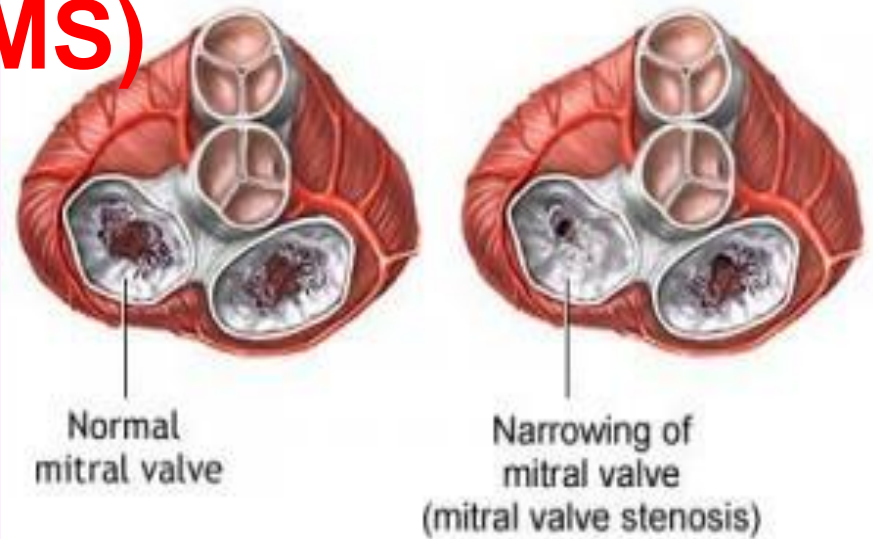
- Recurrent heart failure

- cardiomegaly with pulmonary hypertension.

MITRAL STENOSIS (MS)

Pathophysiology

- Thickening of valve leaflets
- Fusion of commissures
- Shortening & thickening of chordae tendineae.
- Funnel shaped valve apparatus → marked obstruction to blood flow from LA to LV
- LA enlargement (**Not LV**), pulmonary venous congestion, PH, RV & RA dilation
- Right side HF



Clinical manifestations:

The clinical course depends on the severity of MS.

Symptoms:

- Dyspnea on exertion.
- Orthopnea & paroxysmal nocturnal dyspnea.
- Poor growth and development.
- Tachycardia and atrial fibrillation.
- Congestive heart failure may be present.



Signs

□ Signs of **RV** hypertrophy:

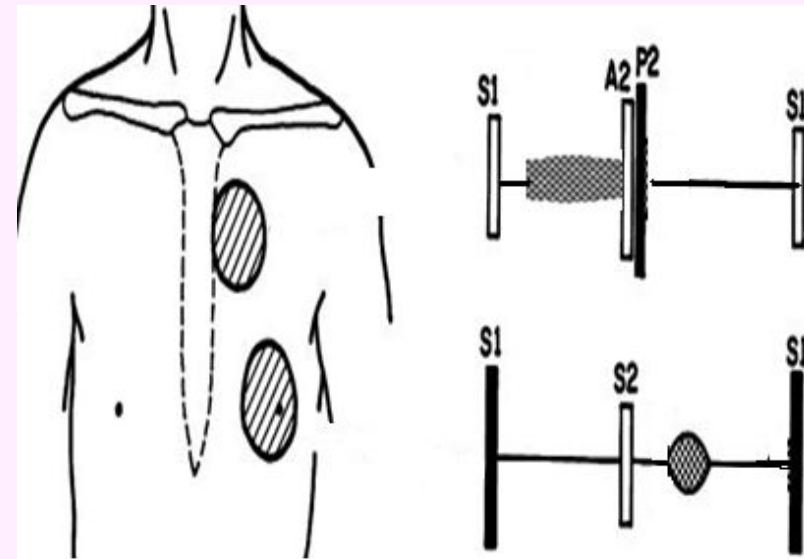
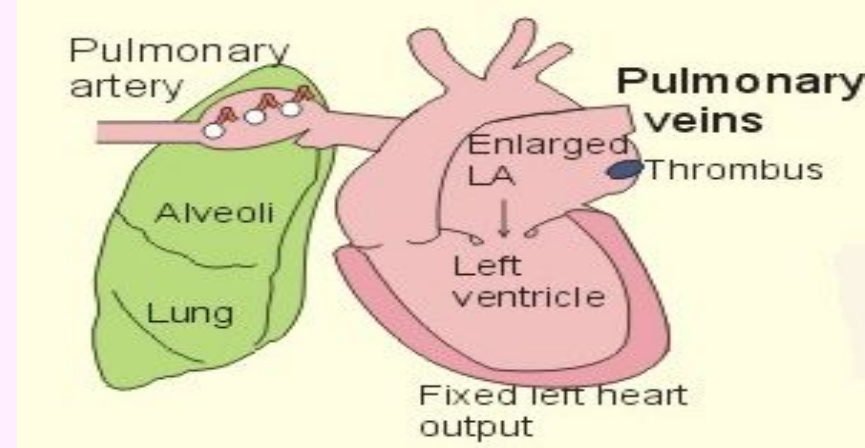
a- The apex is diffuse and shifted outward (RV apex), diastolic thrill

b- Left parasternal pulsations

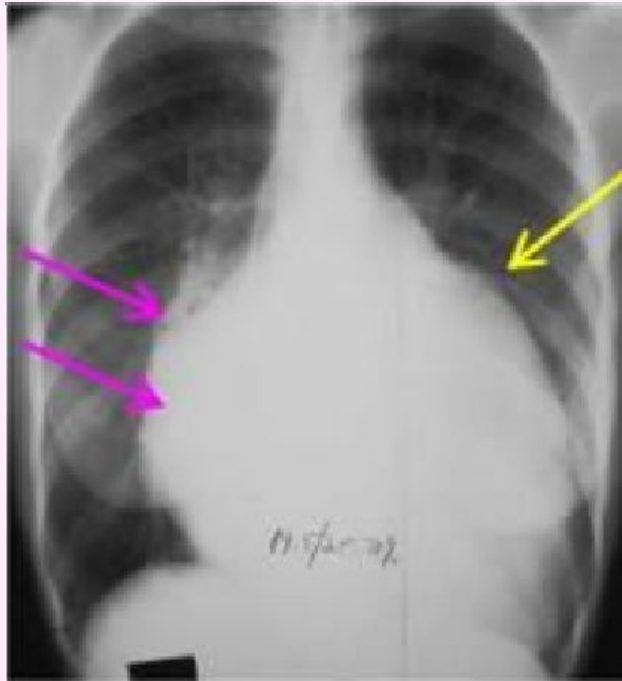
c- Epigastric pulsations

□ **loud S1**

□ Apical, rumbling **mid-diastolic murmur.**



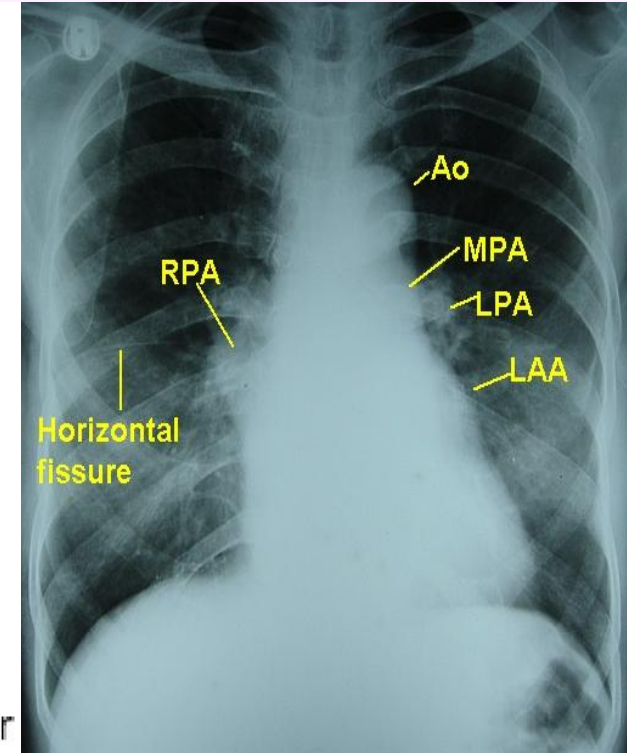
Mitral stenosis CXR



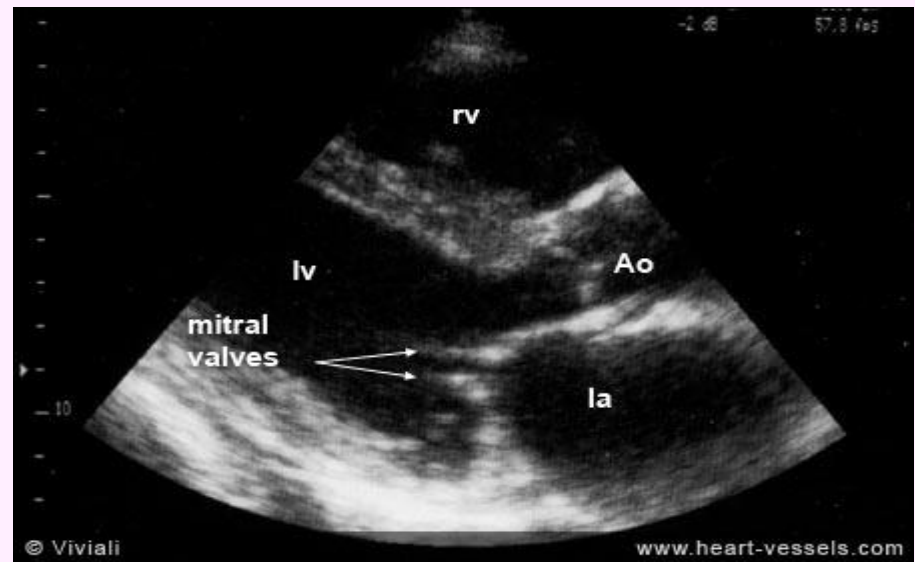
Right atrial enlargement
(from tricuspid regurgitation)
Enlarged left atrial appendage
(from mitral stenosis)



Straightening of left heart border



Mitral stenosis echo



Differential Diagnosis of MS

- **Mitral flow murmur (functional MS)**

associated with large VSD, PDA, MR, AR (**Austin flint** murmur)

- Normal S1
- No presystolic accentuation or opening snap
- Original lesion

- **Carditis (Carey Coombs murmur).**

- Soft , low pitched
- Changeable
- Not associated with thrill.
- Normal or muffled S1

Management:

- **Prophylaxis**

- Against rheumatic recurrences (LONG ACTING PENEICILLIN)

- Against infective endocarditis

- **Medical treatment:**

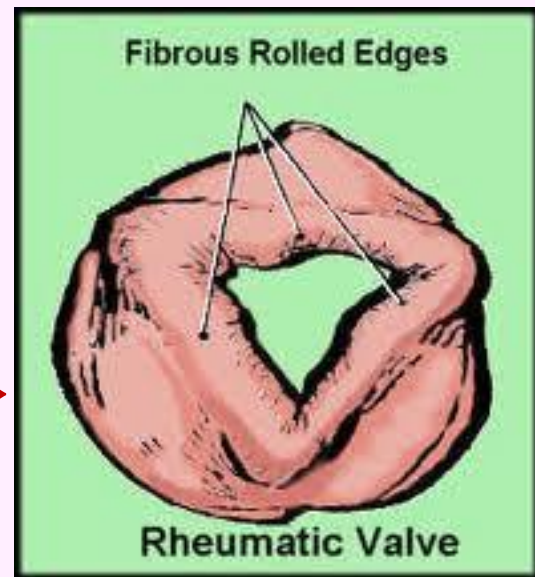
Heart failure and atrial fibrillation (AF).

- **Surgical or balloon trans-catheter valvotomy**

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Combined MS and MR

- Dilatation, scarring and narrowing → stenosis & leakage
- Obstruction and leakage of mitral valve → LA , RV & LV hypertrophy
- LV enlargement is going with MR and against pure MS
- RV enlargement is going with MS and unusual with MR



Which of the following pathological change occur in rheumatic mitral stenosis ?

- (1) Increased left atrial pressure
- (2) Left atrium dilatation
- (3) Left ventricular hypertrophy
- (4) Left ventricular hypertrophy
- (5) Embolization of clots

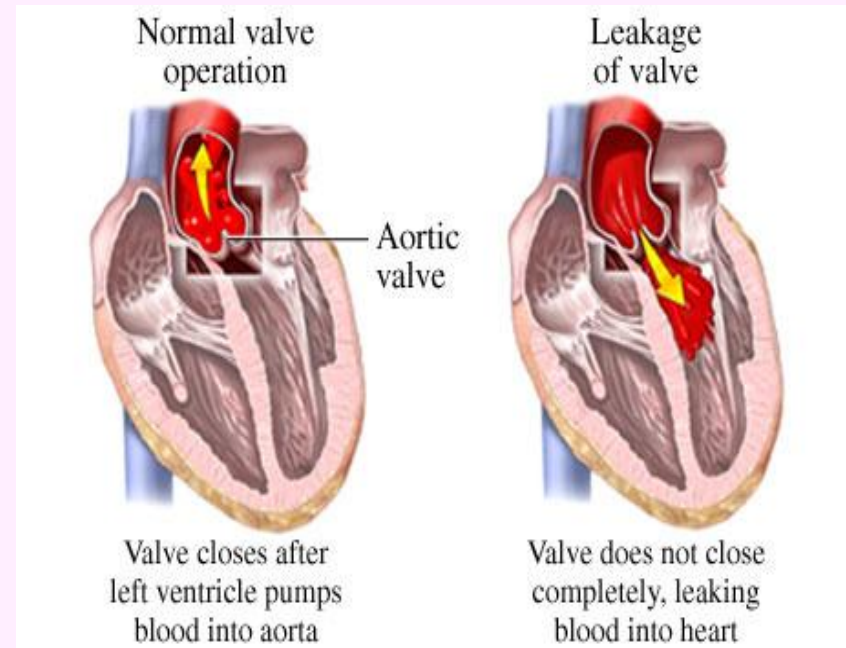
AORTIC REGURGE

(AR, Insufficiency, Regurgitation, Incompetence)

- Rheumatic AR is the result of fibrosis and contracture of the aortic valve structure

- Hemodynamically
AR → LV volume overload

- Rheumatic AR is almost always associated with mitral valve disease.



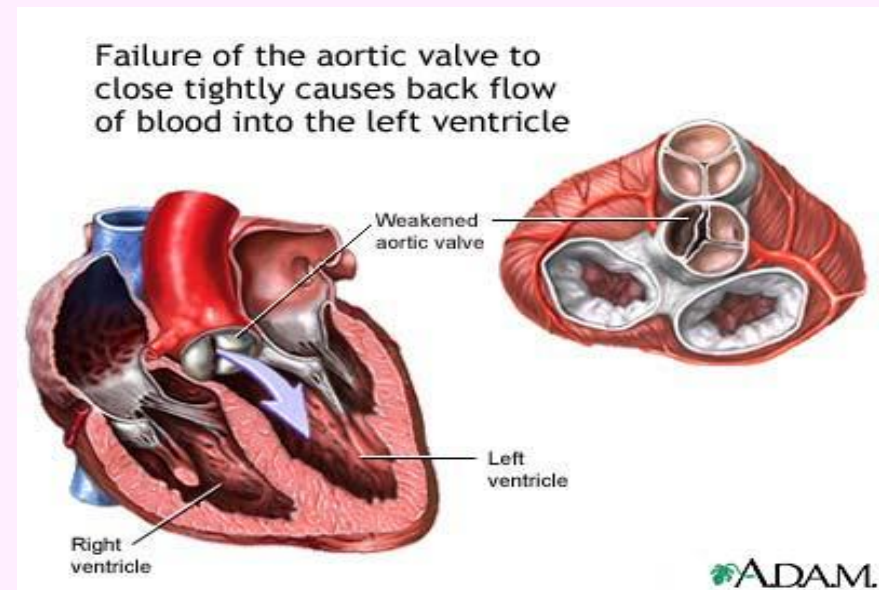
Clinical manifestations:

Symptoms

Depend on the severity.

In moderate and severe cases:

- Effort intolerance, palpitation, dyspnea, orthopnea & paroxysmal nocturnal dyspnea, excessive sweating.
- Manifestations of pulmonary congestion and edema.



Signs

The rapid run off of the blood from aorta during diastole causes the signs of hyperdynamic circulation:



- The pulse is collapsing (water hammer)
- BP: wide pulse pressure (high systolic & low diastole)
- Corrigan's sign prominent carotid pulsation in the neck.
- Capillary pulsation is visible (alternative systolic flushing and diastolic blanching as pressure is applied to finger nails)
- Pistol shots heard over the femoral arteries due opening of collapsed arteries during systole
- Duroziez's murmur: a systolic and diastolic murmur detected by applying mild pressure by the stethoscope over the femoral artery.
- Musset's sign: Head movement in time with heart beat.

* Manifestations of **LV enlargement**.

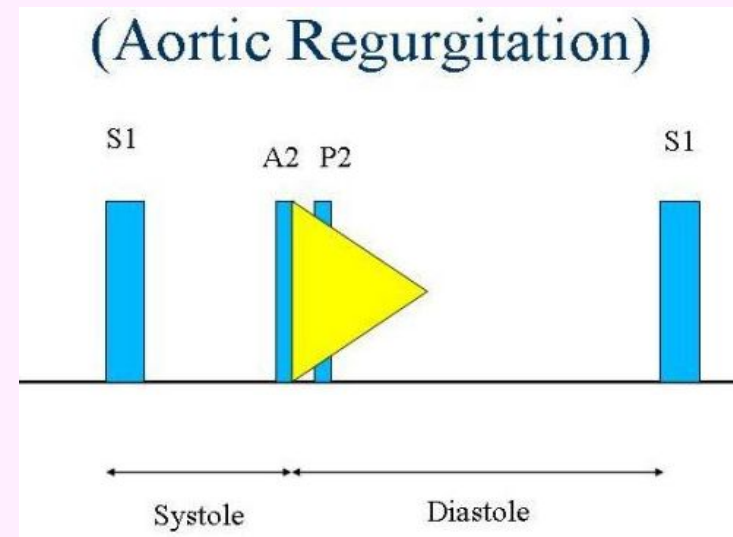
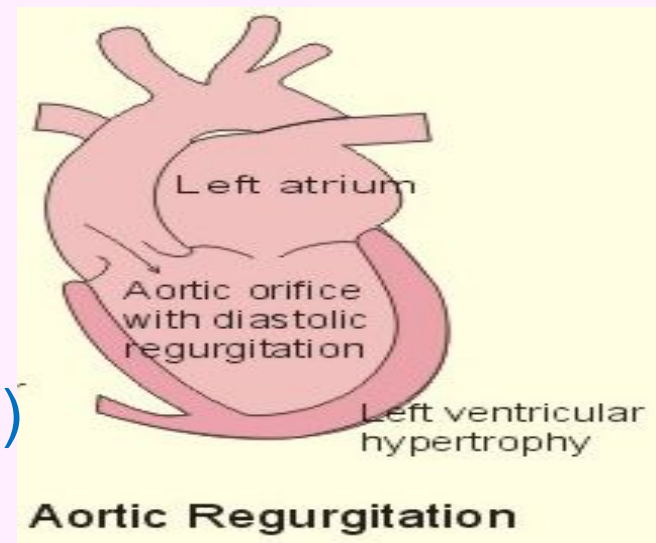
- The apex is shifted downward, forcible, localized and hyperdynamic (ill sustained)
- The S1 & S2 are normal

* **Early diastolic murmur**

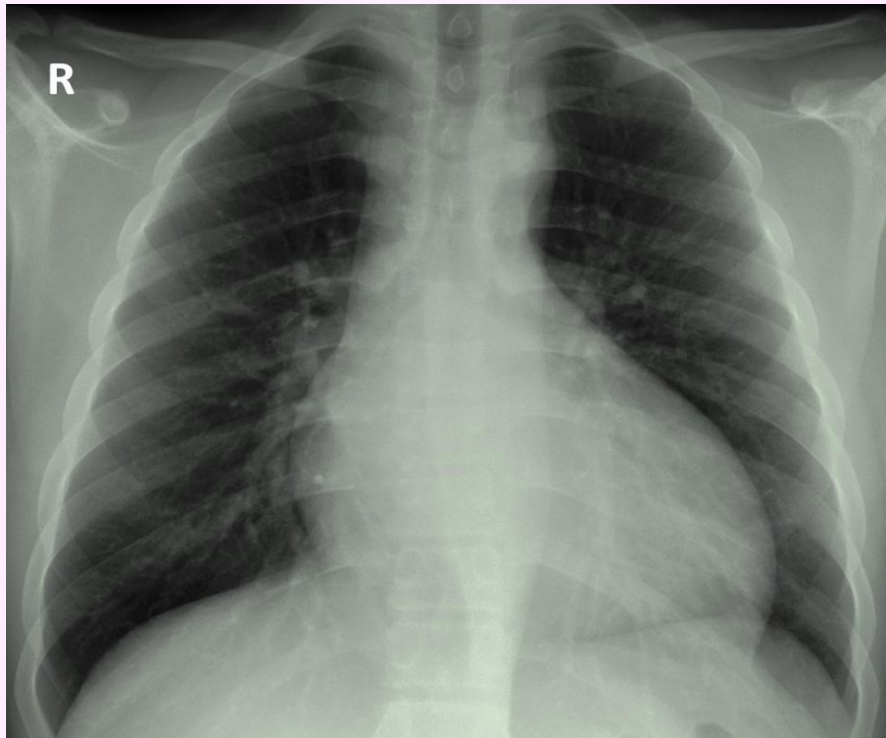
begins immediately after the S2. maximum intensity at the 2nd aortic area, the patient sitting and leaning forward & the breath held in expiration.

* **Austin flint murmur**

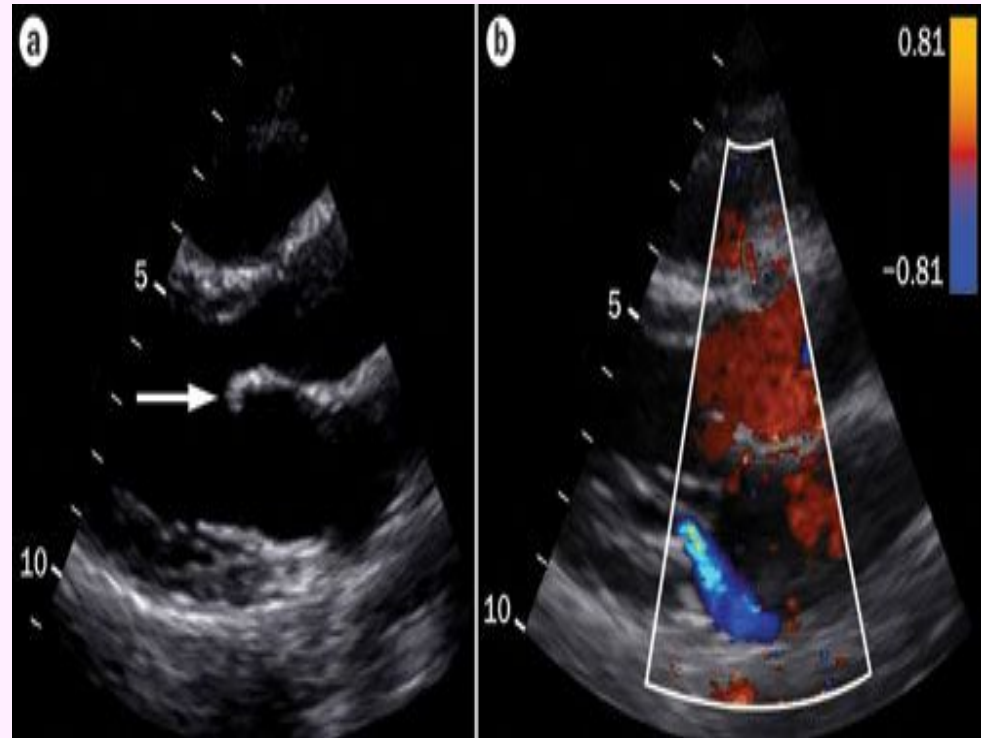
Apical (mid diastolic), rumbling in character (functional mitral stenosis)



Aortic regurge CXR



Aortic regurge Echocardiography



Management

- **Prophylaxis**

- Against rheumatic recurrences (LONG ACTING PENECILLIN)

- Against infective endocarditis

- **Surgery:**

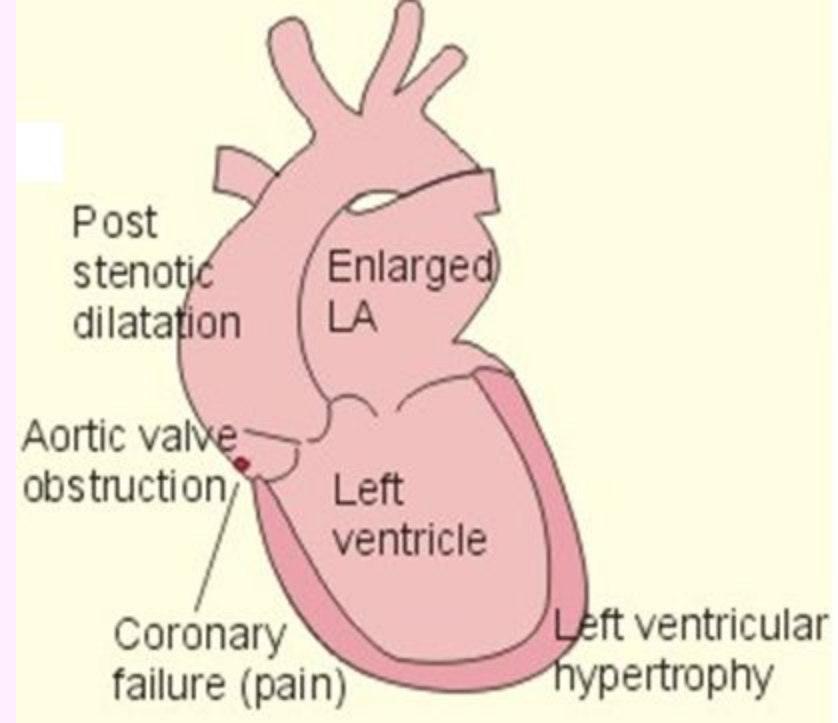
- Aortic valve replacement. It could be recommended at earlier stages of the disease.

AORTIC STENOSIS



- Commissural adhesions occur slowly and progressive → narrowing and calcification of the orifice leads to significant aortic stenosis.
- Obstruction of LV emptying results in LV hypertrophy.

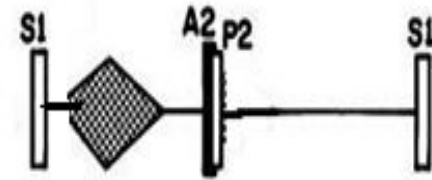
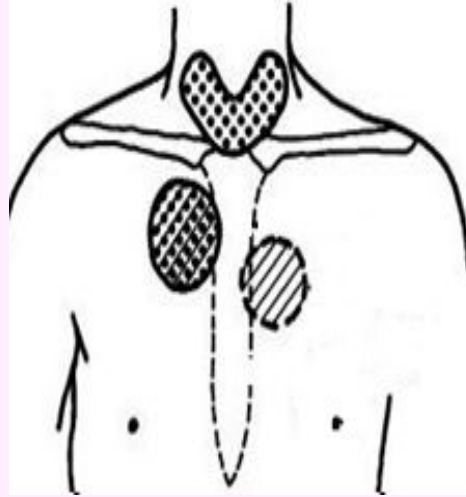
Clinical manifestations:
Symptoms:



In cases with severe stenosis:

Chest pain, exercise intolerance, dyspnea, syncope.

Signs

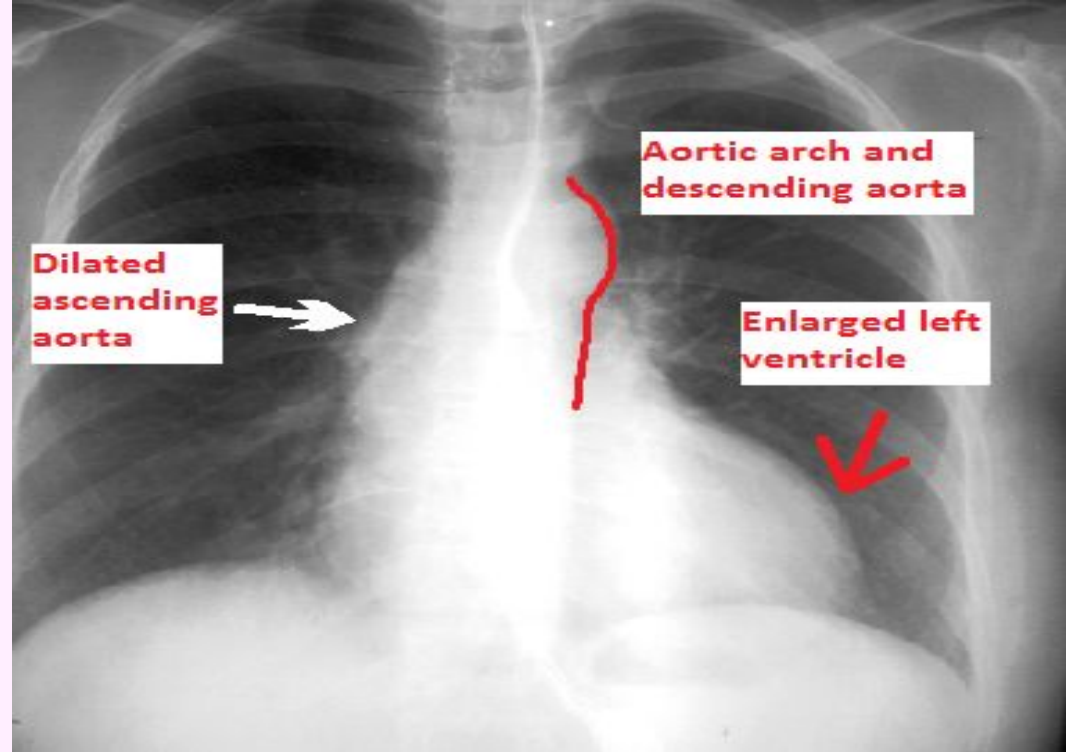


- **The apex:** Localized, forceful & sustained (pressure overload).
- Systolic **thrill** is common on Rt sternal border radiates to the neck.
- Normal S1
- Normal or single S2

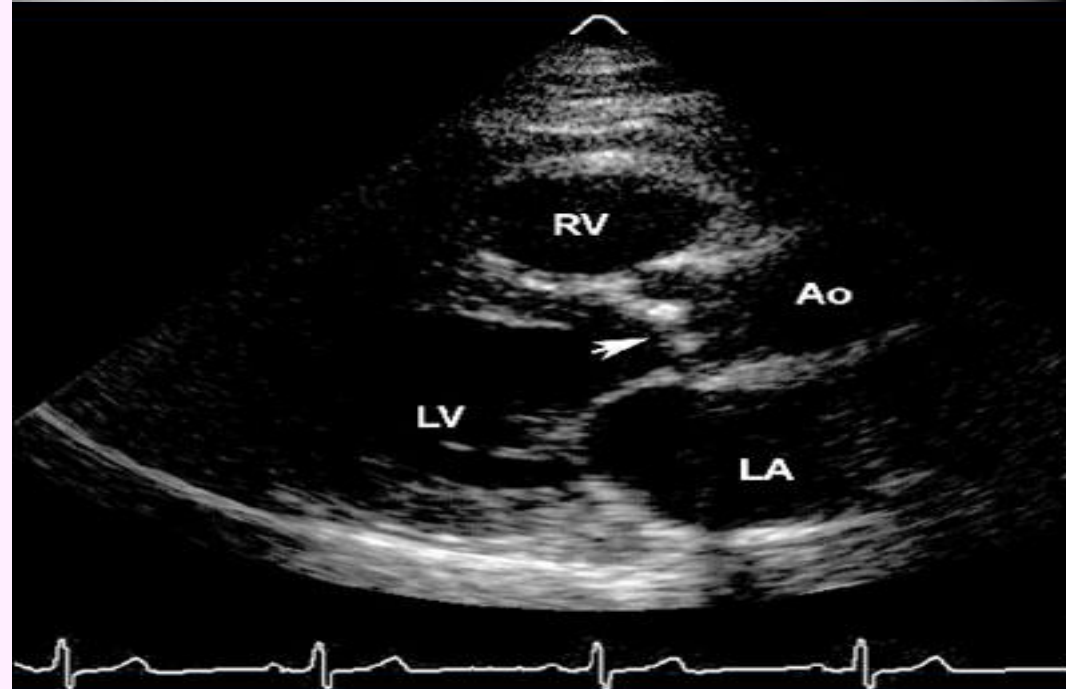
Beyond childhood, scarring & calcification decrease mobility of the valve and thus the intensity of aortic component decreases (single)

- **Ejection systolic murmur** maximally on 2nd Rt or 3rd Lt ics radiates to the neck.

Aortic stenosis CXR



Aortic stenosis
Echocardiography
shows morphology of
the valve and degree
of stenosis.



Management

- Against rheumatic recurrences (LONG ACTING PENECILLIN)
- Against infective endocarditis
- Surgical intervention by valve replacement.
- Trans-catheter balloon dilatation is considered in some cases.

A case with dilated left ventricle and normal size of the other chamber. The most likely diagnosis is :

- (1) mitral stenosis
- (2) mitral regurgitation
- (3) aortic stenosis
- (4) aortic regurgitation

8 year old child with history of rheumatic fever and pansystolic murmur of mitral regurge. What is your management

- (1) prophylaxis against infective endocarditis when indicated
- (2) long acting penicillin every 3 weeks
- (3) salicylates 70 mg/kg for 6 weeks
- (4) Both 1 and 2
- (5) All 1, 2 and 3

THANK

YOU!