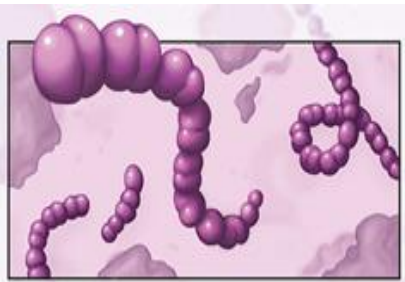




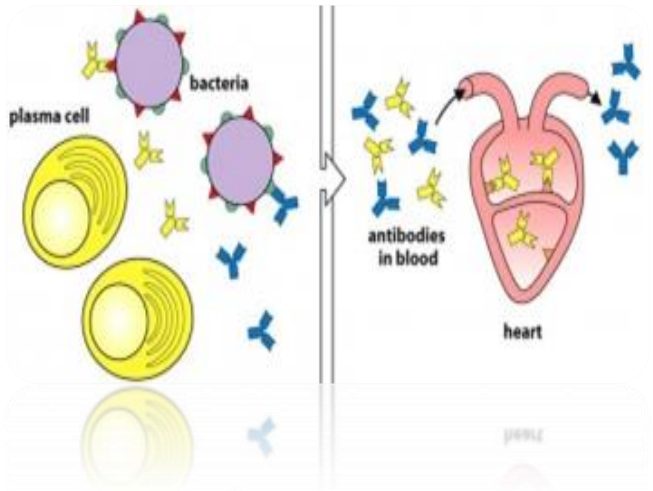
# ***Rheumatic Mitral Stenosis from Basic to Invasive***

**Koren Ofir, MD, FICA**

# Acute Rheumatic Fever



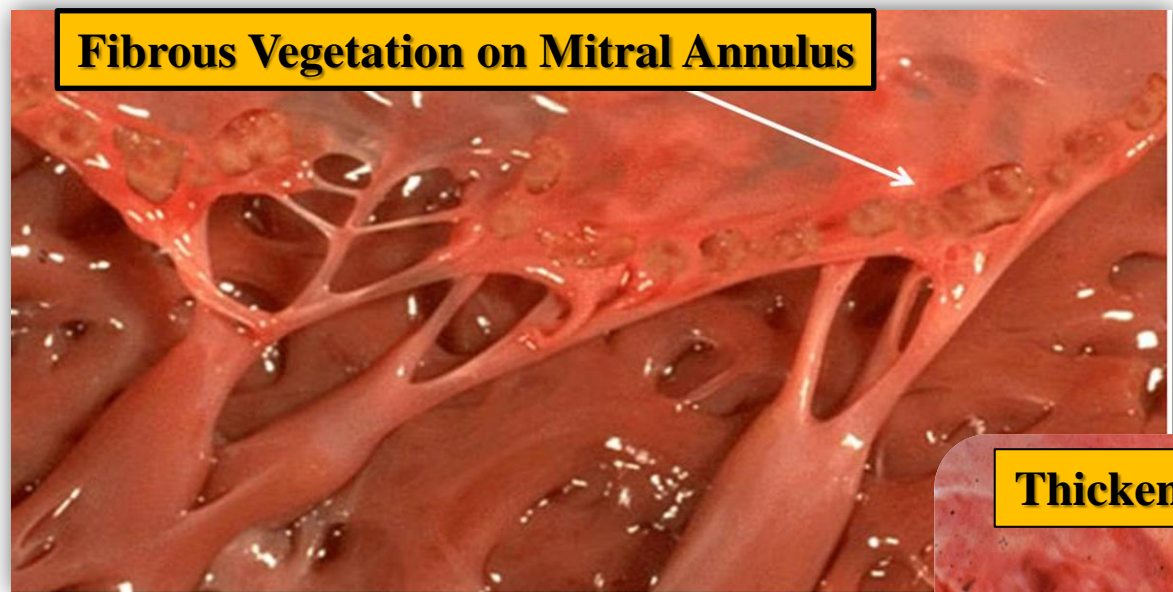
*Streptococcus pyogenes*



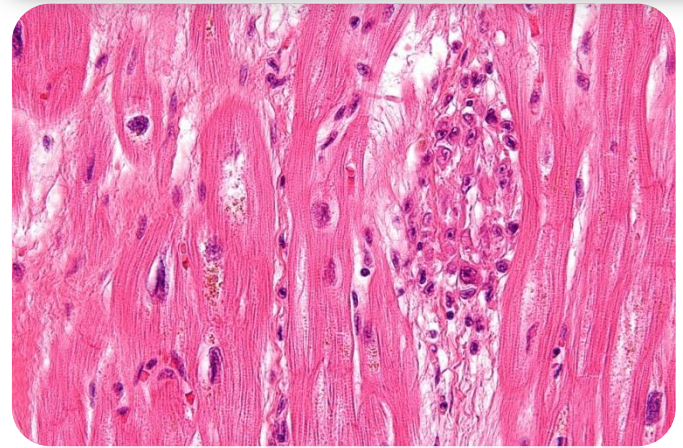
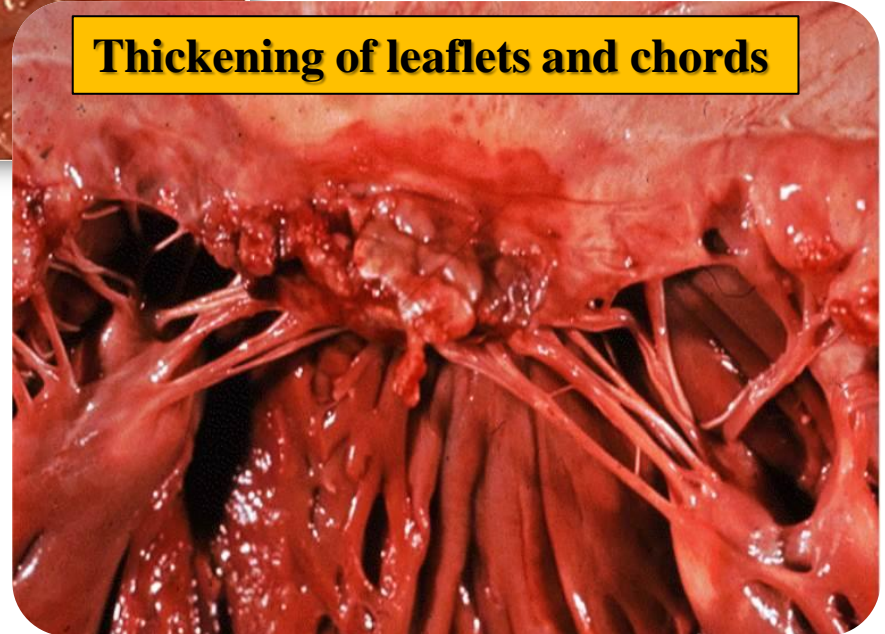
Typical Age – 5-14y

# Heart involvement in ARF

**Fibrous Vegetation on Mitral Annulus**



**Thickening of leaflets and chords**



**Aschoff Bodies**



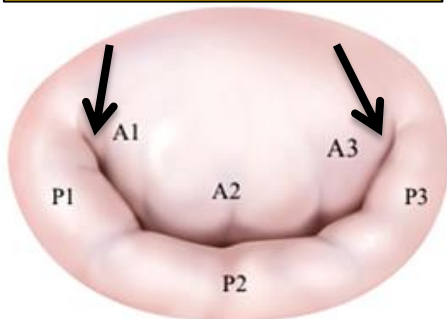
## *Notes to remember*

- ❖ Only **3%** of Untreated GAS infection may Developed ARF
  - ❖ Malnourishment
  - ❖ Poor Hygiene
  - ❖ Genetic Predisposition
  - ❖ Endemic Regions
- ❖ Acute Carditis developed in **50%** of ARF - Usually in the **1<sup>st</sup>** month
- ❖ Chronic Rheumatic Heart disease may occur:
  - ❖ Few years to >20years
  - ❖ Mostly in Female (2/3)
  - ❖ After repeated ARF attacks or Even after single attack

# Chronic Rheumatic Heart Disease

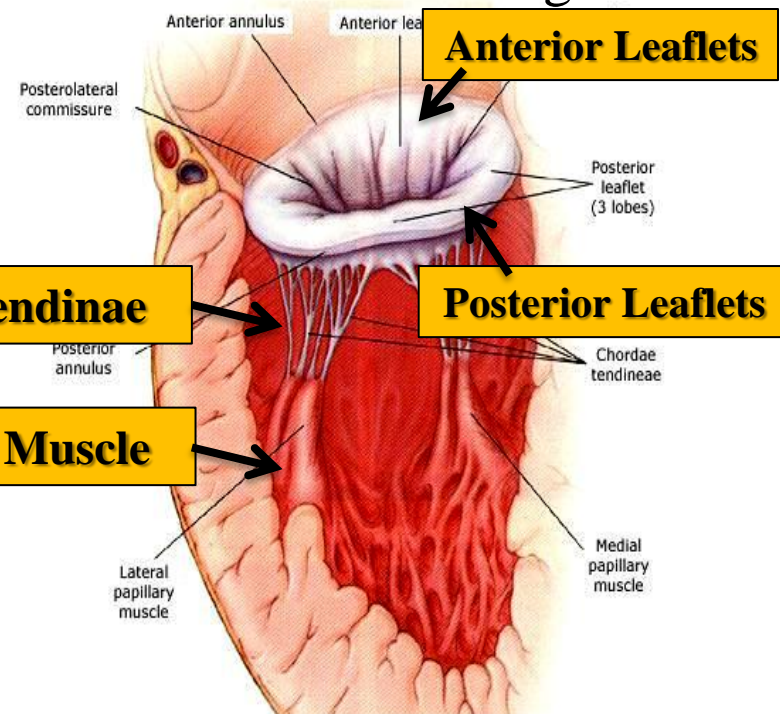
- ❖ Valve Involvement
  - ❖ Isolated MS ~25%
  - ❖ MS & MR ~ 40%
  - ❖ Multivalve ~38% (AV ~35%. TV ~6%, PV~ Rarely)
- ❖ RHD extend beyond Heart Valves into Sub-Valvular areas leading:
  - ❖ Thickening at leaflet edges
  - ❖ Fusion of commissures
  - ❖ Chordal shortening and fusion

**Commissures**



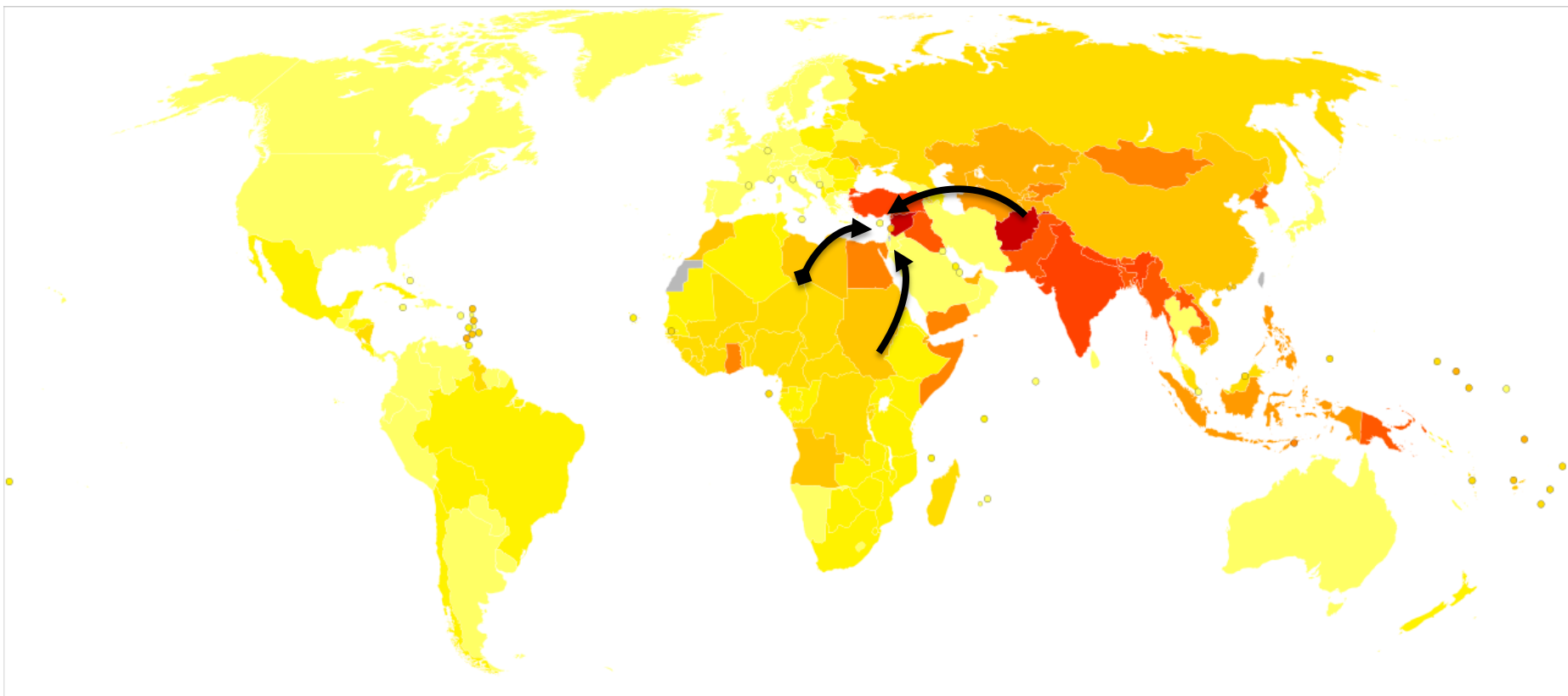
**Chordae Tendinae**

**Papillary Muscle**



## Epidemiology

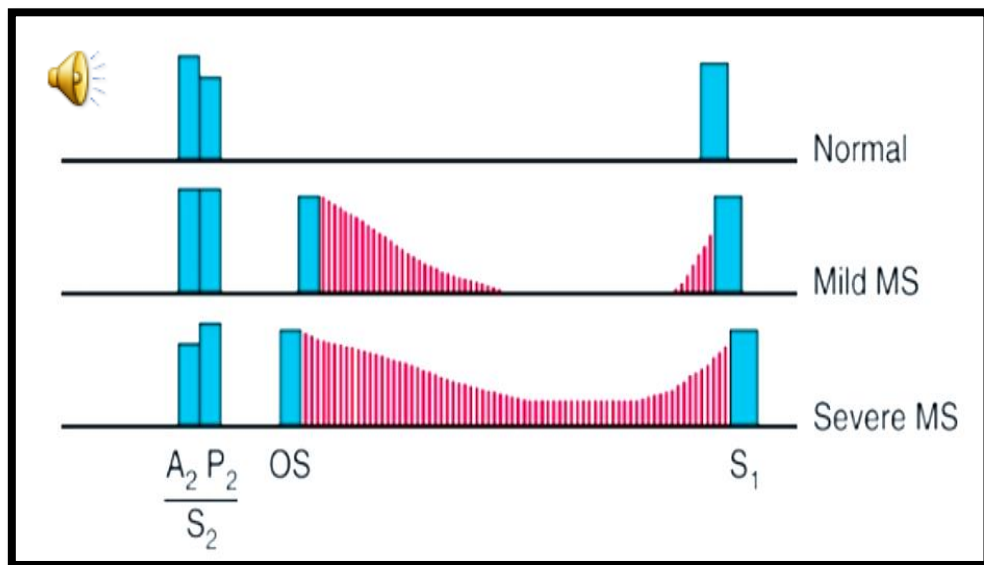
- ❖ Prevalence correlate with **Geographic** and **Age** Variability
- ❖ North America/Europe – 1:100,000 at age 60
- ❖ Africa – 35:100,000 at age 35



## Diagnosis

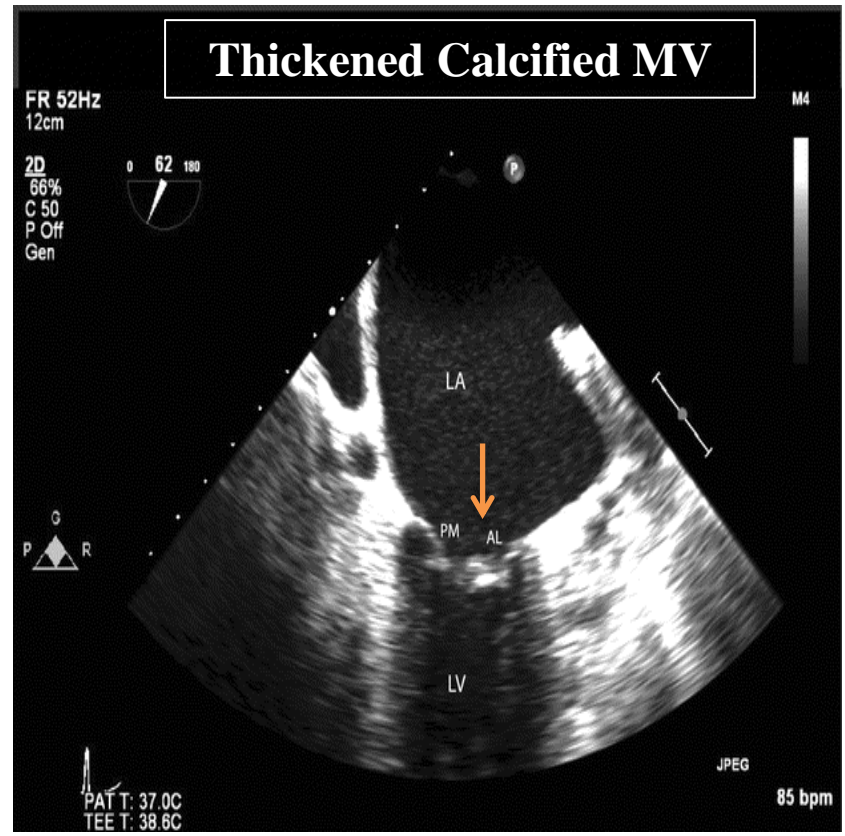
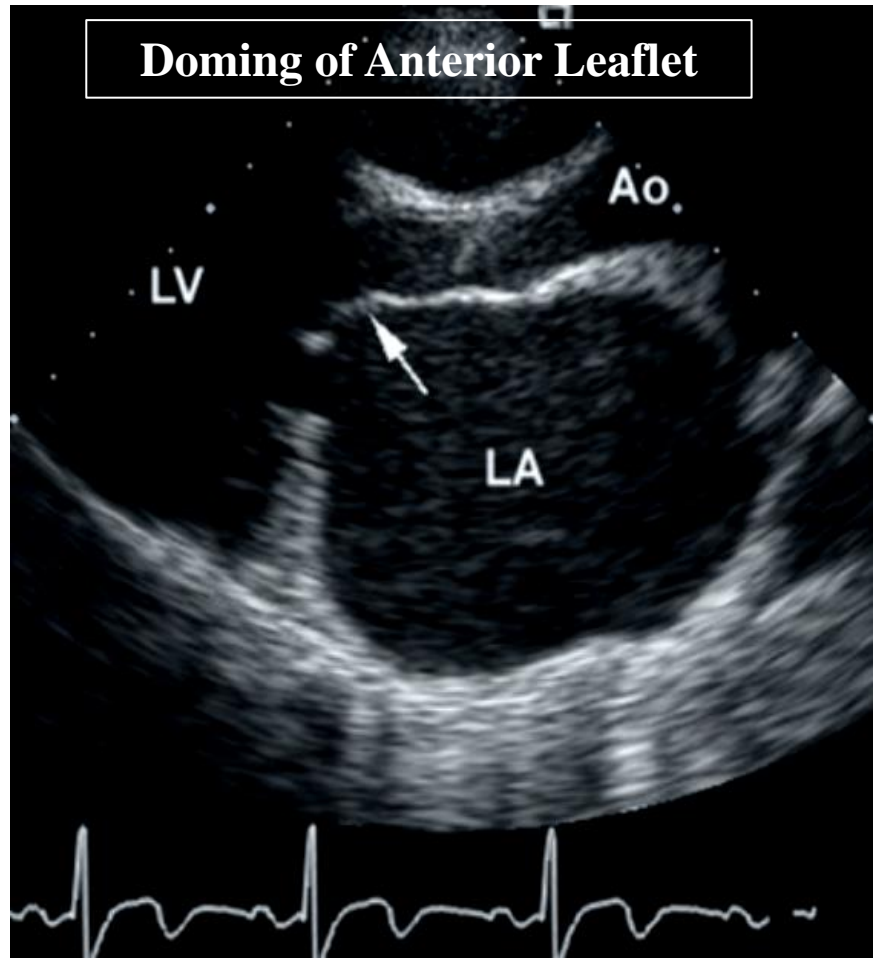
- ❖ Clues in High-Tech Nation = Physical Examination
- ❖ **Observation** – Purple Cheeks, Cyanotic nose & Lips
- ❖ **Auscultation** – Irregular Heart Sounds, Loud S1 & OS
  - ❖ Interval Time S2-OS reflect LA Pressure=Severity of MS
  - ❖ Diminished S1 & OS = End stage MS
- ❖ **ECG** – P-Mitrale, Afib

**Mitral Face**



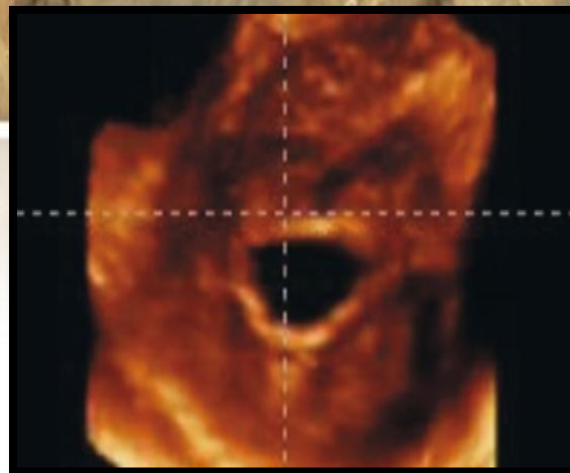
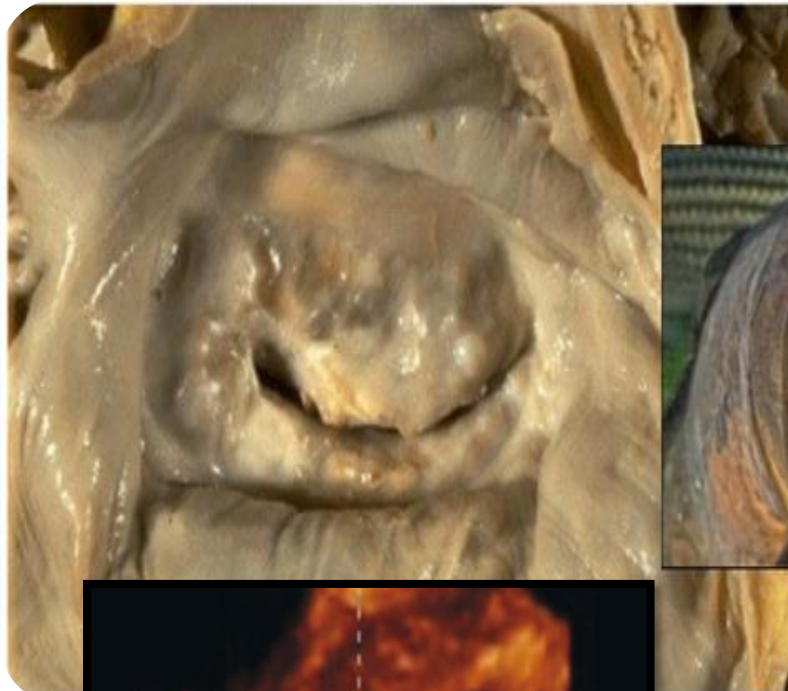
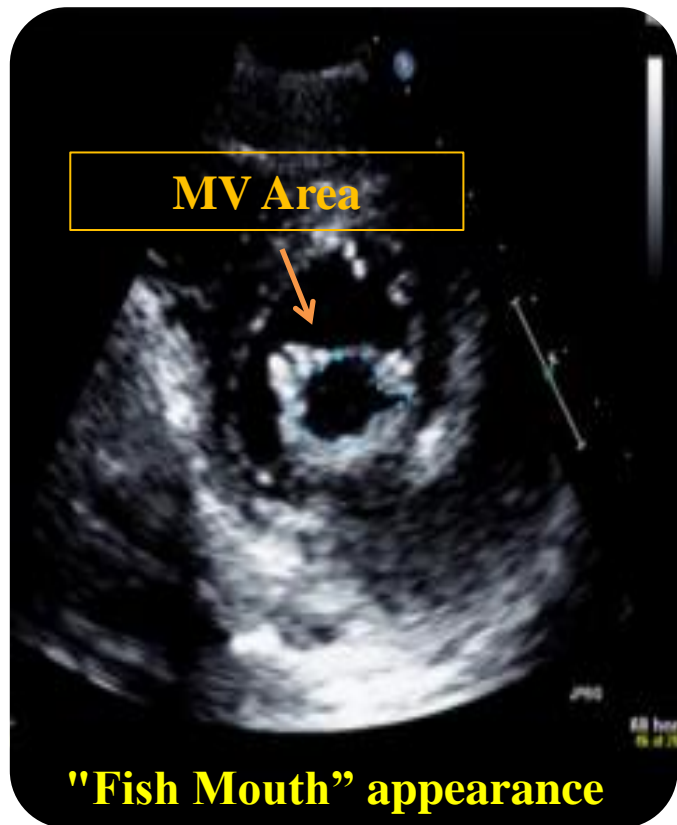


# Echocardiographic Features





## Echocardiographic Features





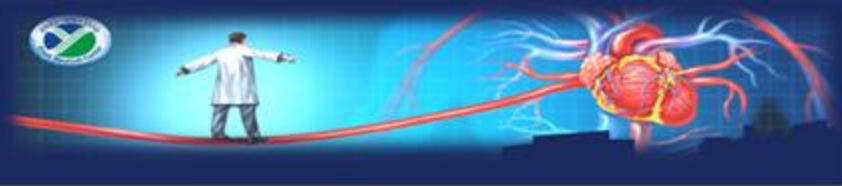
## MS Severity Grades

	Mild	Moderate	Severe
<b>Specific findings</b>			
Valve area (cm <sup>2</sup> )	> 1.5	1.0 – 1.5	< 1.0
<b>Supportive findings</b>			
Mean gradient (mmHg)	< 5	5 – 10	≥ 10
Pulmonary artery Pressure (mmHg)	< 30	30- 50	> 50



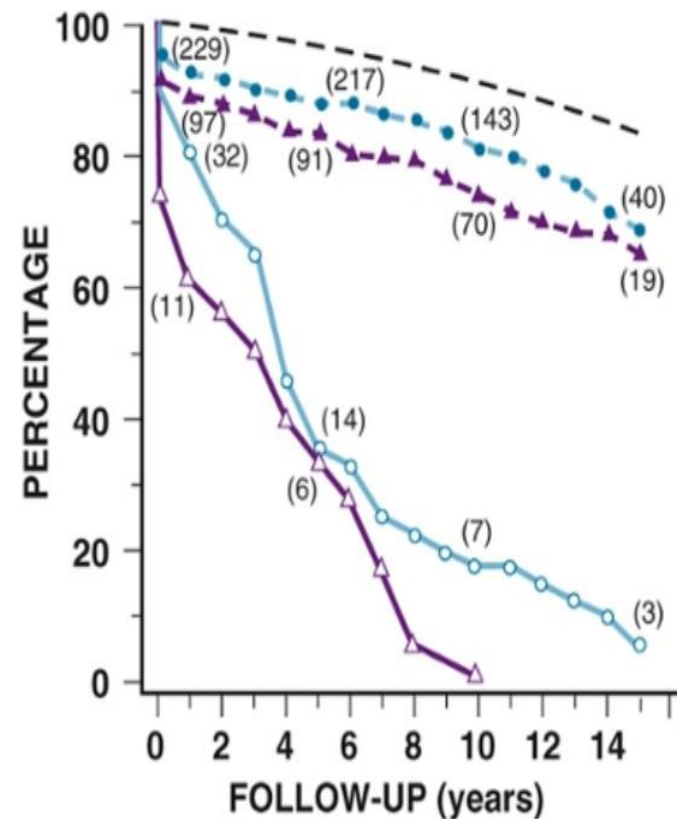
## Stages

Stage	Definition	Anatomy	Hemodynamic	Symptoms
A	<b>At Risk</b>	Mild valve Doming	Normal	None
B	<b>Progressive</b>	Commissural Fusion	MVA $>1.5 \text{ cm}^2$ Diastolic half-time $<150 \text{ msec}$	None
C	<b>Asymptomatic Severe MS</b>	MVA $\leq 1.5 \text{ cm}^2$	Diastolic half-time $\geq 150 \text{ msec}$	None
D	<b>Symptomatic Severe MS</b>	MVA $\leq 1.5 \text{ cm}^2$	Diastolic pressure half-time $\geq 150 \text{ msec}$	<u>Decreased exercise tolerance</u> Exertional dyspnea Hemoptysis Chest Pain



## Natural History & Complication

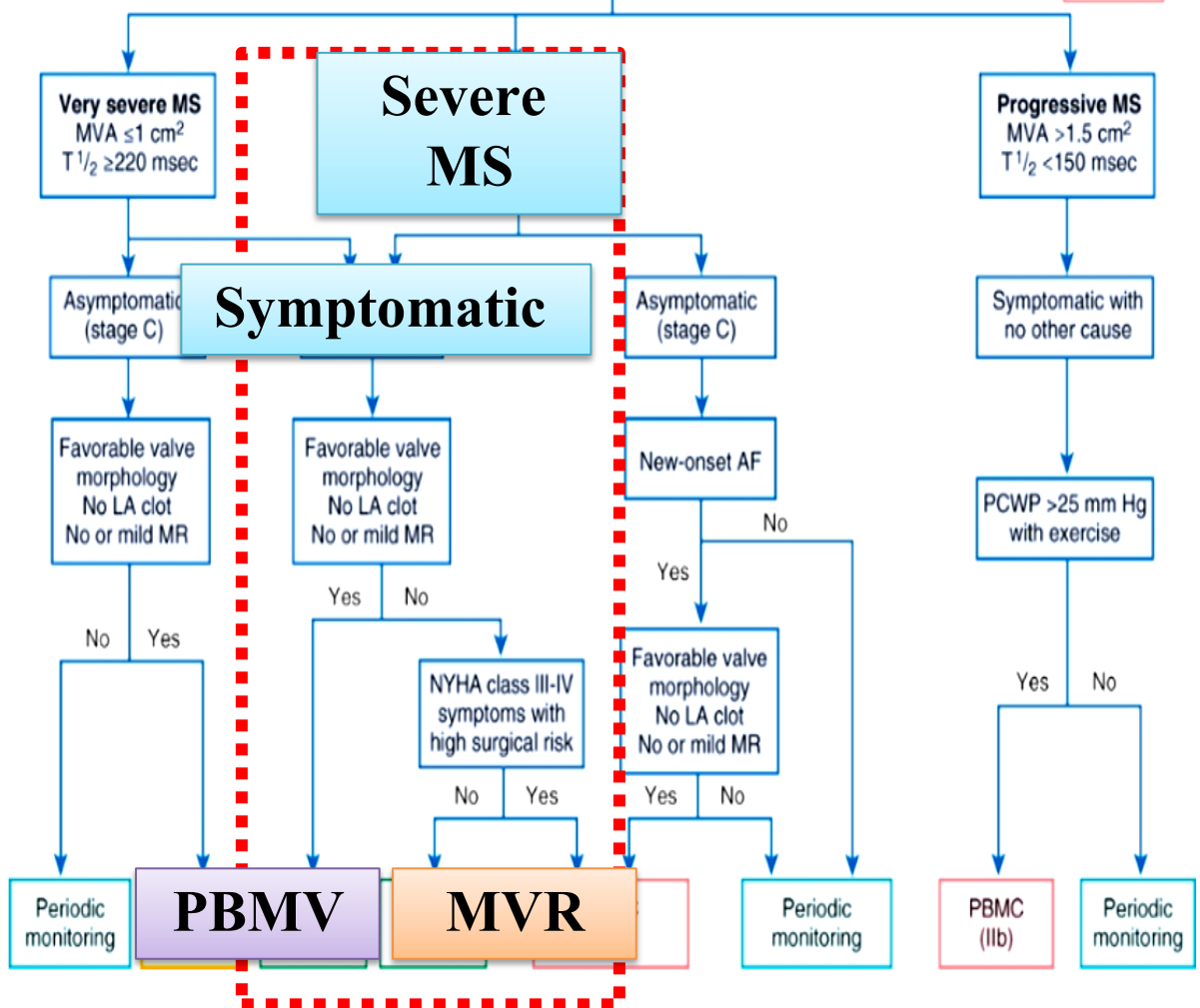
- ❖ Asymptomatic with Mild-Moderate MS = Same as General Population
- ❖ Mortality in Symptomatic Severe MS (5y)
  - ❖ Overall - 44%
  - ❖ NYHA III – 62%
  - ❖ NYHA IV – 15%
- ❖ MVA progression ~0.09-0.1 cm<sup>2</sup>/year
- ❖ Complication
  - ❖ Afib (>60% in patients >40y)
  - ❖ Systemic Thromboembolism )
  - ❖ Infective Endocarditis



# Treatment

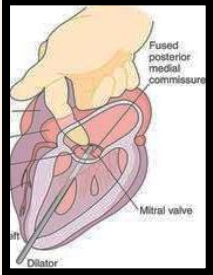


## Rheumatic MS

- Class I
- Class IIa
- Class IIb





# Therapeutic Options

APPROACH	ADVANTAGES	DISADVANTAGES
<p><b>Closed Valvotomy</b></p>	<p>1. Inexpensive 2. Relatively simple</p>	<p>1. No direct visualization 2. Only with flexible, noncalcified valves 3. Contraindicated with <math>\geq</math>MR ++ 4. General anesthesia</p> 
<p><b>Open Valvotomy</b></p>	<p>1. Directed valvotomy. 2. Annuloplasty for MR</p>	<p>1. Better with flexible, noncalcified valves 2. General anesthesia</p>
<p><b>Valve Replacement</b></p>	<p>1. Feasible in all patients</p>	<p>1. Prosthetic valve 2. Chronic anticoagulation</p> 
<p><b>PBMV</b></p>	<p>1. Percutaneous approach 2. Local anesthesia</p>	<p>1. No direct visualization of valve 2. Only with flexible noncalcified valves 3. Contraindicated with <math>\geq</math>MR ++</p> 

## Patients Selection

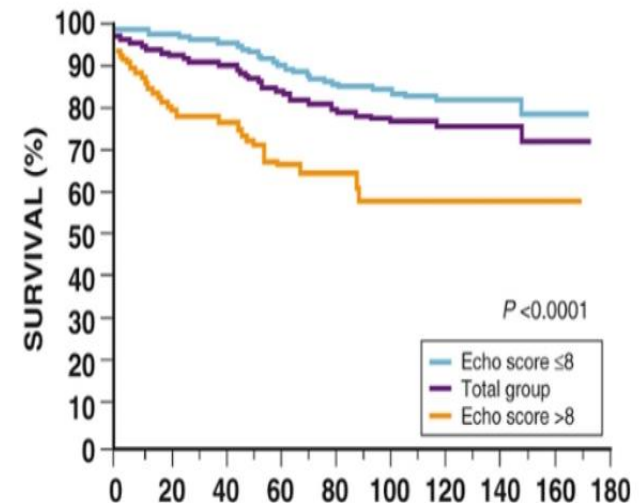
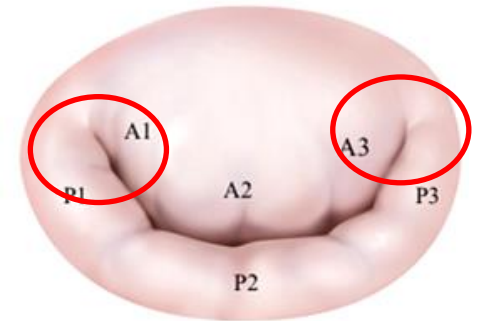
❖ PBMV = Procedure of Choice for Suitable Patients

**Symptomatic Moderate-Severe MS**  
**&**  
**Favorable MV Morphology**  
**&**  
**No or Mild MR**  
**&**  
**No LA Thrombus\***

❖ **Wilkins Score**, Total 16 (Worst), **Ideal ≤8**

- ❖ Valve Thickening (1-4)
- ❖ Valve Calcification (1-4)
- ❖ Leaflets Mobility (1-4)
- ❖ Sub-Valvular Thickening (1-4)

Calcification limited to the Commissures





# Procedure

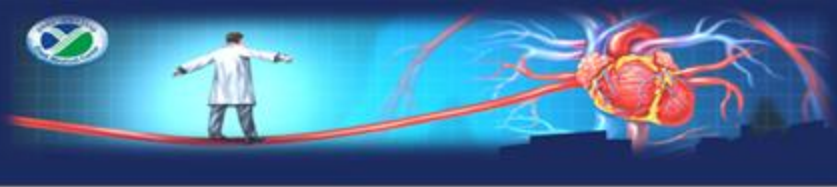






## *Take Home Massage*

- ❖ MS decline in developing countries but still a problem in our area
- ❖ Early diagnosis and prompt treatment is crucial
- ❖ PBMV in properly selected patients provide
  - ❖ Significant alteration in disease progress
  - ❖ Immediate clinical improvement
  - ❖ Reduce Re-stenosis Rate & Mortality
- ❖ Our Center performing PBMV for nearly Three decades in almost 650 pts
  - ❖ Leading center in Israel & Worldwide
  - ❖ Success rate ~90-92%
  - ❖ Significant low Complication



# המשך כנס מהנה