

CASE STUDIES IN STRUCTURAL HEART DISEASE

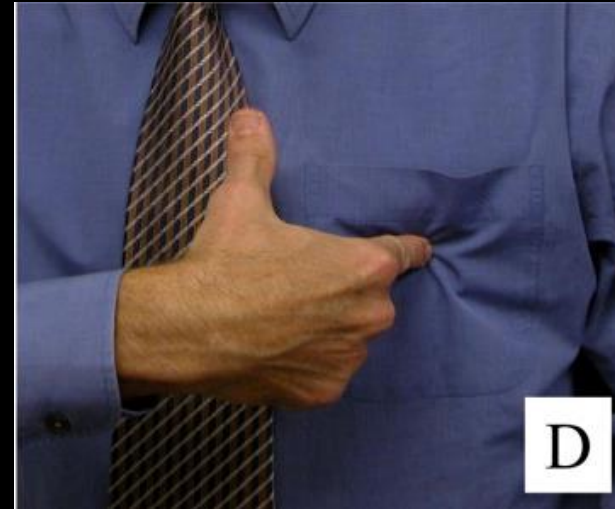
SOLVING OUR PATIENTS' PROBLEMS

Case 1. Mr. A.G.



- 82 yo FARMER CONSULTS HIS DOC
- SHORTNESS OF BREATH X 6 MOS.
- CHEST DISCOMFORT W/ EXERTION
- RECENT BLACK-OUT SPELL IN PASTURE

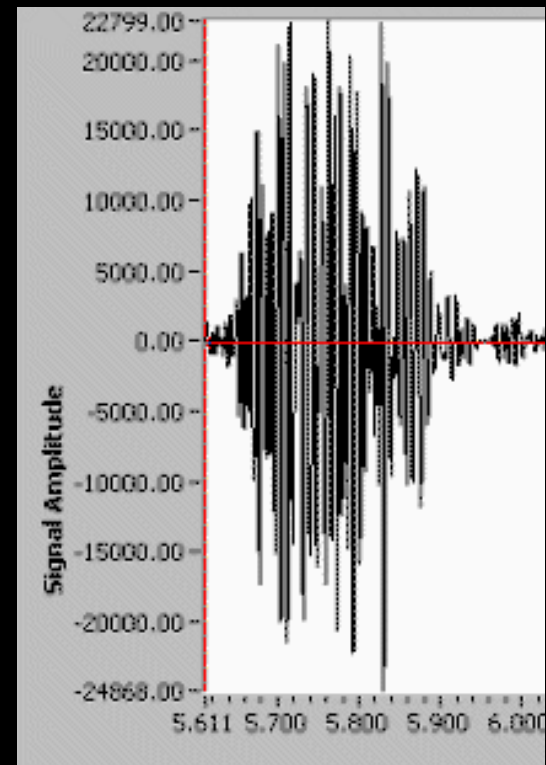
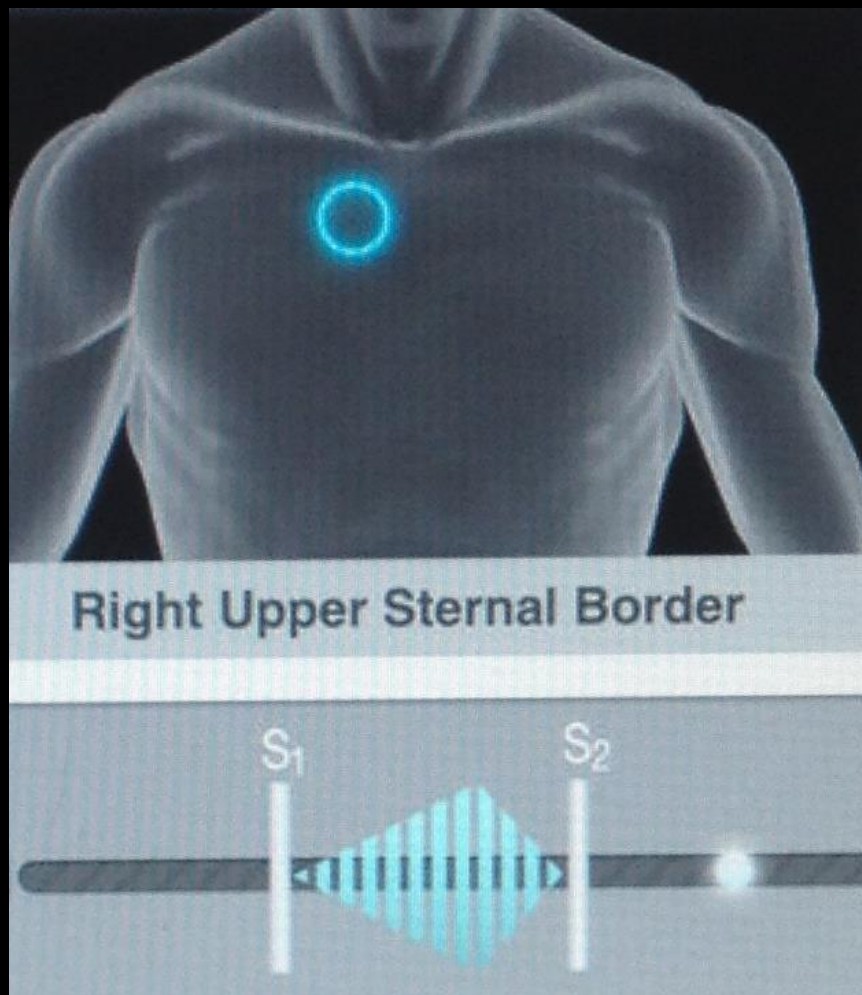
NON-VERBAL COMMUNICATION



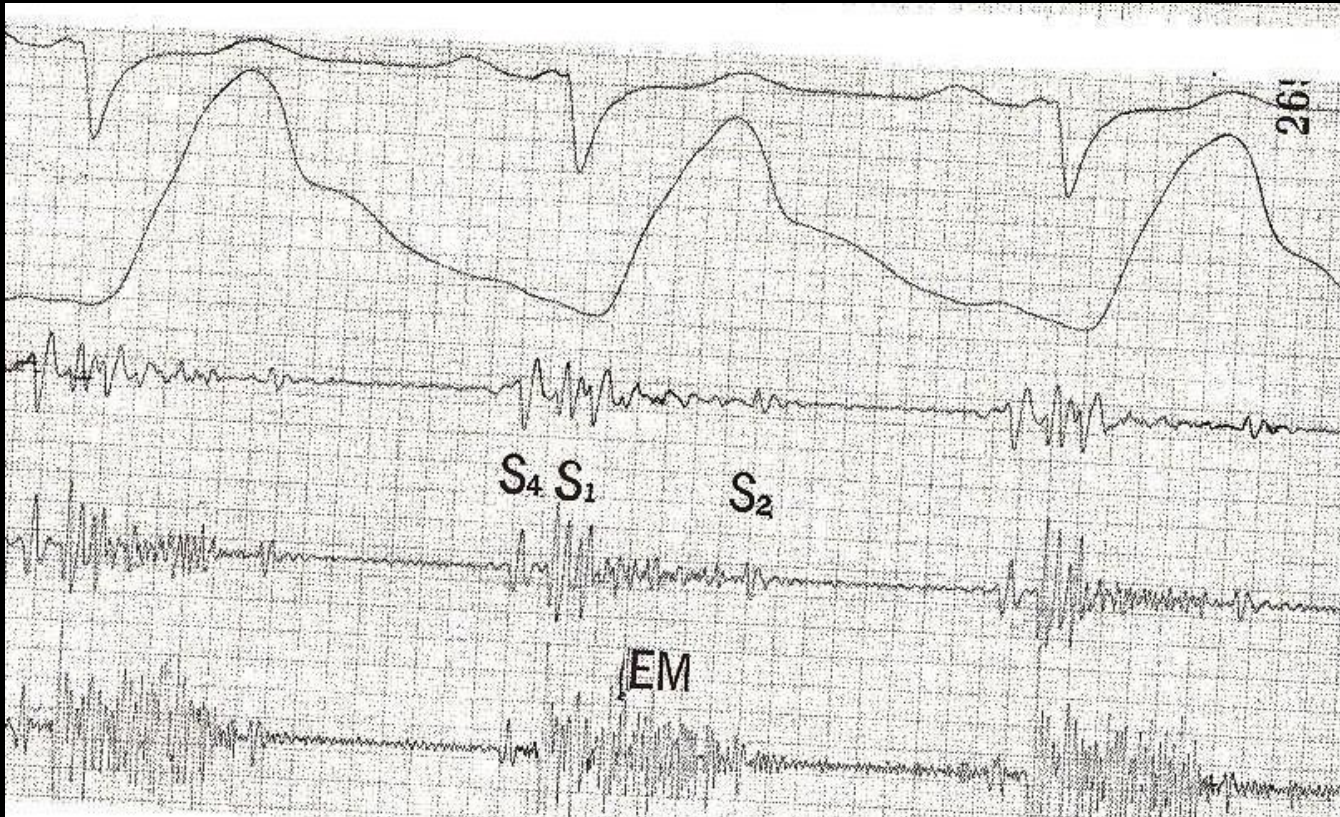
- NON-VERBAL COMMUNICATION CAN BE VERY IMPORTANT
- PT AND SPOUSE
- WILL BE MISSED IF DOC IS POSITIONED AT COMPUTER W/ BACK TO PT!
- A=LEVINE'S SIGN: TYPICAL OF MYOCARDIAL ISCHEMIA
- B=1 FINGER SIGN: UNLIKELY TO BE CARDIAC IN ORIGIN!

PHYSICAL EXAM

- ▣ SLENDER ELDERLY MALE NAD
- ▣ VS: BP 110/90 P88
- ▣ HEENT: NO PALLOR OR CYANOSIS
- ▣ NECK: G2/6 SYSTOLIC MURMUR
- ▣ CHEST: HYPER-RESONANT; CLEAR
- ▣ CV: SIMULATOR
- ▣ ABD: NON-TENDER; PALPABLE AORTIC PULSATIONS 2.5 CM DIAM
- ▣ EXT: NO C,C,E
- ▣ CNS: INTACT



PHONO CARDIOGRAM

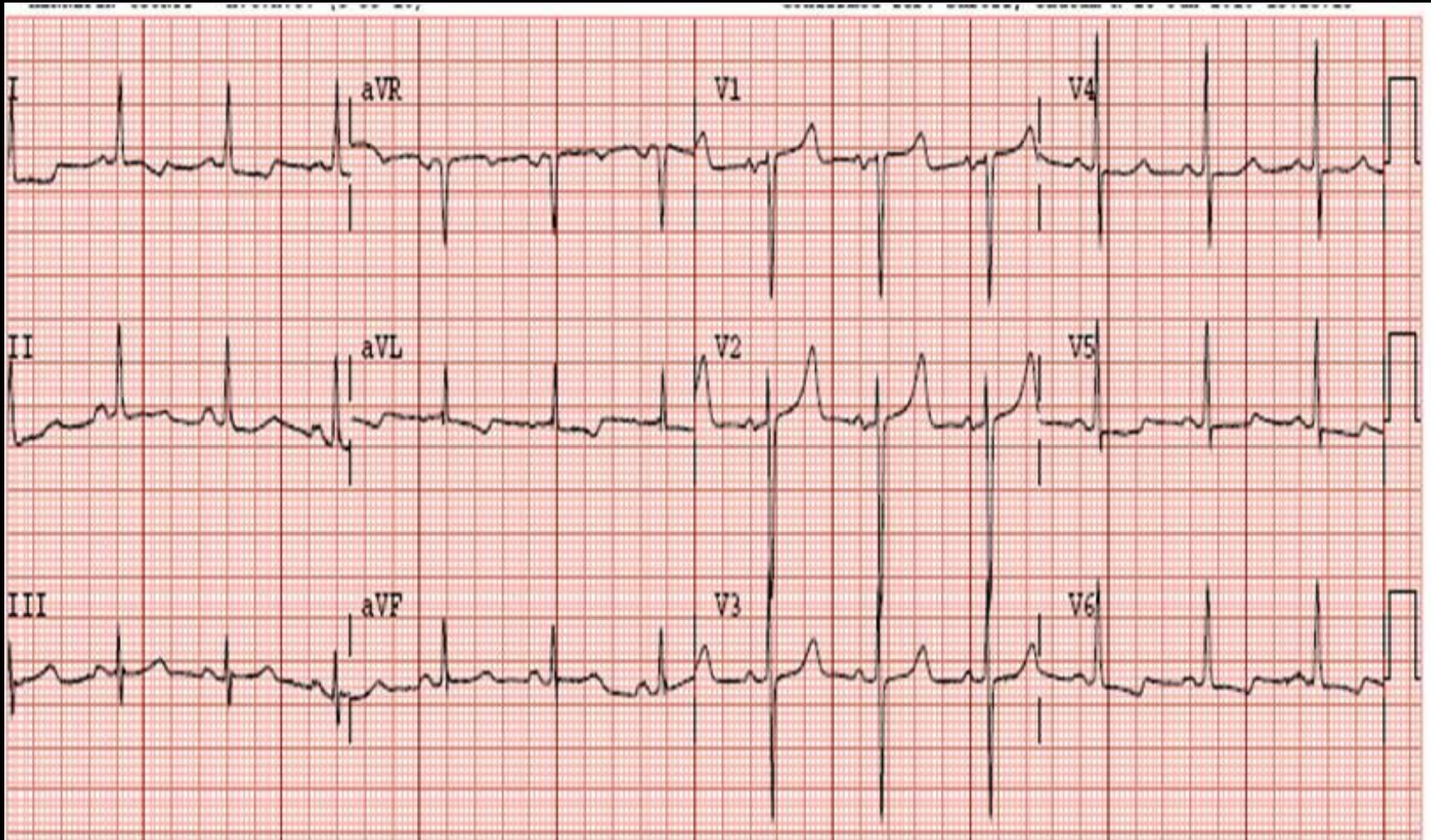


CAROTID

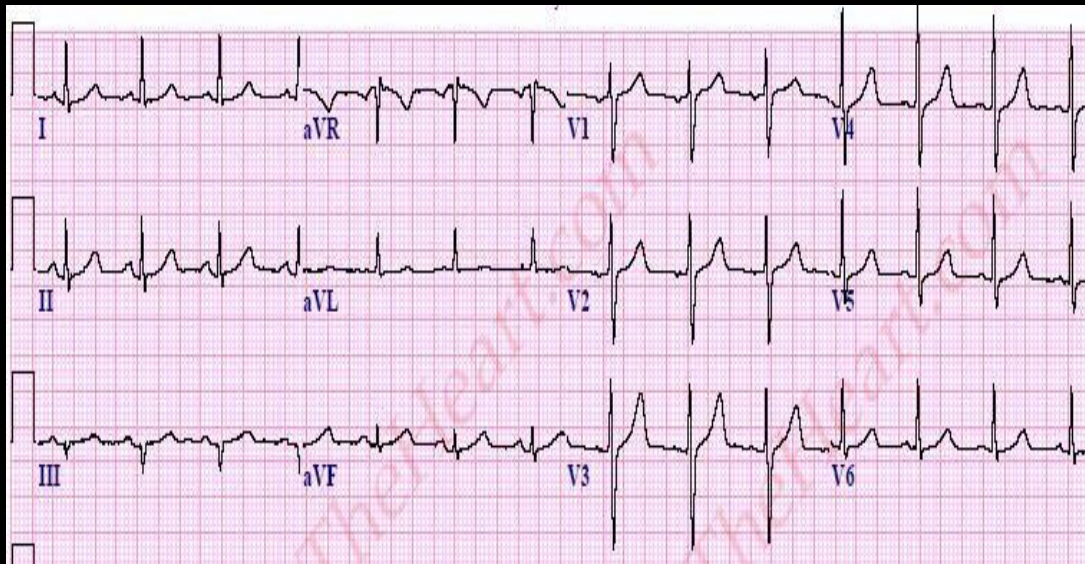


2ND RICS

EKG

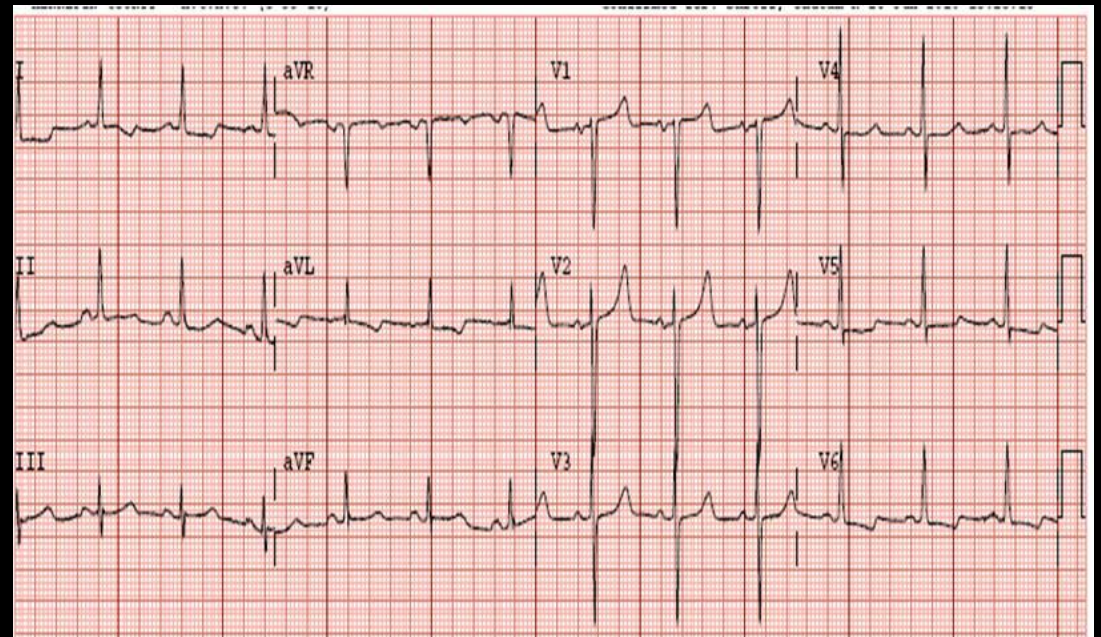


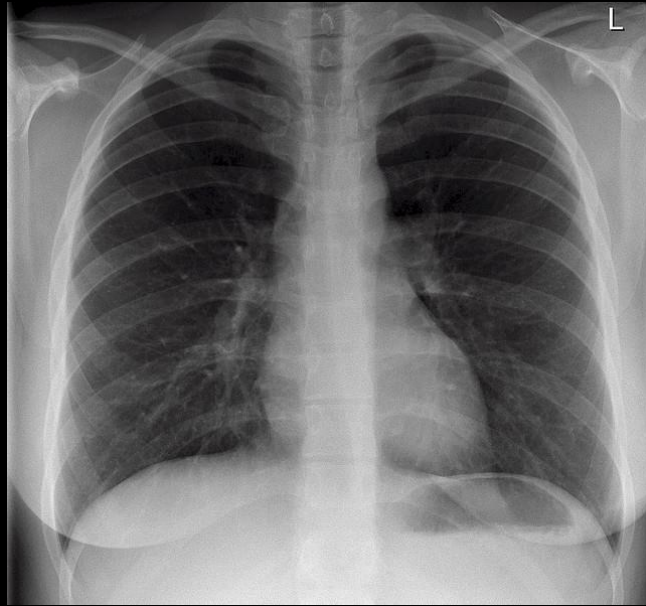
1-RATE 2-RHYTHM 3-QRS DURATION 4-QRS VOLTAGE 5-ST-T



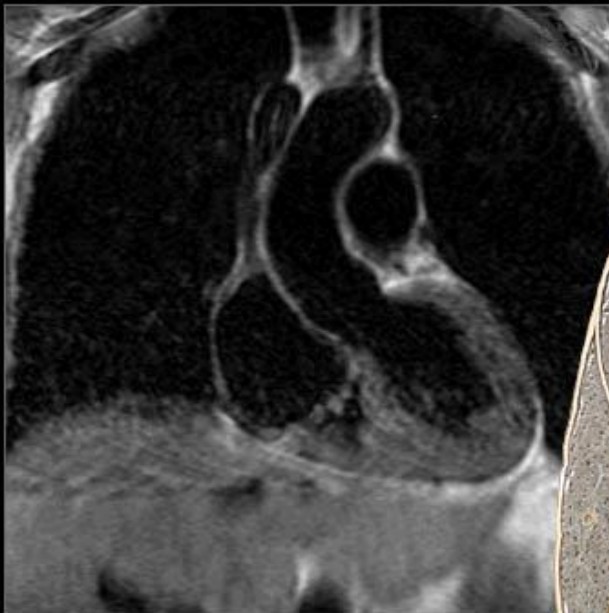
NML

Mr. AS





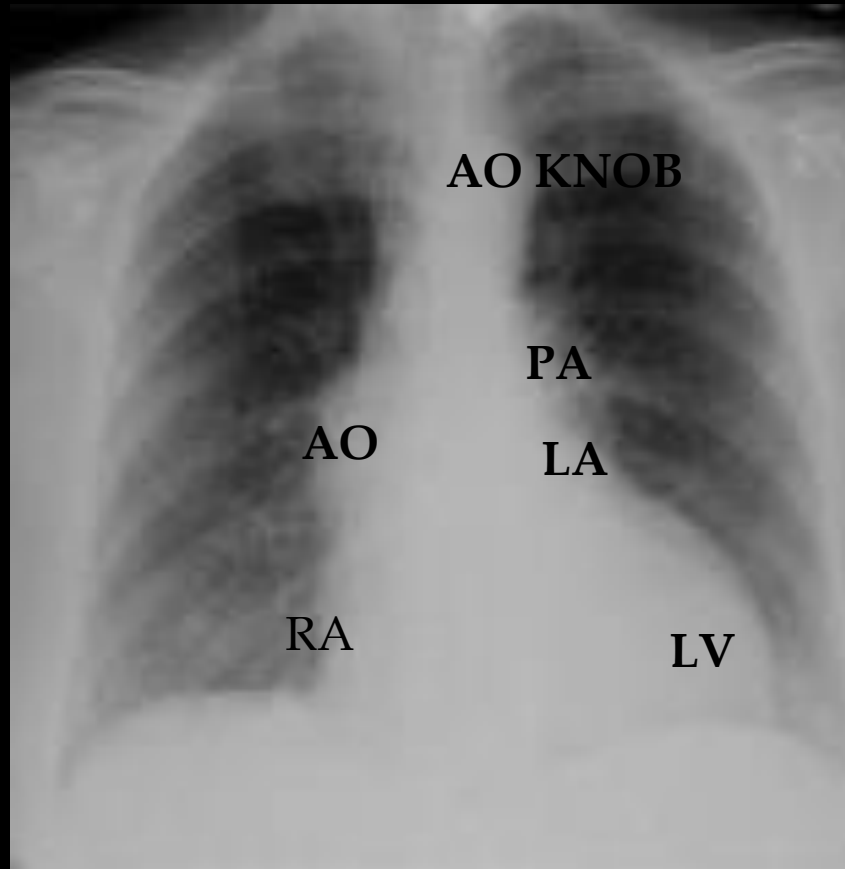
CORONAL SECTION OF HEART AND CXR



CXR



CXR

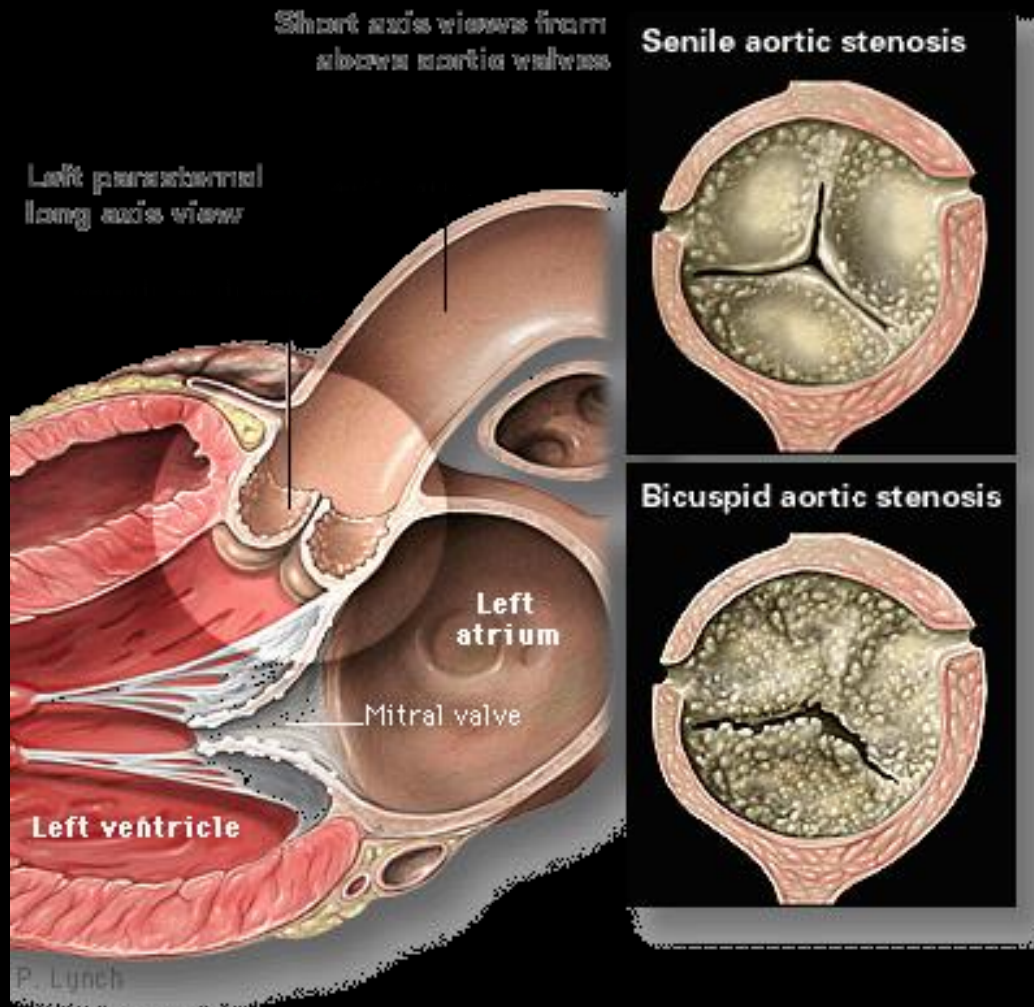


RV NOT BORDER FORMING

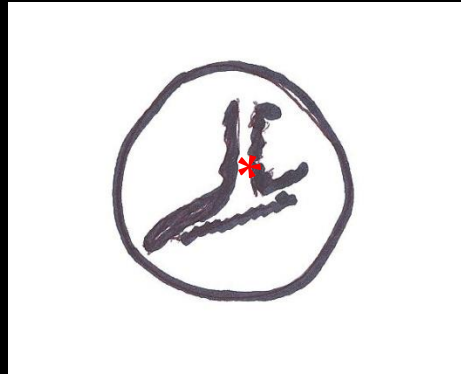


CA++ AO VALVE

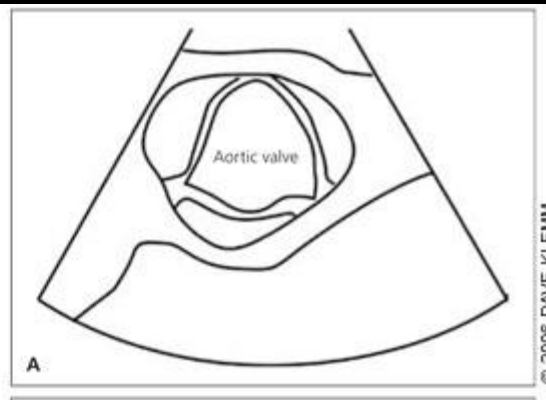
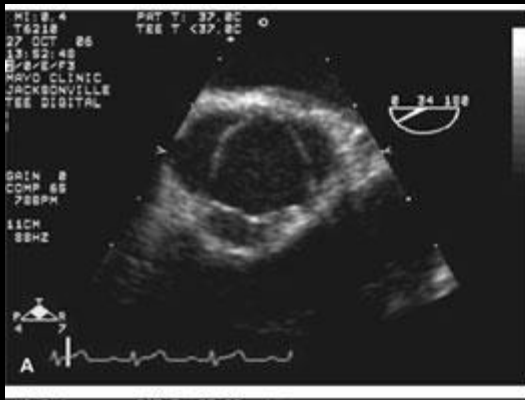
DIAGRAM: ECHO OF AORTIC VALVE



ECHO MR. AS VS NML



* REDUCED AORTIC
OPENING



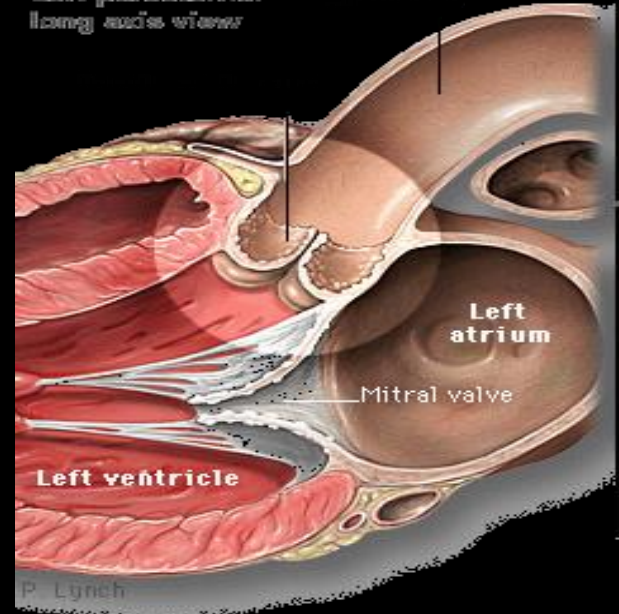
NORMAL AORTIC VALVE: SHORT AXIS

ECHO

SAGITTAL



Left parasternal
long axis view

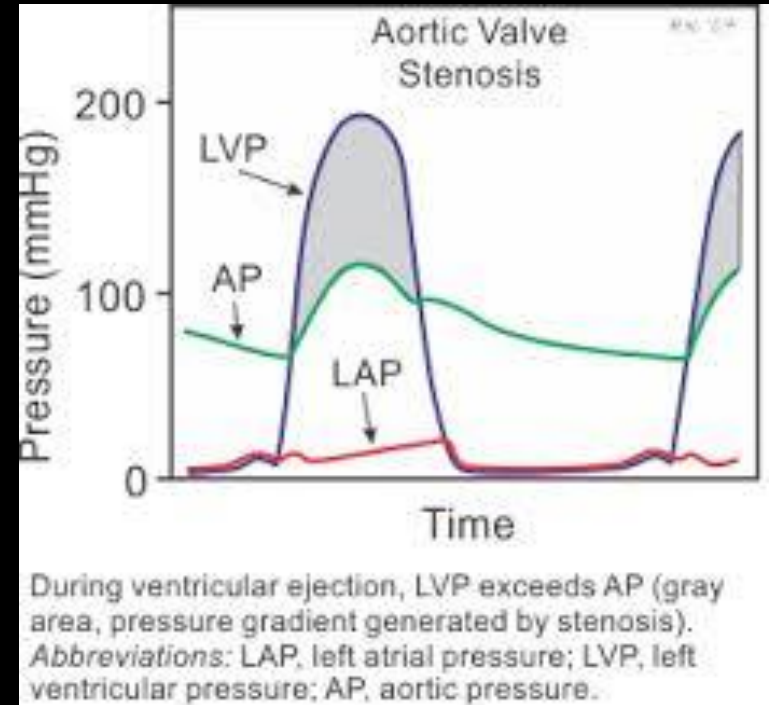
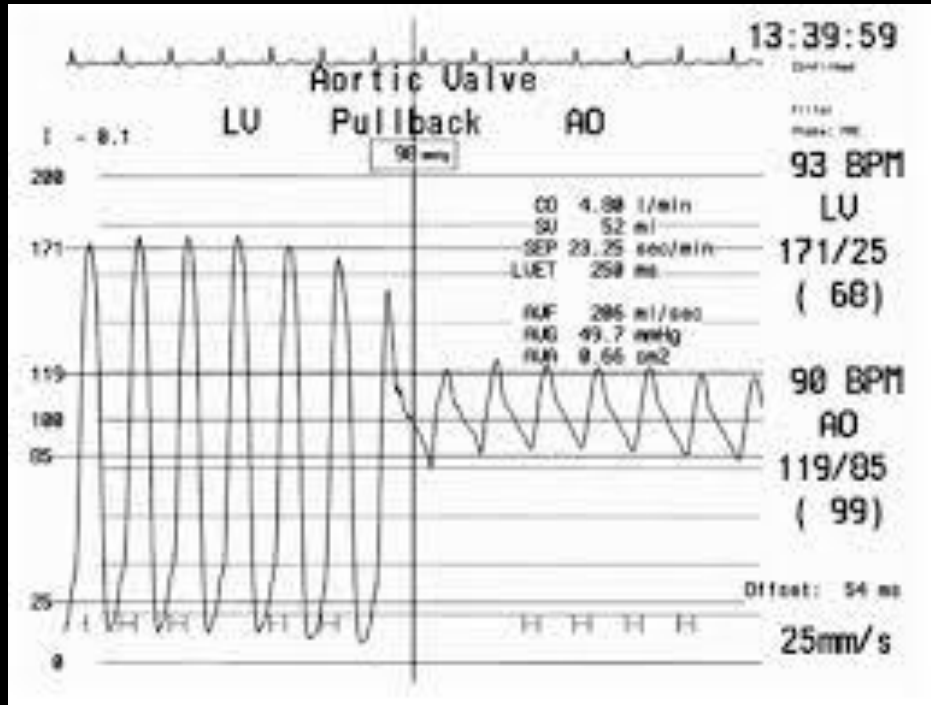


DOPPLER GRADIENT

SHORT AXIS

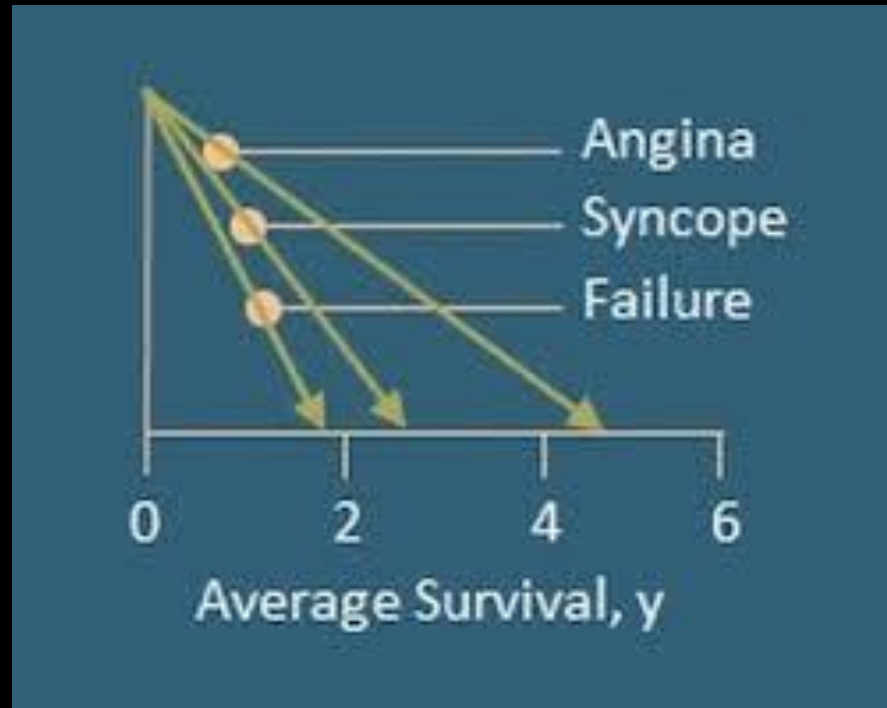


CARDIAC CATH: AORTIC STENOSIS

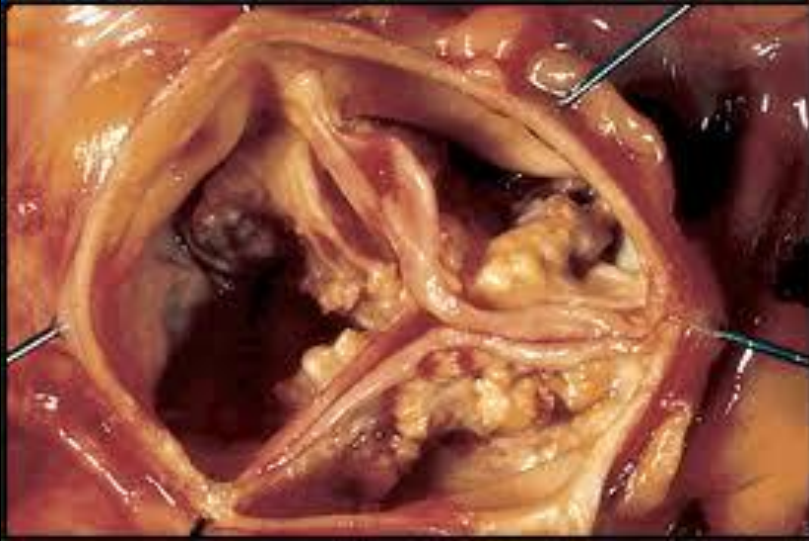


PEAK-PEAK GRADIENT LESS THAN PEAK INSTANTANEOUS GRADIENT
ROLE OF CATH: CLARIFY ECHO UNCERTAINTY; CORONARY ANATOMY

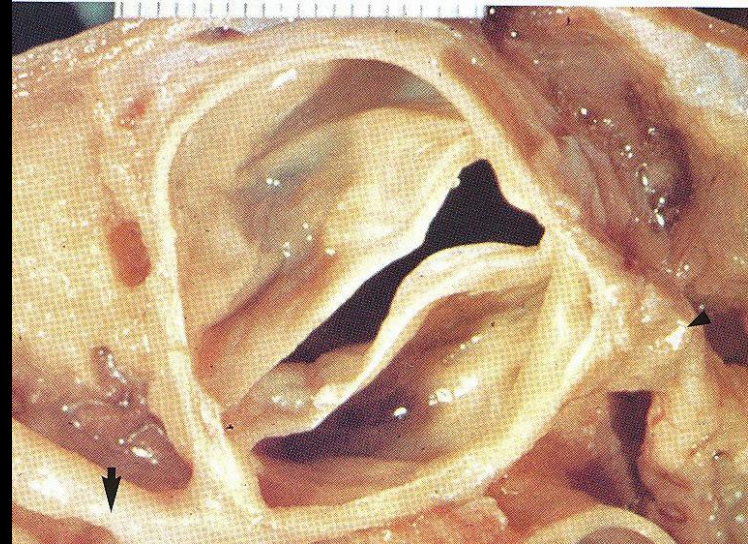
SYMPTOMS OF AORTIC STENOSIS



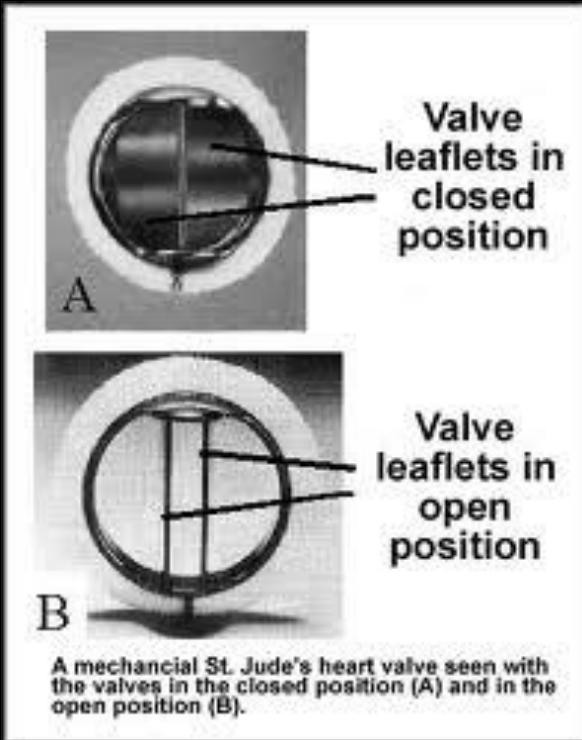
PATHOLOGY: AORTIC STENOSIS



TRILEAFLET DEGENERATIVE



CONGENITAL BICUSPID

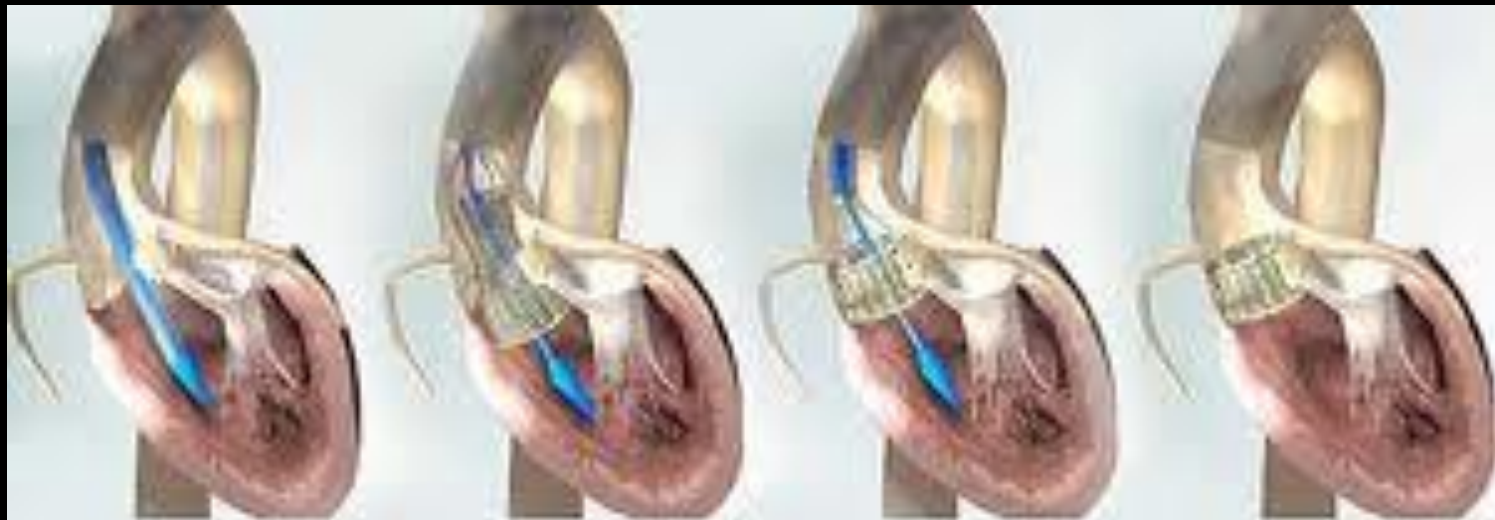


MECHANICAL BI-LEAFLET VALVE



PORCINE VALVE

TAVR



1.) Crossing native valve

2.) Deploy percutaneous valve

3.) Expand percutaneous valve

4.) Final Release

SUMMARY

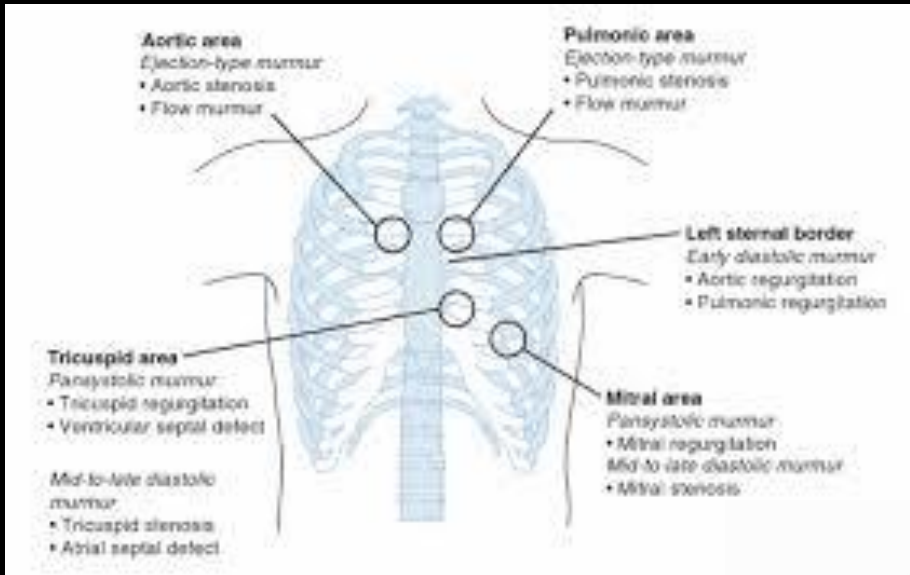
- ▣ BEDSIDE DX OF AORTIC STENOSIS--H&P:
 - SX OF ANGINA, CHF, SYNCOPE
 - HEART MURMUR CHARACTERISTICS
 - CAROTID UPSTROKE
- ▣ EKG, CXR
- ▣ IMAGING STUDIES
- ▣ NATL HISTORY OF VALVULAR AS
- ▣ INDICATIONS FOR SURGERY
- ▣ METHODS OF SURGERY (TAVR VS OPEN)
- ▣ PROSTHETIC VALVES: TISSUE VS MECH.
- ▣ CONTROVERSIES
 - ASX SEVERE AS
 - VERY SEVERE AORTIC STENOSIS: NO MURMUR!!!

CASE 2. MS. OI

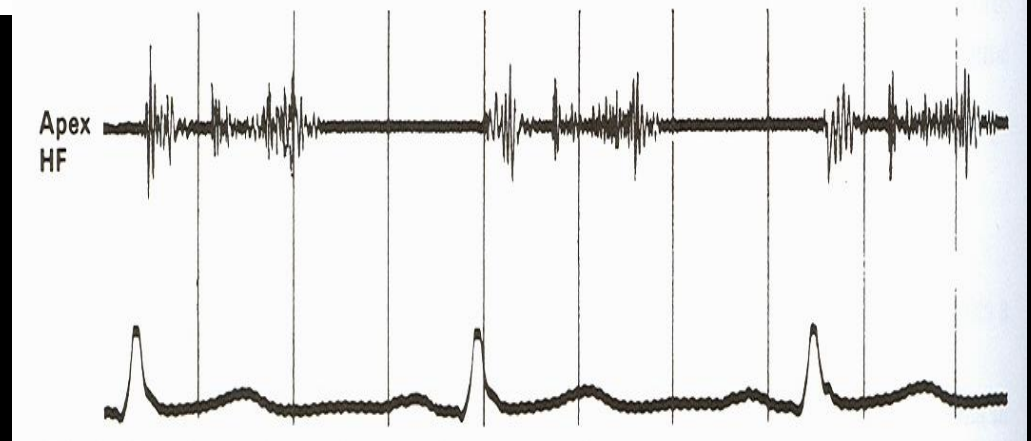


- 26 YO WOMAN CONSULTS YOU:
 - ABN EKG: ? OLD MI
 - C/O'S PALPITATION
 - "LIGHT-HEADED"
 - HX HEART MURMUR AS CHILD
- PMH: NEG. SURG: NONE
- HABITS: 2 GLASSES WINE/WK; NON SMOKER
- MEDS: NONE
- OBJ: SLENDER WF NAD BP 110/70 P85
- HEENT: NEG. NECK: JVP NML
- CHEST: CLEAR ABD: NON-TENDER, NO MASSES EXT: HYPERMOBILE JOINTS

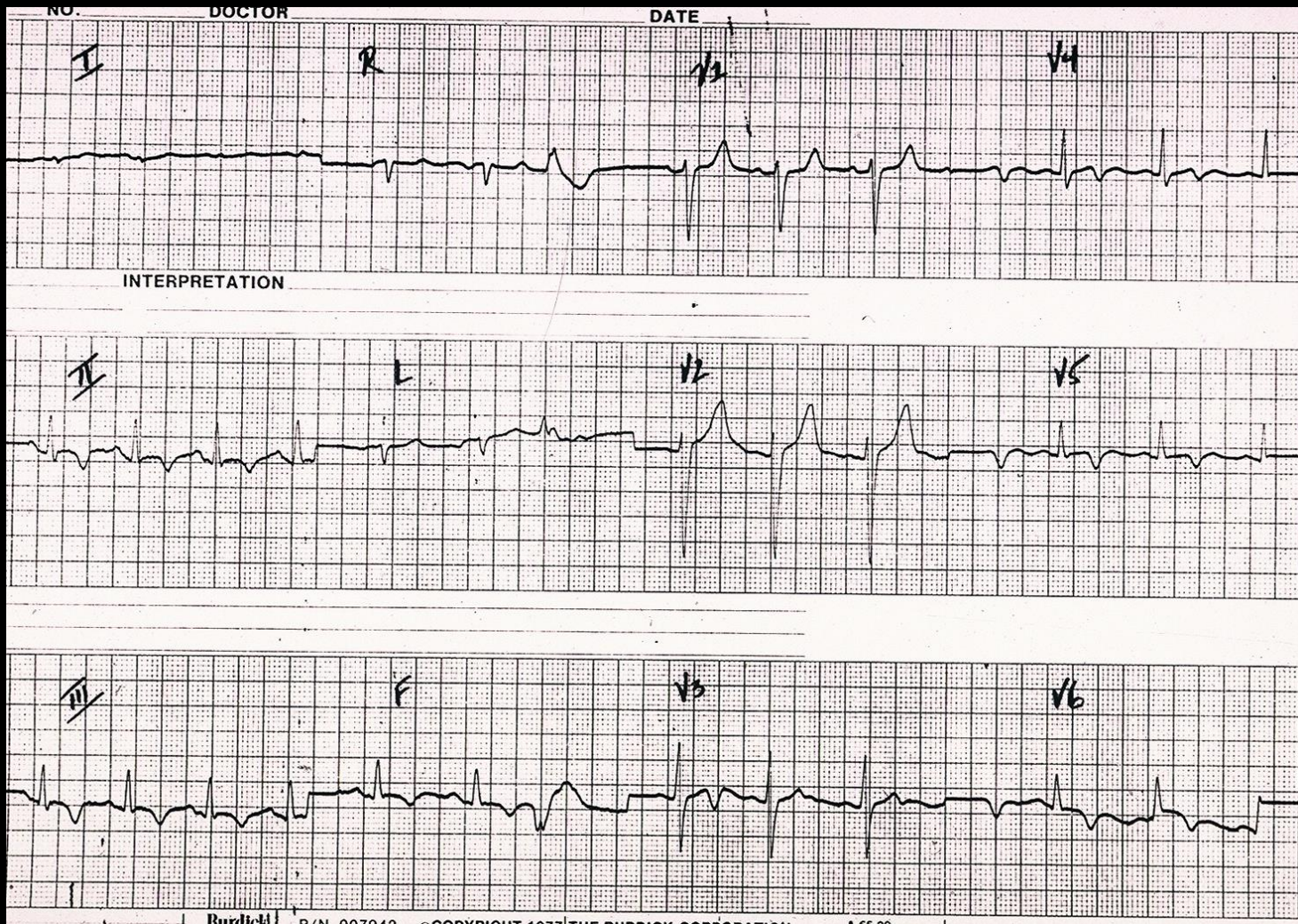
PHYSICAL EXAMINATION

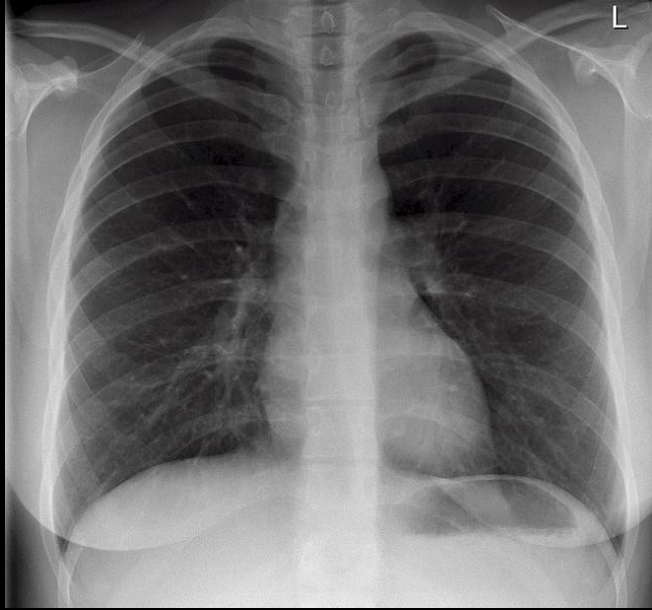


Cardiac simulator



01 35 YO FEMALE: EKG

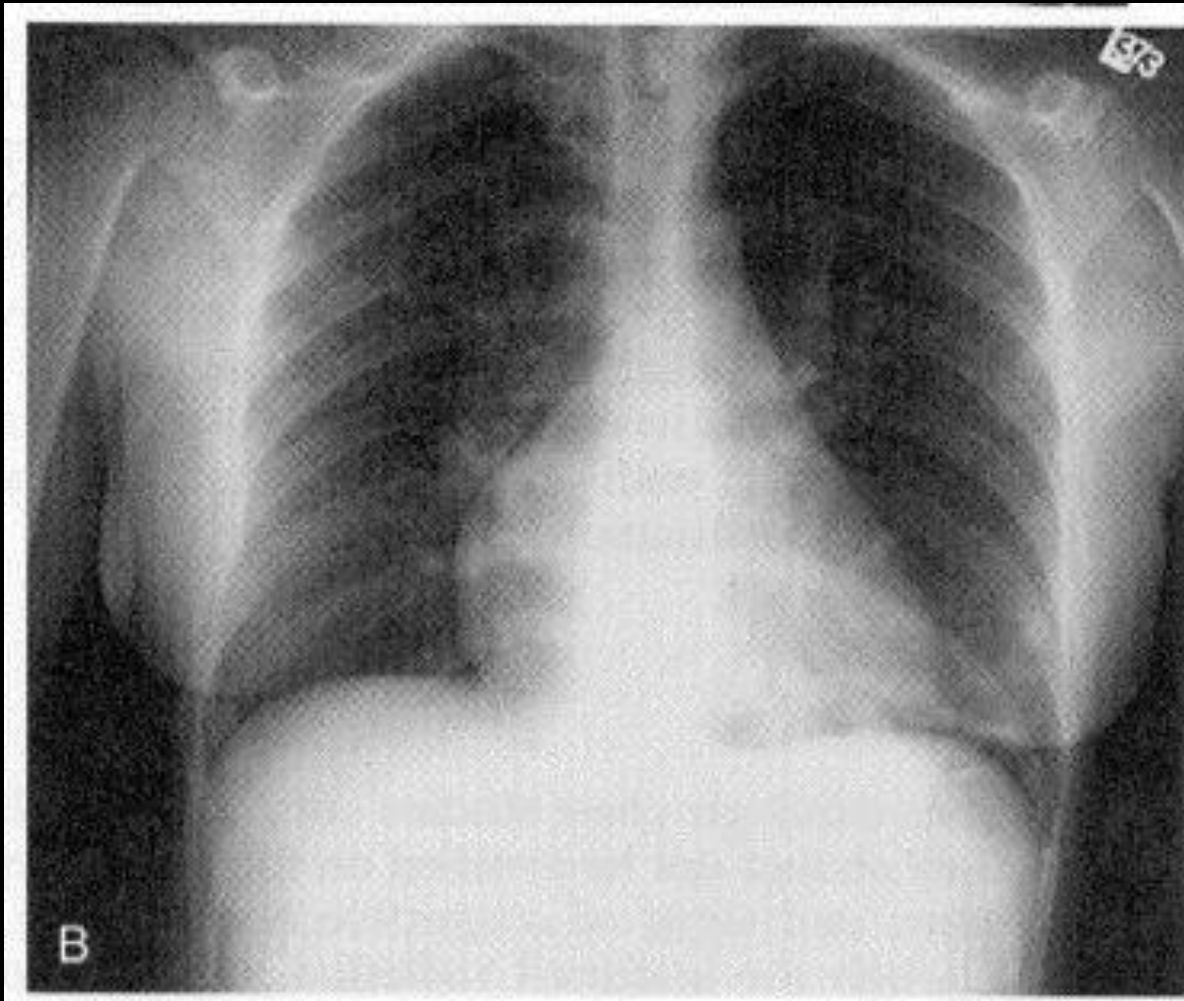




CORONAL SECTION OF HEART AND CXR

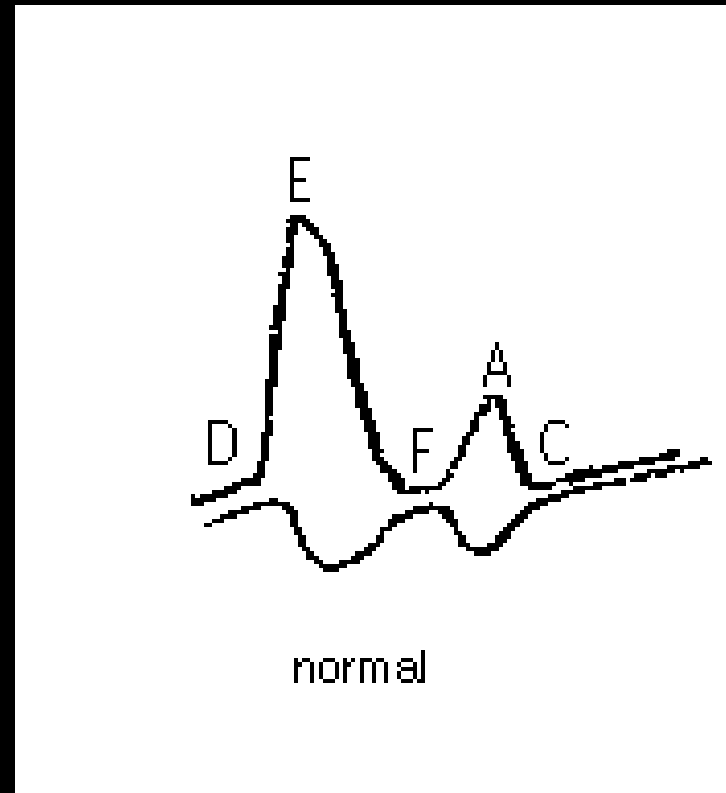
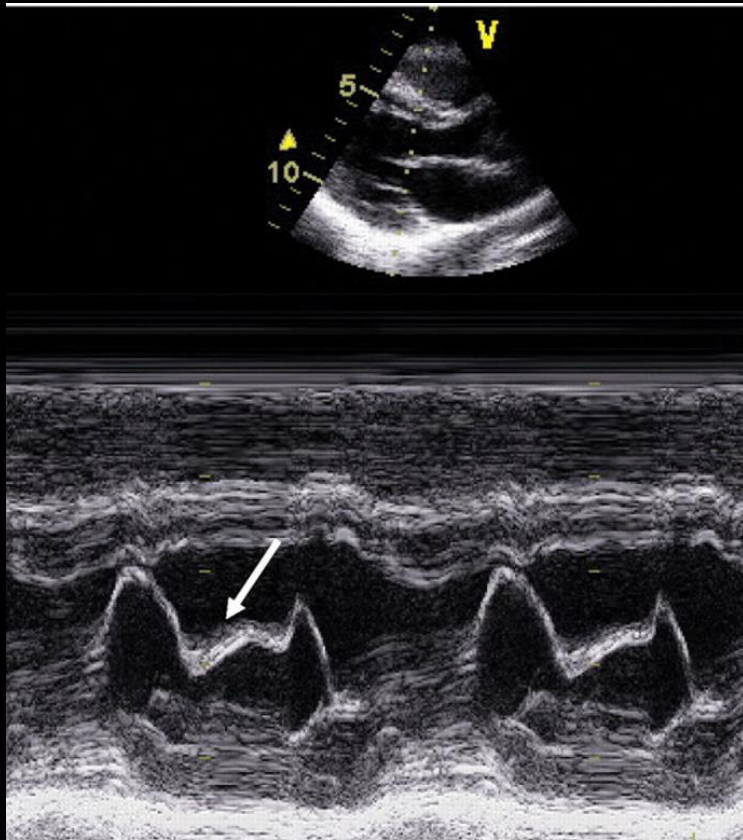


CHEST XRAY



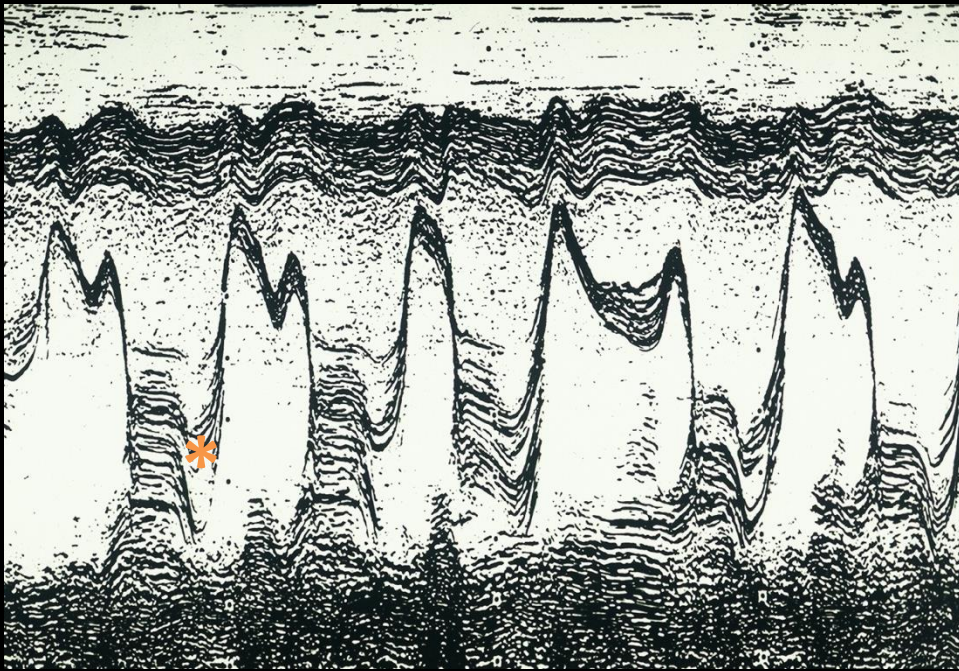
Cardiomegaly and
straightening of left
heart border and right
atrial dilatation

MOTION MODE ECHO (M-MODE) OF NORMAL MITRAL VALVE

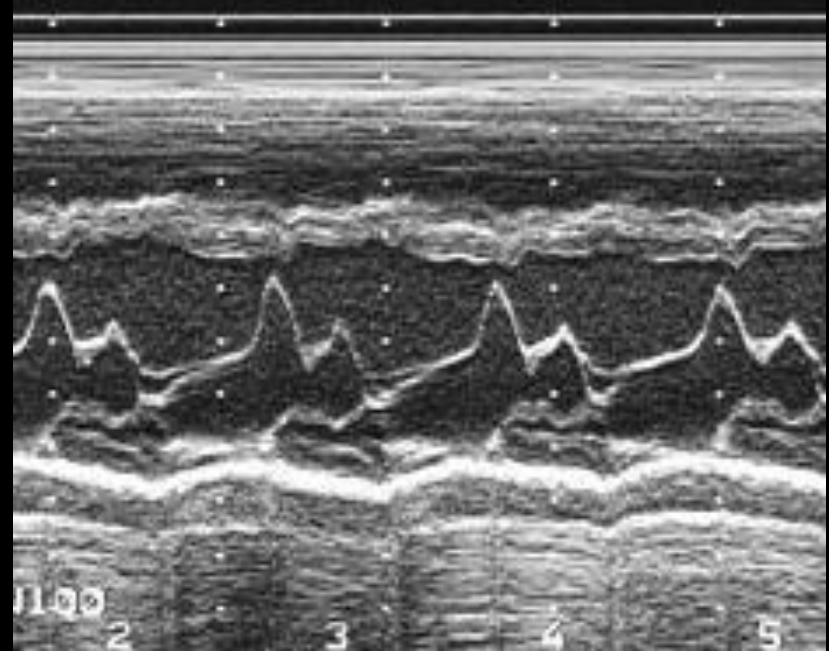


**D-E: EARLY MITRAL OPENING; A: LATE RE-OPENING DUE TO ATRIAL
ZONREACTION. C: MITRAL CLOSURE IN SYSTOLE.**

M-MODE ECHO

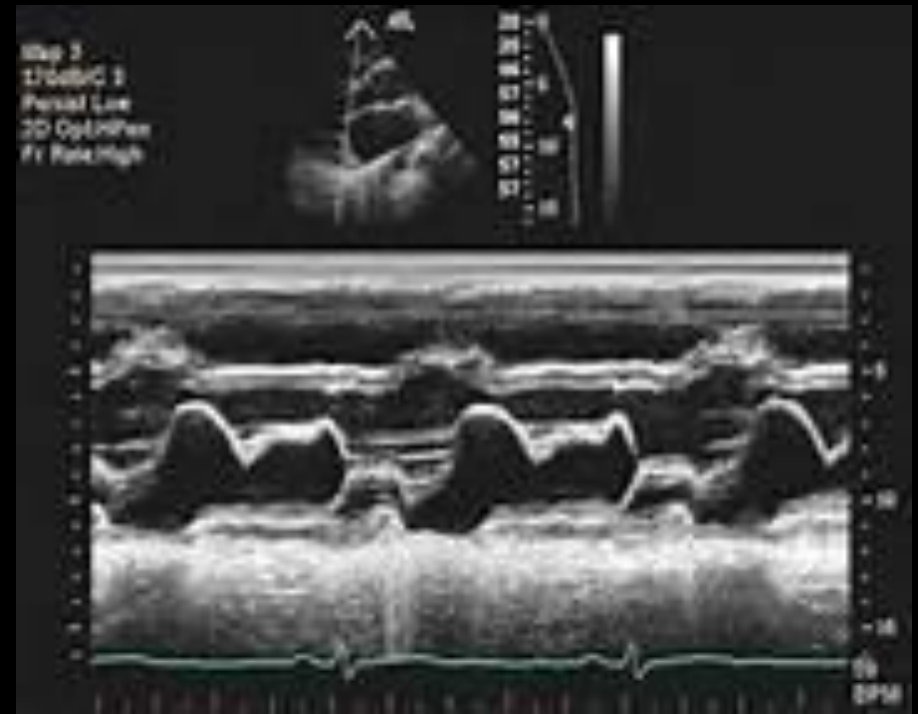


MS. OI

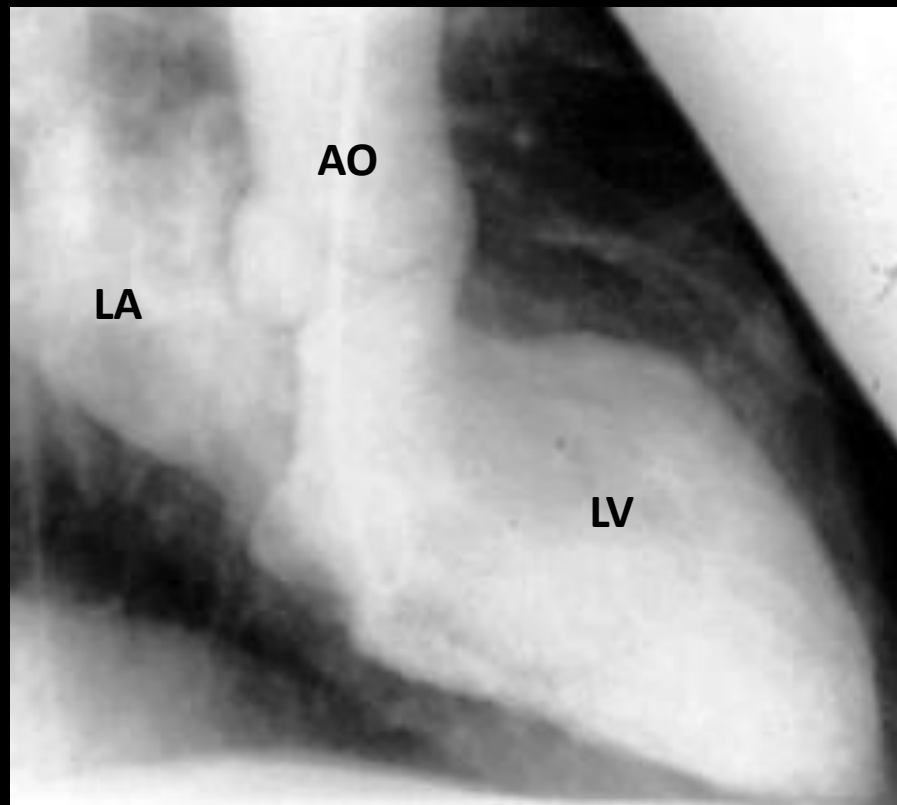


NML

2-D AND M-MODE ECHO



V'GRAM: SEVERE MR



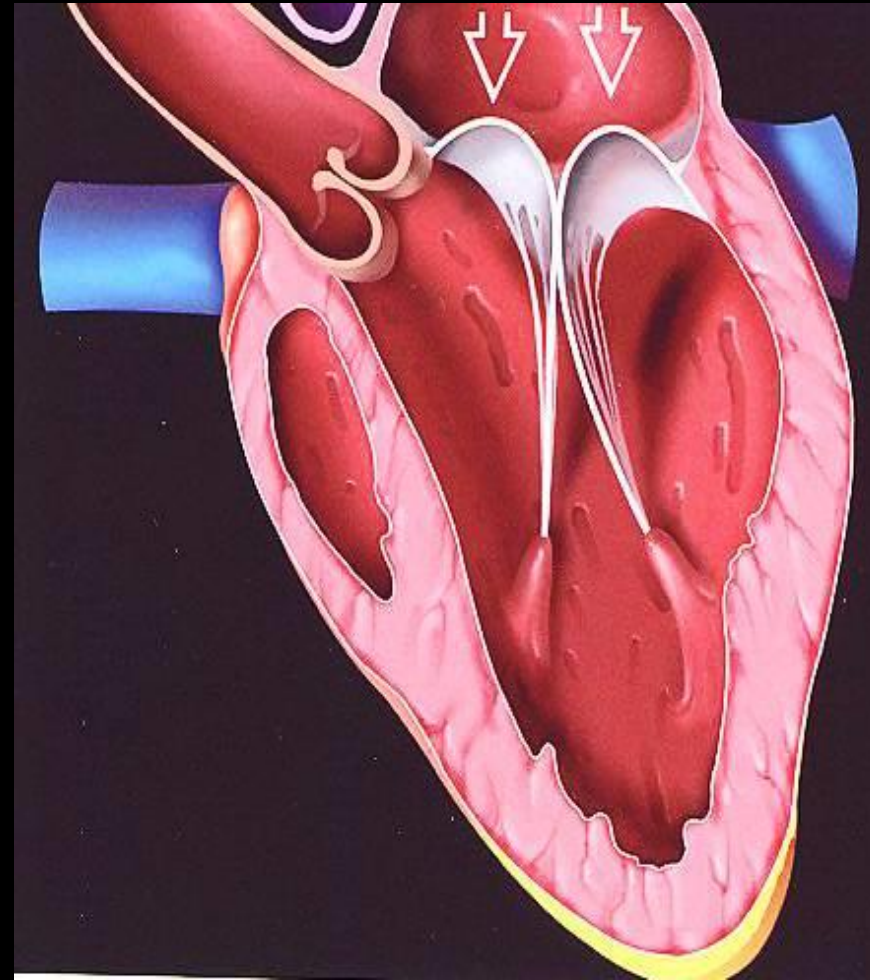
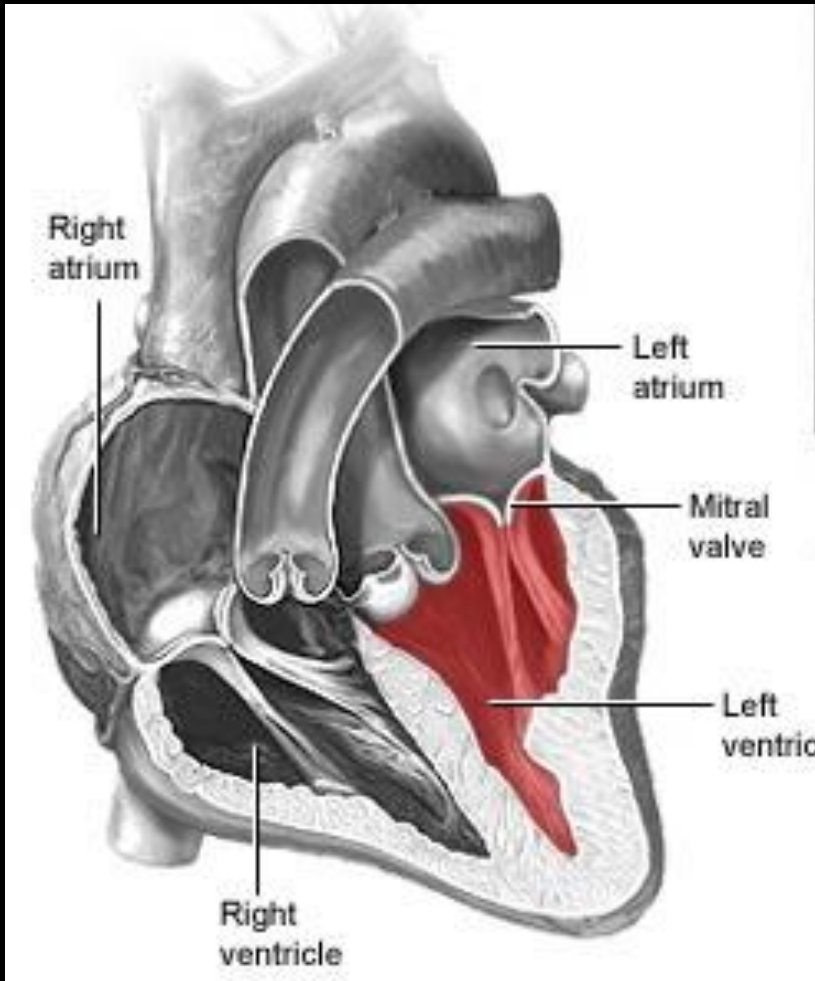
ROLE OF CATH IN MR

- CLARIFY ETIO
 - ISCHEMIC
 - DILATED CM
 - STRUCTURAL
- CORONARY ANATOMY PRIOR TO SURGERY

THE MITRE=MITRAL VALVE



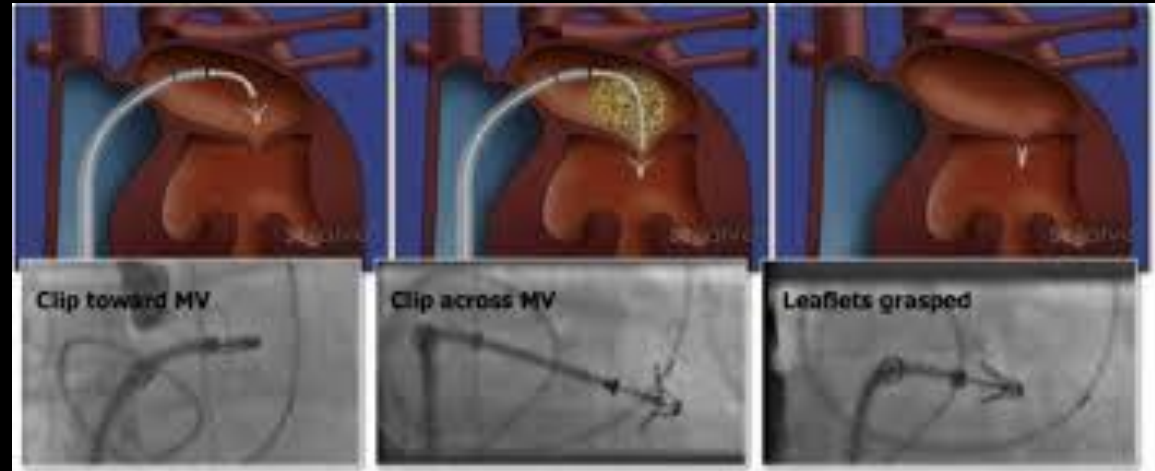
NML VS MVP





A

Mitral valve clip



Case 3: AL REFERRED FOR HEART MURMUR



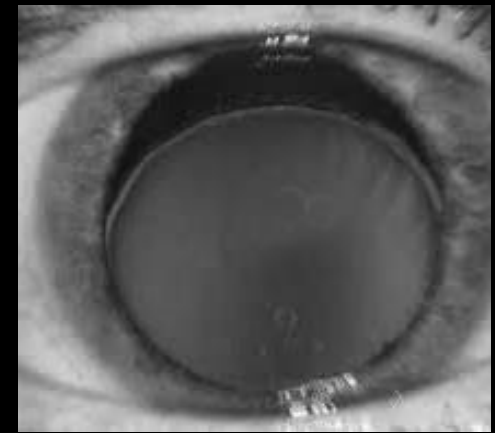
34 YO DAY LABORER AND ATTORNEY W/
POLITICAL ASPIRATIONS. HAS
SKELETAL ABNORMALITIES AND HEART
MURMUR.

S: aware of forceful heart beat; mildly
short of breath; self-conscious re. "sunken
in chest," tall and thin body habitus

PMH: Myopia; Herniorraphy

FH: Mother died shortly after child birth

PHYSICAL FEATURES

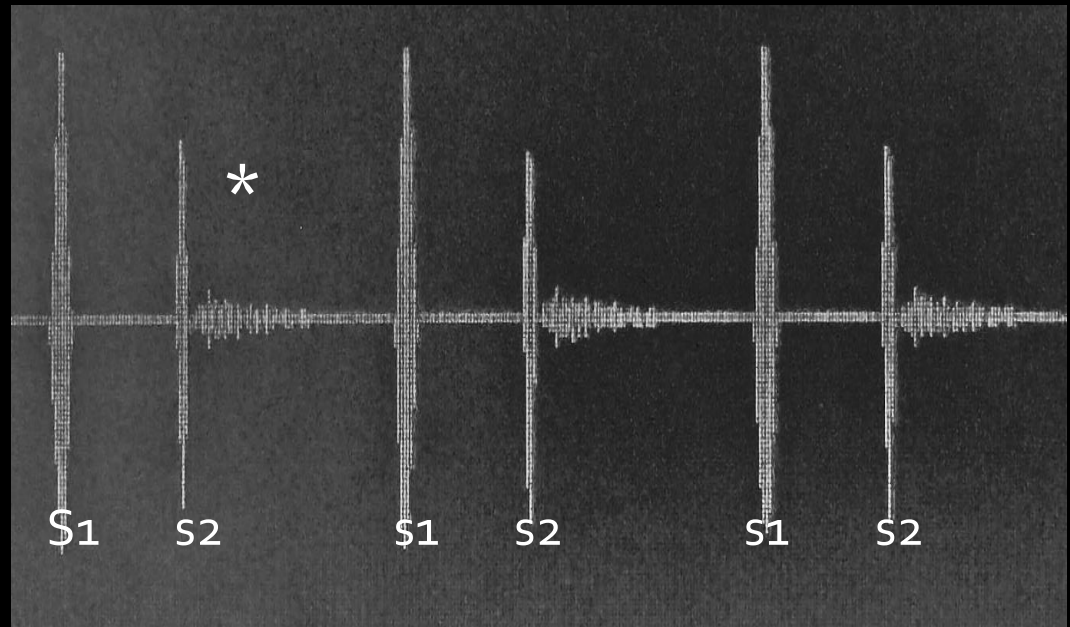
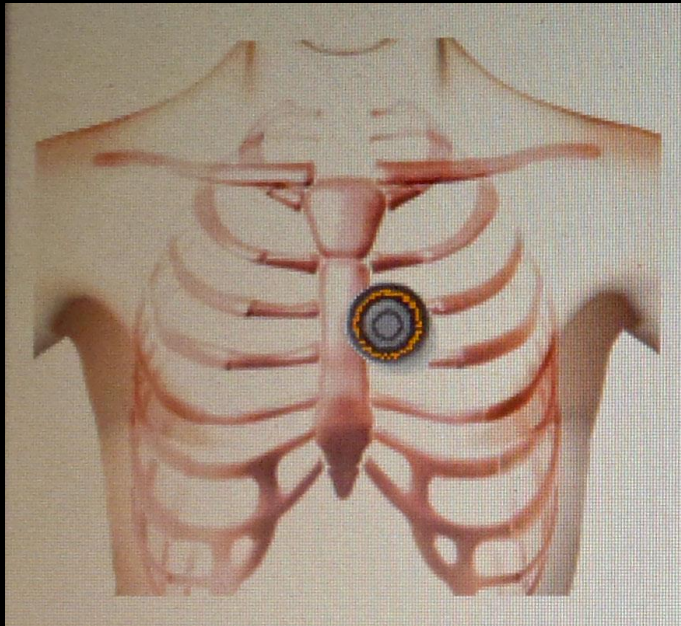


PECTUS EXCATUM

ARACHNODACTYLY

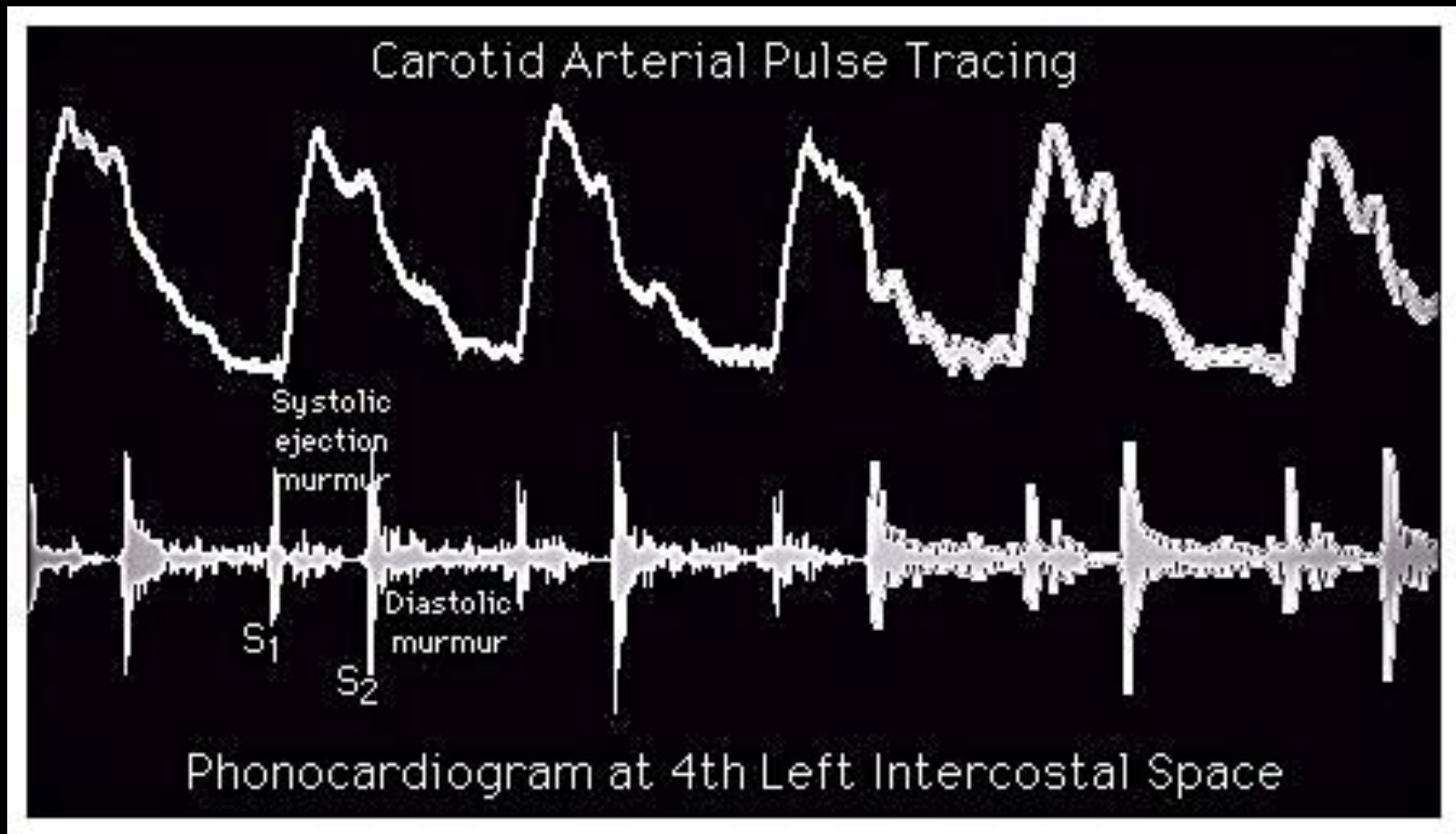
ECTOPIA LENTIS

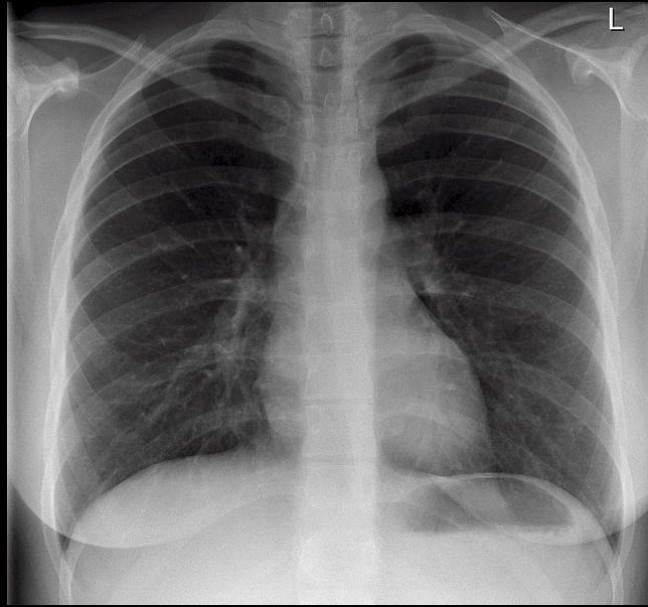
PHONOCARDIOGRAM



WHAT IS THE IMPLICATION OF AN AORTIC REGURGITATION MURMUR HEARD BEST AT 4TH RIGHT INTERCOSTAL SPACE RATHER THAN LEFT?

PHONO AND CAROTID PULSE TRACING*****





CORONAL SECTION OF HEART AND CXR



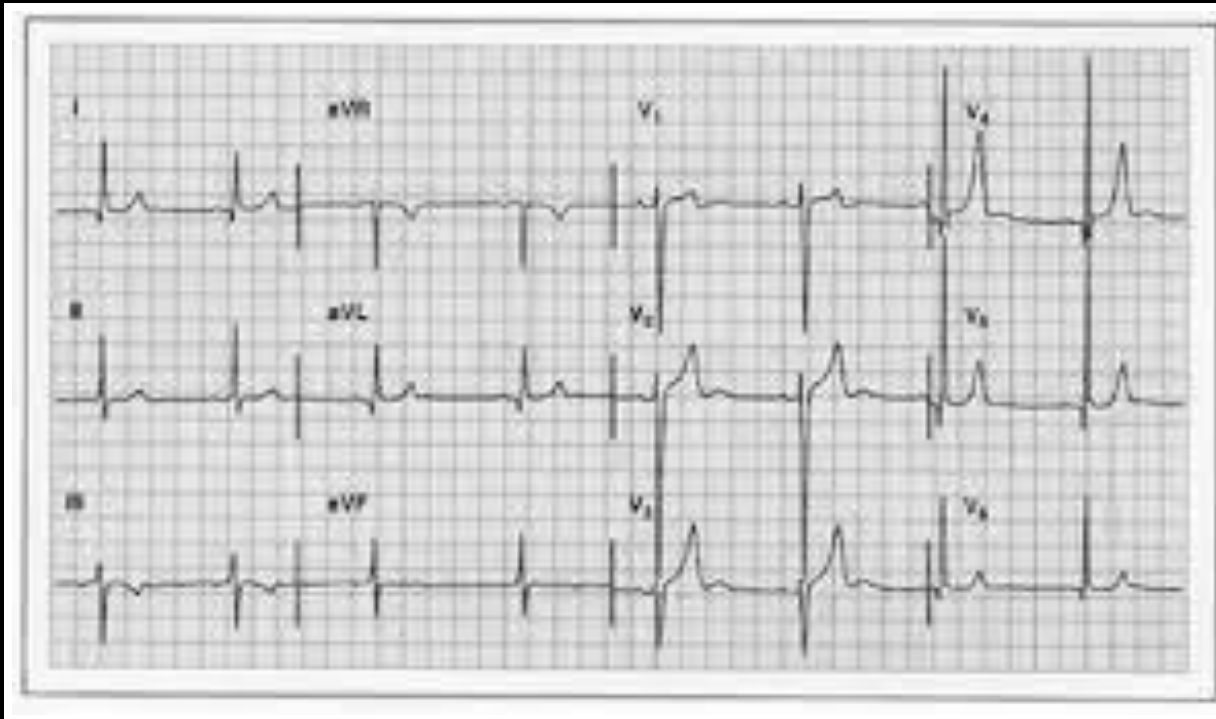
PA CXR



DILATED AORTIC ROOT

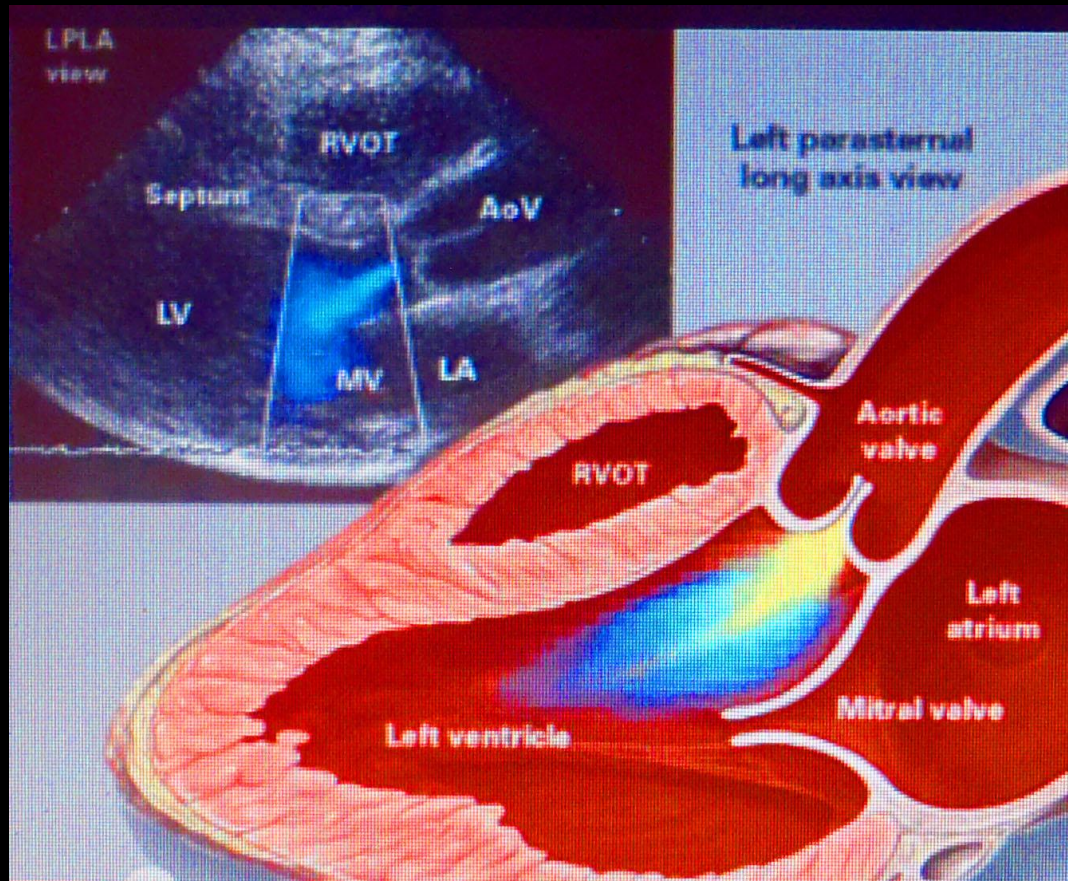


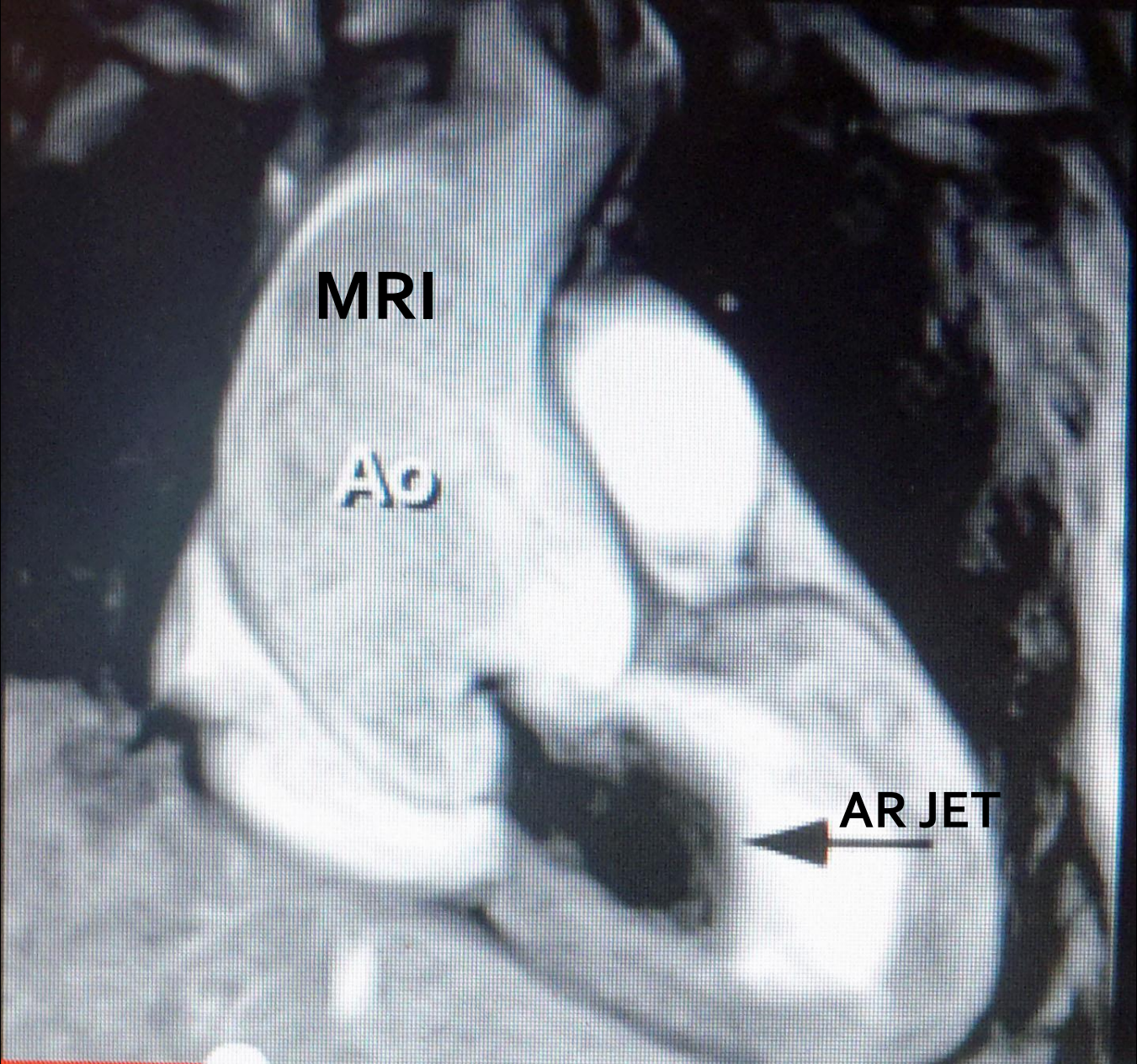
AL: EKG



- INCREASED PRECORDIAL VOLTAGE
- PEAKED T WAVES
- Q WAVES

ECHOCARDIOGRAM OF AORTIC REGURGITATION



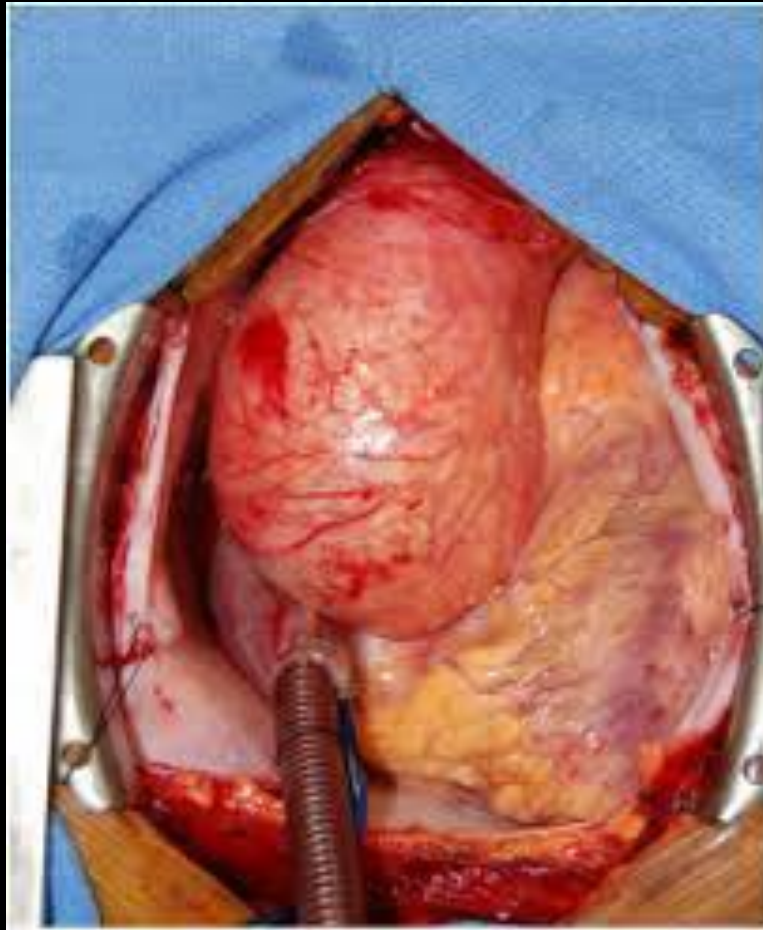


MRI

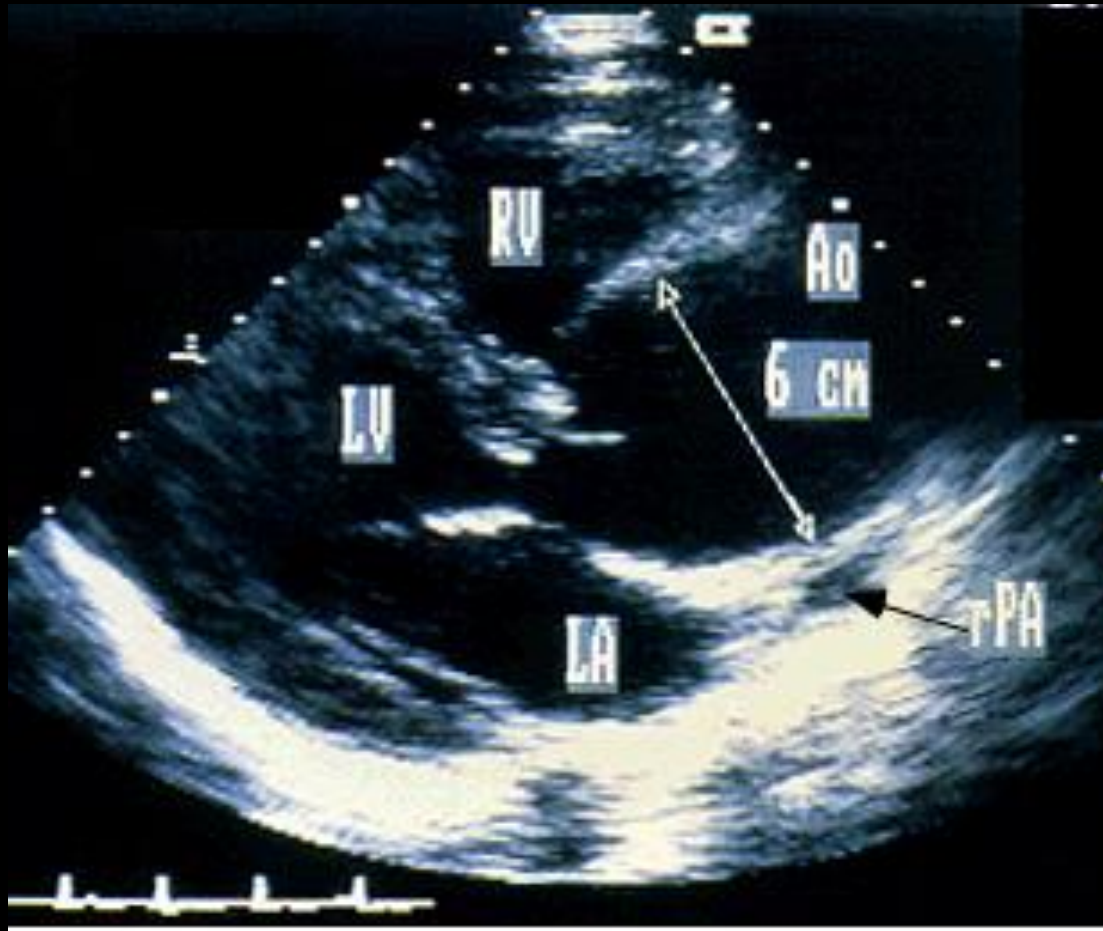
Ao

AR JET

ASCENDING AORTIC ANEURYSM

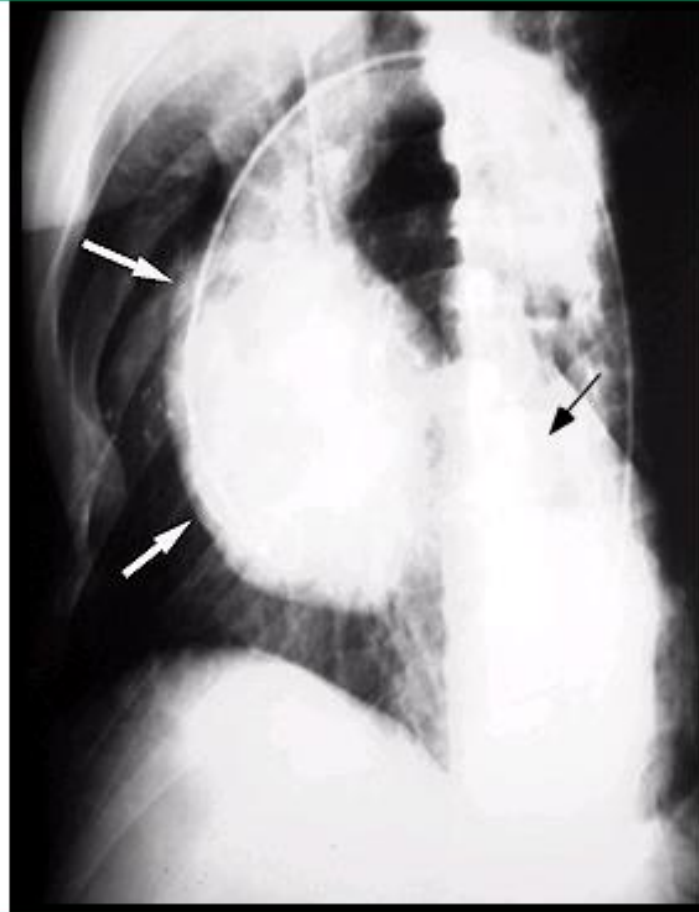


ANNULO AORTIC ECTASIA



DILATED AORTIC ROOT
DISTAL TO SINUSES OF
VALSALVA; ANNULO-
AORTIC ECTASIA

Aortic root aneurysm in Marfan syndrome on chest film



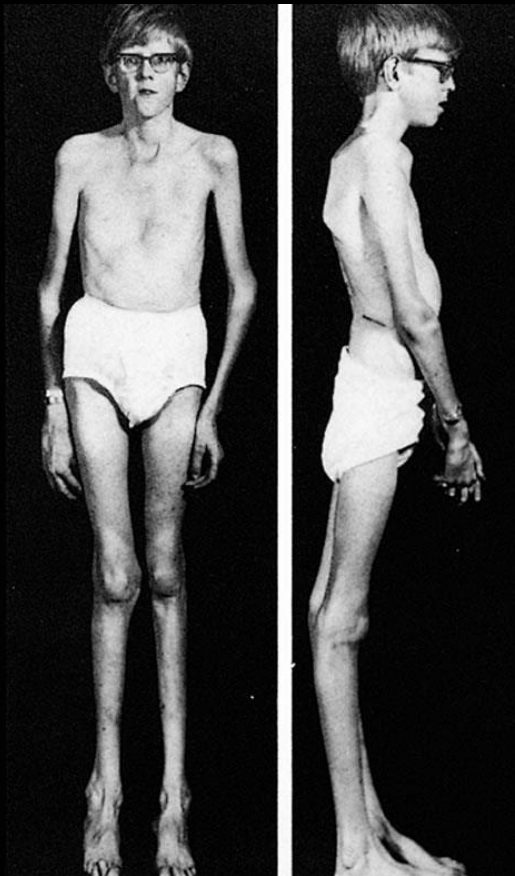
This aortogram in a young patient with Marfan syndrome demonstrates significant dilation of the aortic root (white arrows). There is also opacification of the left ventricle as a result of aortic regurgitation (black arrow).

Courtesy of Jonathan Kruskal, MD.

AORTOGRAM: SEVERE AI



MARFAN'S SYNDROME



REVOLUTIONS IN CARDIOLOGY

- STETHOSCOPE
- XRAY
- EKG
- CARDIAC CATH
- CORONARY ANGIO
- ECHO
- PCI
- TAVR

RENE HYACINTHE LAENNEC



*1816 INVENTED THE STETHOSCOPE * MEDIATE VS IMMEDIATE (EAR)
*"QUIRE OF PAPERS" *WOOD TURNER * DIED OF TB AGE 45

RONTGEN: X-RAY

- DISCOVERED XRAYS
1895
- RAYS EMITTED BY
ELECTRONS
- PENETRATING ABILITY



EINTHOVEN'S EKG: 1895



D^r Walton D. Miles, Boston.

June 18th, 1920

Electrocardiogram taken with Einthoven's original string galvanometer.
(See the instrument on the corner of the brick pillar.)

Lead I

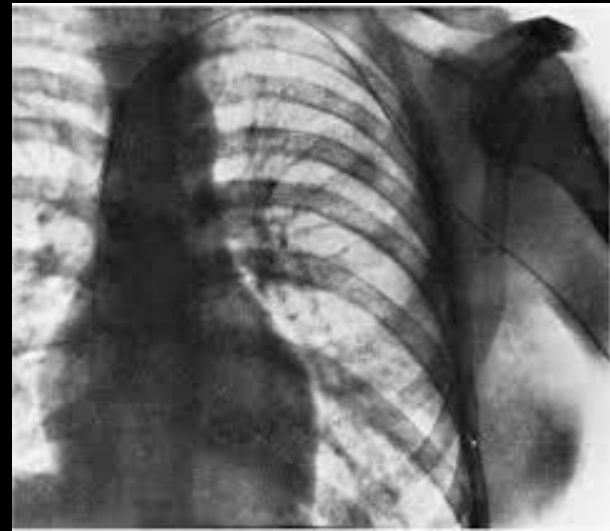


absc. 1 div. = 0.04 sec.

ordin. 1 . = 10^{-4} Volt

With kind regards
of W. Einthoven

CARD CATH: FORSSMANN 1929



- Surgical intern 1929 performed cut-down on his antecubital vein and inserted catheter
- Walked down to xray and documented catheter in right atrium
- His goal was medication and contrast delivery
- Deceived OR nurse into helping him
- Fired from his position
- Received Nobel prize in 1956
- Left cardiology research and became a urologist

CORONARY ANGIO: MASON SONES

1958



- PEDIATRIC CARDIOLOGIST AT CLEVELAND CLINIC
- DOING AORTOGRAM ON 26 YO MAN WITH RHEUMATIC HEART DISEASE
- CATHETER MISTAKENLY PLACED IN RIGHT CORONARY ARTERY
- CONTRAST INJECTED INTO RCA CAUSED TEMPORARY ASYSTOLE
- RENE FAVALARO PERFORMED FIRST CABG IN 1967

ECHOCARDIOGRAPHY

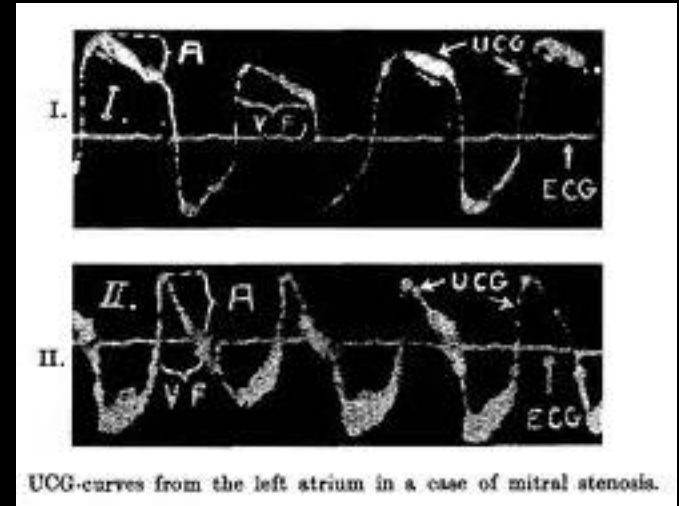
EDLER AND HERTZ 1953



Inge Edler (left) and Carl Helmut Hertz, the Cardiologist-Physiologist team that gave the World echocardiography in 1953, at a symposium in Sweden in 1977.



Edler and Hertz's echocardiographic trace of the anterior mitral valve leaflet in the late 1950s



UCG-curves from the left atrium in a case of mitral stenosis.

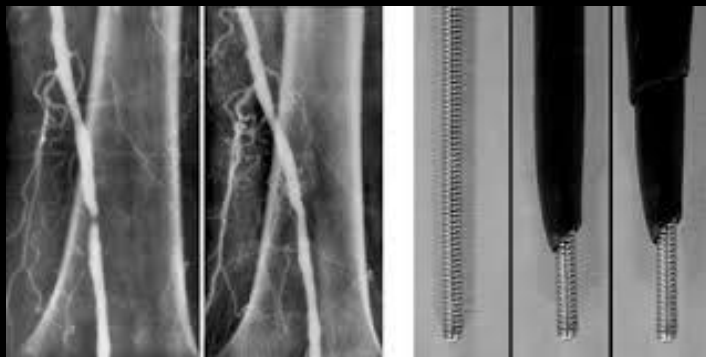
- REFLECTION OF INAUDIBLE SOUNDS IN BATS
- SONAR WWI AND WWII
- MEASURING LA EXPANSION IN MS/MR PTS



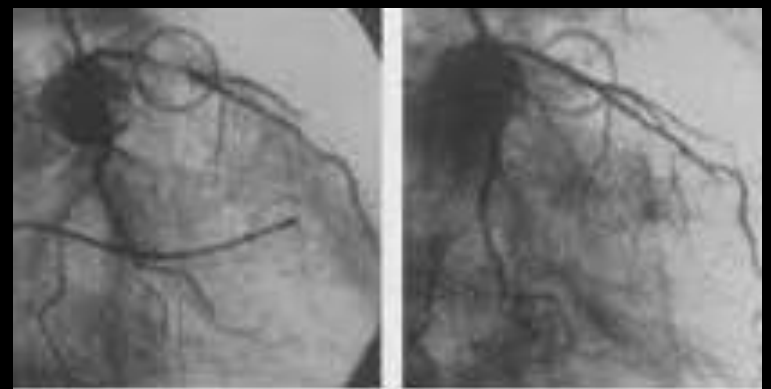
PCI: DOTTER AND GRUENTZIG

Charles T. Dotter

Father of Angioplasty & Interventional Radiology



1964



1977