Approach to Cardiovascular Case

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History Taking

- Patient details
- Presenting Complaint
- History of Presenting Complaint
- Past Medical History
- Medications
- Family History
- Social History

Presenting complaint

- Usually ask the patient:
  What problems brought you to the doctors today?
  How can I help you?
- Ask open-ended questions *(**e.g. Where is your pain?**)* rather than leading ones *(**Was the pain in the centre of your chest?**)*.
- Try not to use medical terms *(e.g. **Do you have orthopnoea**?)*

History of presenting complaint

- Find out more information about presenting complaint

- ***Where did you experience the chest pain?*** [Location]
- ***What was the pain like?*** [Character]
- ***How severe was the pain?*** [Severity]
- ***How long did the pain last for?*** [Duration]
- ***How often do you experience the pain?*** [Frequency]
- ***Did the pain spread anywhere?*** [Radiation]
- ***What makes the pain worse?*** [Exacerbating factors]
- ***Does anything make it better?*** [Relieving factors]
- ***Did you noticed any thing else at the time? Nausea? Sweating?*** [Associated symptoms]

Past medical history

Any other medical problems
Specifically any cardiovascular problems

DM

HTN

CAD

CVA

Drug history

- Sometimes patients may consider ‘over the counter drugs’ not important

- Enquire about any herbal treatments

Family history

DM

HTN

CAD

CVA

SCD

HCM

Social history

- Ask the patient if they smoke?

  Type of tobacco – Cigarettes/ beedi/ SLT? Amount per day

- Drug abuse e.g. cocaine

- Do they consume any alcohol?
  If so how many units per week?

- *Living conditions* - RHD

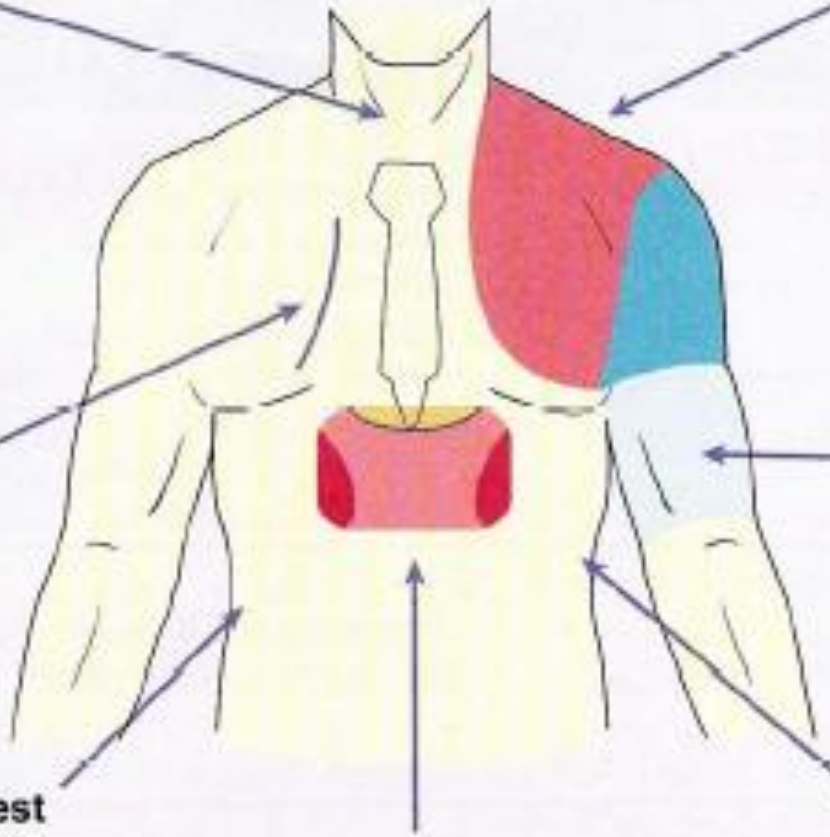
Cardinal Symptoms

Chest pain or discomfort
Dyspnea, orthopnea, paroxysmal nocturnal dyspnea
Palpitations, dizziness, syncope
Cough, hemoptysis
Pain in extremities with exertion (claudication)
Edema

Chest pain

There are literally dozens of illnesses, injuries and conditions that can cause chest pain

Knowing common signs, symptoms and patient presentations can help you differentiate between different kinds of chest pain.



Retrosternal
Myocardial ischemic pain
Pericardial pain
Esophageal pain
Aortic dissection
Mediastinal lesions
Pulmonary embolization

Shoulder
Myocardial ischemic pain
Pericarditis
Subdiaphragmatic abscess
Diaphragmatic pleurisy
Cervical spine disease
Acute musculoskeletal pain
Thoracic outlet syndrome

Interscapular
Myocardial ischemic pain
Musculoskeletal pain
Gallbladder pain
Pancreatic pain

Arms
Myocardial ischemic pain
Cervical/dorsal spine pain
Thoracic outlet syndrome

Right Lower Anterior Chest
Gallbladder pain
Distention of the liver
Subdiaphragmatic abscess
Pneumonia/pleurisy
Gastric or duodenal penetrating ulcer
Pulmonary embolization
Acute myositis
Injuries

Epigastric
Myocardial ischemic pain
Pericardial pain
Esophageal pain
Duodenal/gastric pain
Pancreatic pain
Gallbladder pain
Distention of the liver
Diaphragmatic pleurisy
Pneumonia

Left Lower Anterior Chest
Intercostal neuralgia
Pulmonary embolization
Myositis
Pneumonia/pleurisy
Splenic infarction
Splenic flexure syndrome
Subdiaphragmatic abscess
Precordial catch syndrome
Injuries

Cardiac causes of chest pain

Myocardial ischaemia	•Retrosternal pain, radiate into arms, throat or jaw. •Constricting character, is provoked by exertion and relieved rapidly by rest •In cardiac emergencies, pain is similar in location and character to angina but is usually more severe, more prolonged, and unrelieved by rest
Pericarditis	Central chest pain, sharp in character and aggravated by deep inspiration, cough or postural changes
Aortic dissection	•Severe tearing pain in either the front or the back of the chest. •Onset is abrupt, unlike the crescendo quality of ischaemic cardiac pain

Dyspnoea

- Subjective feeling of difficulty in breathing
- Patient complains of shortness of breath or “I can’t get enough air”.
- Caused by many conditions including: heart failure, pulmonary disease, anaemia, anxiety, obesity.
- The history often give clues to the cause
- In many patients, occurs on exertion only.
- Exertional dyspnoea is usually due to cardiac failure, chronic pulmonary disease or poor physical condition.

New York Heart Association Functional Classification

Class	Symptoms
I	No symptoms or limitations in ordinary physical activity
II	Mild symptoms and slight limitation during ordinary activity
III	Marked limitation in activity even during minimal activity. Comfortable only at rest
IV	Severe limitation. Experiences symptoms even at rest

Orthopnoea

- Patient has more difficulty breathing in the lying position than when sitting upright.

- It is usually associated with congestive heart failure but may occur with severe lung disease.

Paroxysmal nocturnal dyspnoea

- Patient describes sudden wakening from sleep with shortness of breath.
- The patient will sometimes sit on the side of the bed to seek relief.
- Usually associated with congestive heart failure but similar symptoms may occur with asthma

Cough

Dry or productive of frothy sputum, occurs on exertion or lying flat, accompanied or preceded by dyspnoea.

Hemoptysis

-Blood tinged sputum : Pulmonary oedma

-Frank haemoptysis : Mitral Stenosis

Pulmonary embolism and infarction

Cardiac asthma	Pulmonary asthma
Breathlessness precedes cough	Cough precedes breathlessness
History of CVD	History of COAD/ BA/ chronic cough for years
Sputum is abundant, frothy and bloody.	Sputum is scanty and mucoid
Heart enlarged Basal crackles ECG abnormal	Heart is usually small Predominant wheeze/ silent chest ECG usually normal

Ankle swelling

- Some patients present with ankle swelling due to edema from heart failure.
- Such ankle edema is usually symmetrical and worse in the evening.
- If the heart failure progresses the oedema can ascend up the legs, and in severe cases to the lower abdomen/sacral areas.

SYSTEM	HISTORY
Cardiac	DOE Orthopnoea PND
Renal	Starts with face/ periorbital Anasarca Other signs
Hepatic	Usually rare Associated pleural effusion, ascites

Palpitations

- An unexpected awareness of the heartbeat.
- Ask the patient to describe exactly :
- Fast?

  Regular? Irregular?

  Skipped beats?

  How long they lasted for?

  Any other symptoms - e.g. dyspnoea? Chest pain?

Syncope

- Transient loss of consciousness resulting from cerebral anoxia, usually due to inadequate blood flow

- Did they lose consciousness?
  Under what circumstances did this occur?
  Did the patient experience any warnings?
  Was recovery spontaneous?
  Did the patient take time to recover?
  Did any bystanders notice any abnormal movements?

- It is always very useful to obtain a corroborative history from a relative or witness.

Claudication

- Claudication in Latin meaning to limp
- Patients notice pain in one or both legs (usually calves) when they walk more than a certain distance
- This distance is called claudication distance
- Suggests possible peripheral vascular disease with a poor blood supply to the affected limb
- Eventually, with increasing severity - rest pain

Congenital Heart Disease

To Be Asked Only if Patient Is an Infant

- Frequent pneumonias (increased lung blood flow)
- Excess perspiration (sign of failure in infants)
- Mother aware of infant's heartbeat or vibration or thrill

To Be Asked if Patient Is an Infant, Child, or Adult

- Murmur at birth?
- Pregnancy with rubella
- Normal growth and development
- Family history of congenital heart disease
- Cyanosis
- Mental retardation, Squatting

Physical examination

- General Appearance
- Ophthalmologic Examination
- Jugular Veins
- Carotid Pulse
- Cardiac Inspection and Palpation
- Auscultation
- Abdomen
- Extremities

General Inspection

1. Does the patient look acutely ill, chronically ill, or well?
2. Are there any features characteristic of certain syndromes?
3. Go with the probabilities

    Long thin people have long thin valves (MVP)

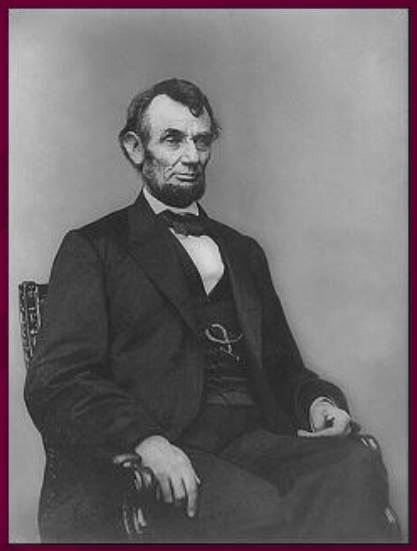
    Young-think bicuspid aortic valve

    Middle age-think rheumatic AV disease

    Elderly -think degenerative AV disease

Face and Neck

- Jaundice
- Xanthelasma
- Corneal arcus
- Malar flush (mitral stenosis)
- High arched palate (Marfan's syndrome)
- Central cyanosis



Hands

Clubbing

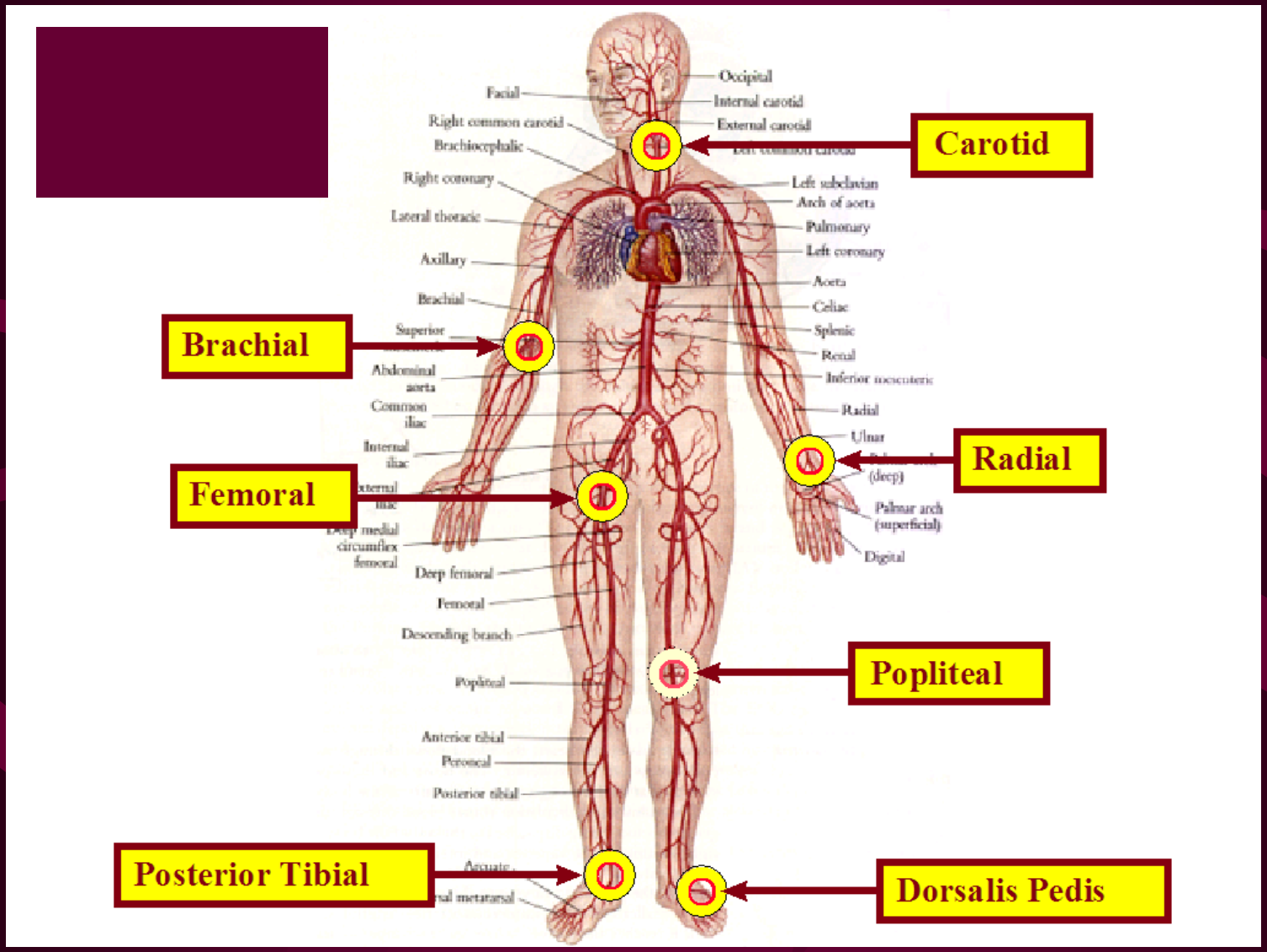
Xanthomata

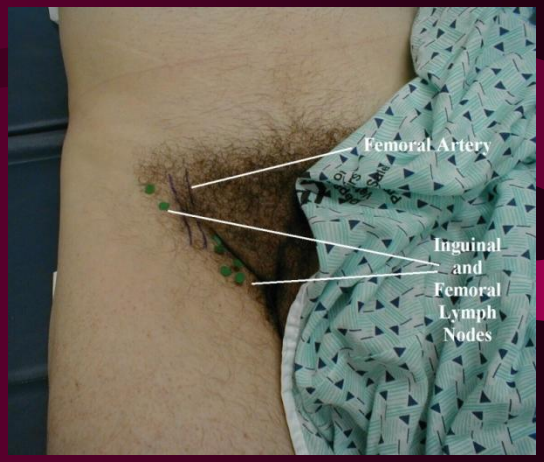
Splinter Hemorrhages

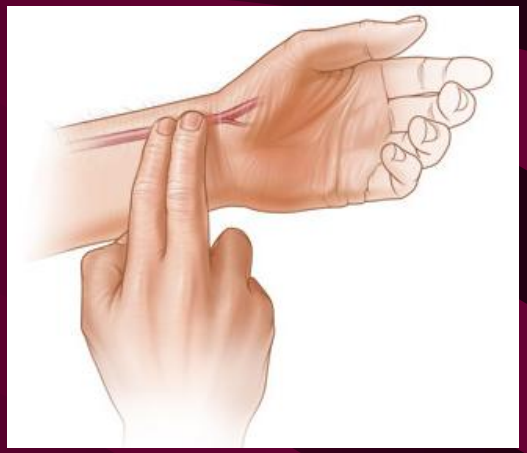
Examination - Pulse

- Rate (Radial artery)
- Rhythm
- Vessel wall
- Character (carotid artery)
- Volume (carotid artery)
- Radio-femoral delay (coarctation of the aorta)
- Carotid auscultation
- Palpability of all pulses

Palpable Pulses




Femoral Artery
Inguinal and Femoral Lymph Nodes



Blood Pressure

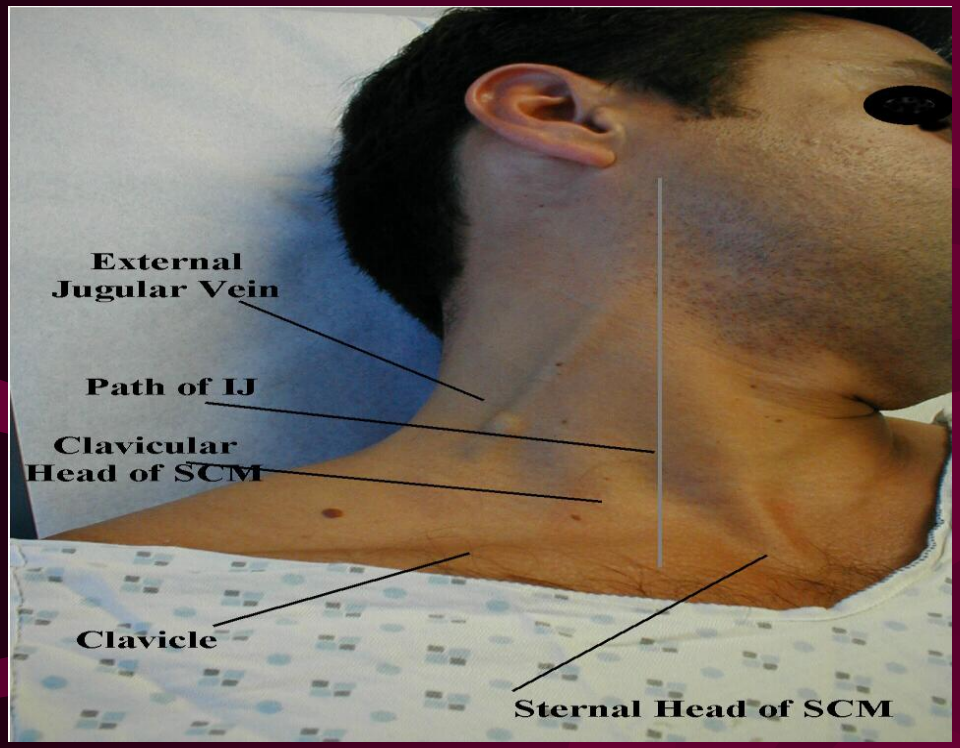
BP in both arms?

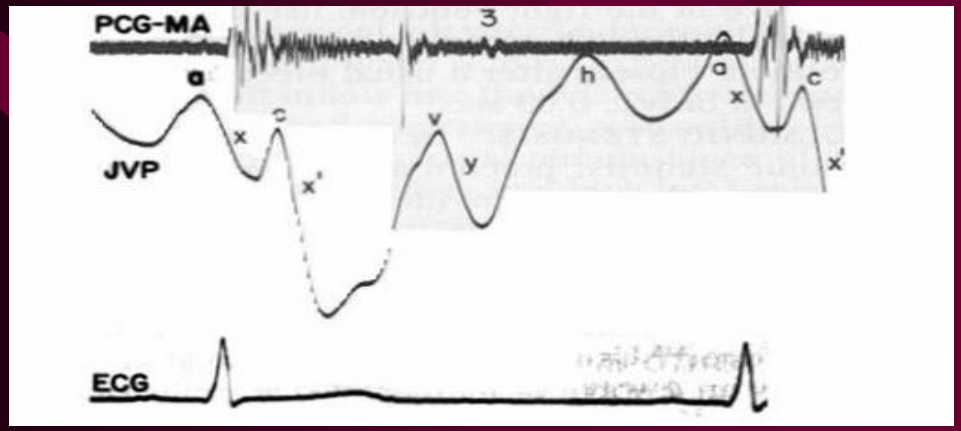
- Atherosclerotic obstruction
- Dissection of aorta
- Aortic coarctation above left subclavian

BP in the lower extremities?

- Hypertensive patient (< 40 yrs) - vasculitis
- ABI < 0.9 - PVD
- Hill's sign (>20 mmHg) - AI
- Pulsus paradoxus - exaggerated reduction in BP with inspiration (>10 mmHg) – COAD/ CP
- Postural hypotension

Landmarks for JVP





- **a wave -** atrial systole
- **x descent** – onset of atrial relaxation
- **c wave -** small positive notch in the 'x' descent due to bulging of the AV ring into the atria in ventricular contraction.
- **v wave -** after the x' descent - slow positive wave due to right atrial filling from venous return
- **y descent -** rapid emptying of the RA into RV due to TV opening

JVP Inspection

1. The right jugular vein is used because it is more direct in its path to the RA.

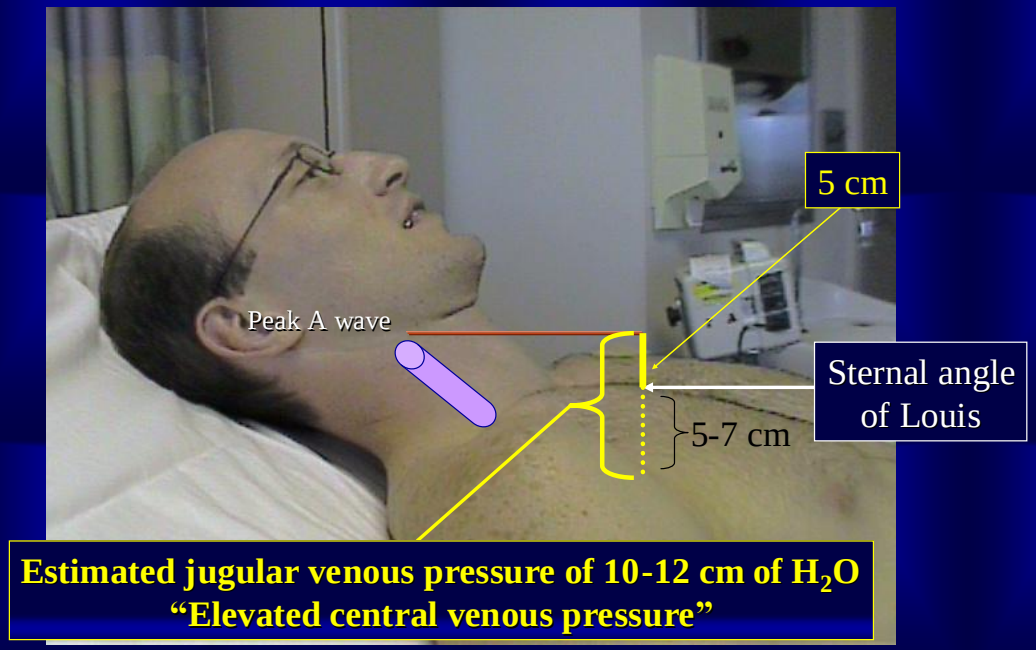
2. Characteristics to note are:
    2. Height
    - Waveform
    - Differentiate from carotid

Venous are better seen, arterial are better palpated
Venous are best seen at the root of neck,
arterial pulses, halfway up the neck
Positive wave in diastole = venous pulses.
Venous pulse -varies with expiration, abdominal compression, Valsalva (rises), inspiration, sitting up (falls).
Venous pulse has an upper level

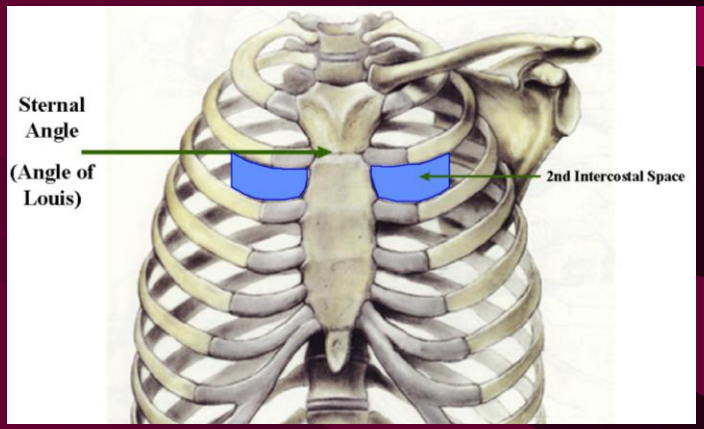
Specific JVP patterns

Condition	Pattern
Normal waveform	X' deeper than Y
Tricuspid regurgitation	CV wave
Complete heart block	Irregular cannon A waves
Tamponade	↑ JVP brisk X' > Y
Constriction	↑JVP brisk X' & Y descents X' less exaggerated than Y
RV infarction	↑ JVP –low amplitude

Estimate Central Venous Pressure



Estimated jugular venous pressure of 10-12 cm of H_2O "Elevated central venous pressure"



- The estimated height of the venous column should be related to the sternal angle, e.g "5 cm above sternal angle".
- Estimated by extending an artificial line from the meniscus of the jugular venous column, parallel to the floor, and measuring down to the sternal angle.

Precordium - Inspection

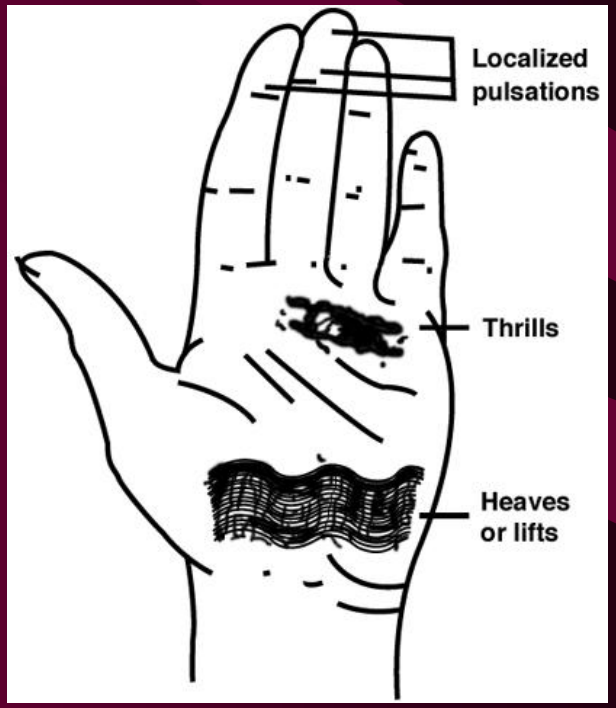
- Scars
  - Median sternotomy
    - CABG
    - Valve replacement
  - Lateral thoracotomy
  - Infraclavicular (pacemaker)
- Pectus excavatum (CTD)

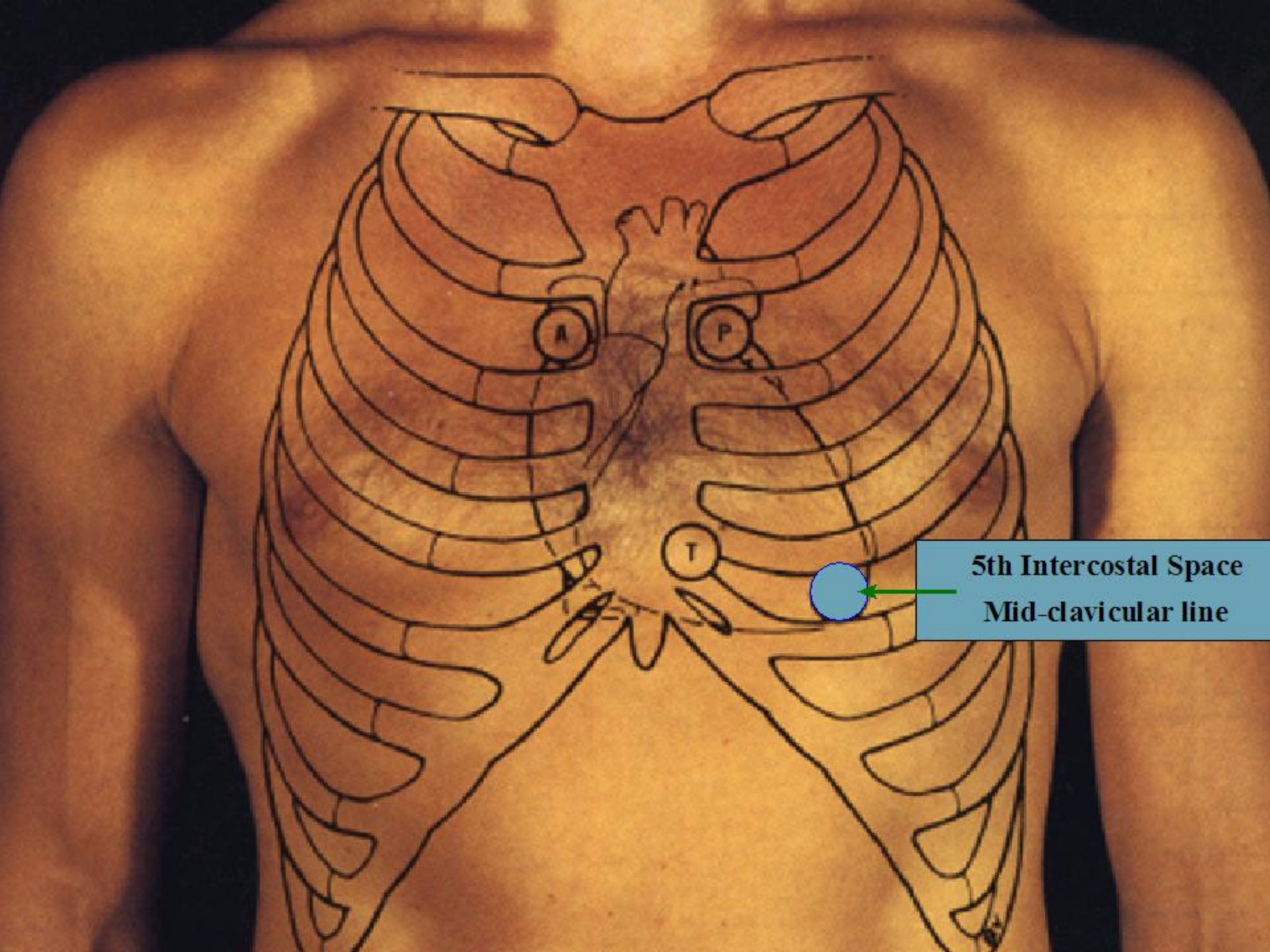
Sternotomy scar

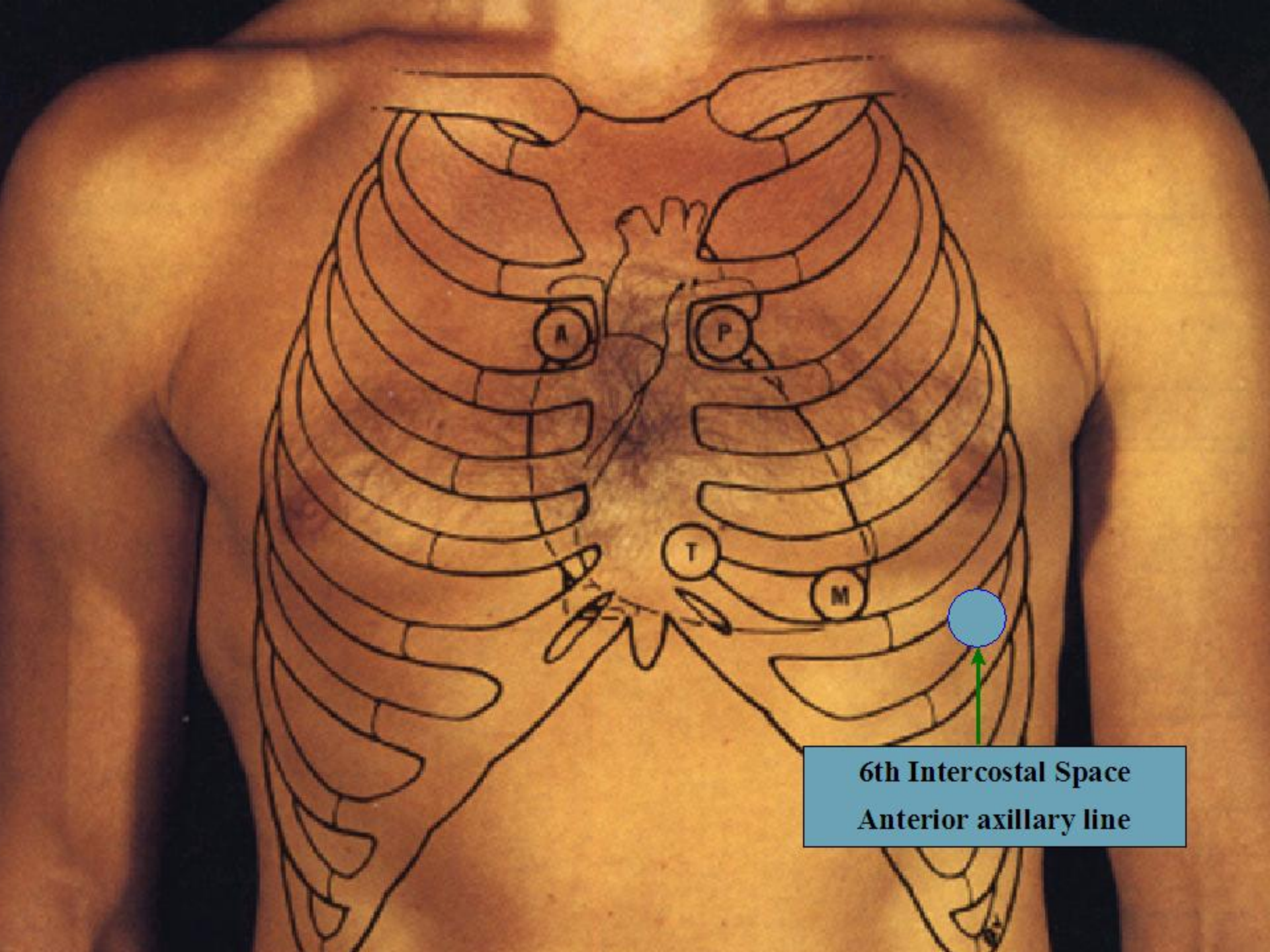
Pectus excavatum

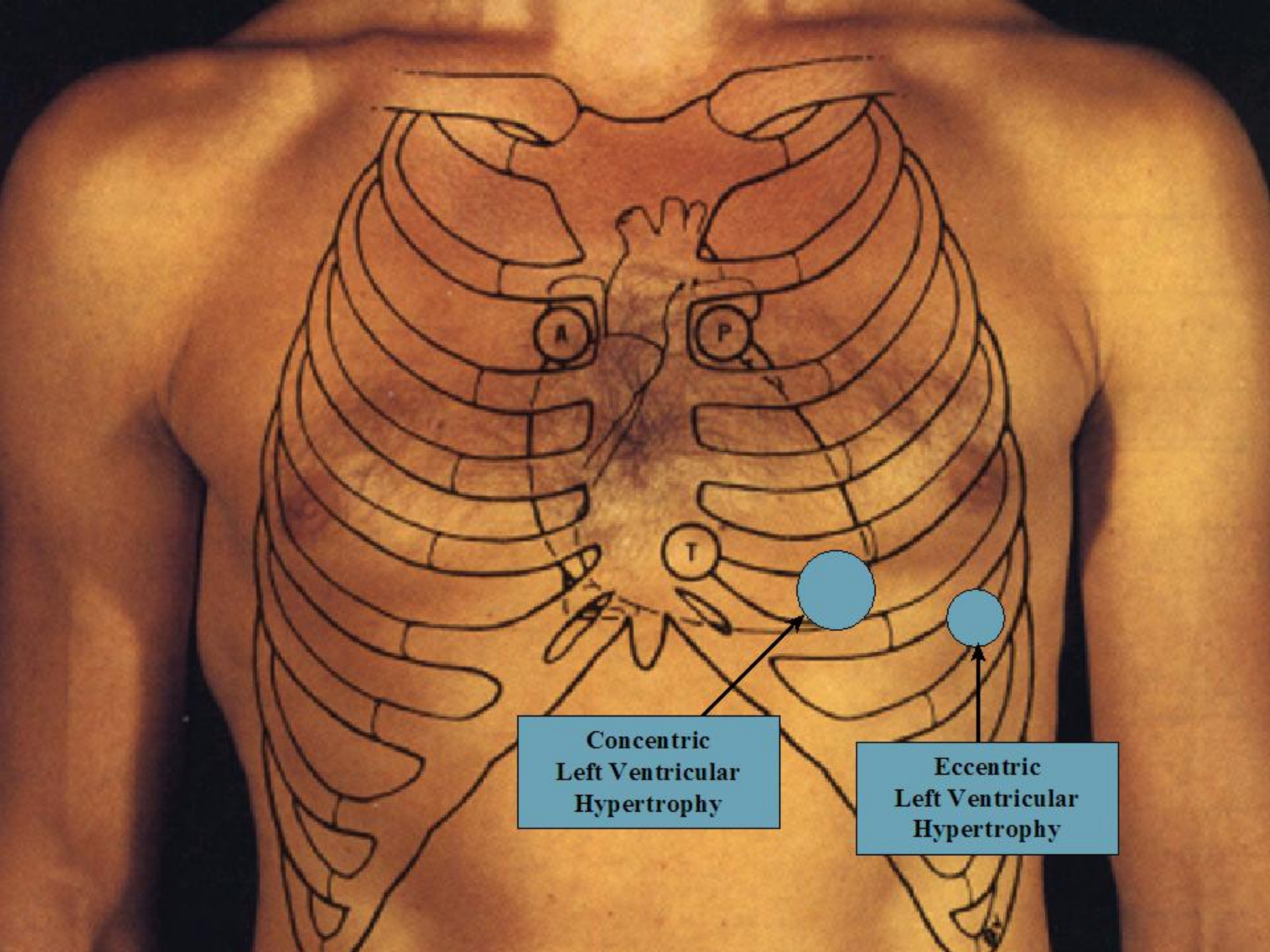
Palpation

- Point of Maximal Impact (PMI)/ Apex (< 3 cm)
- Thrills (palpable murmurs)
- Palpable sounds
- Heaves
- Apex- Normal, sustained, hyperdynamic
- Apex moves outward for the first third of systole and falls away rapidly
- Lasts for no more than 2/3 of systole
- Sustained apex extends up to S2




A
P
T
5th Intercostal Space
Mid-clavicular line

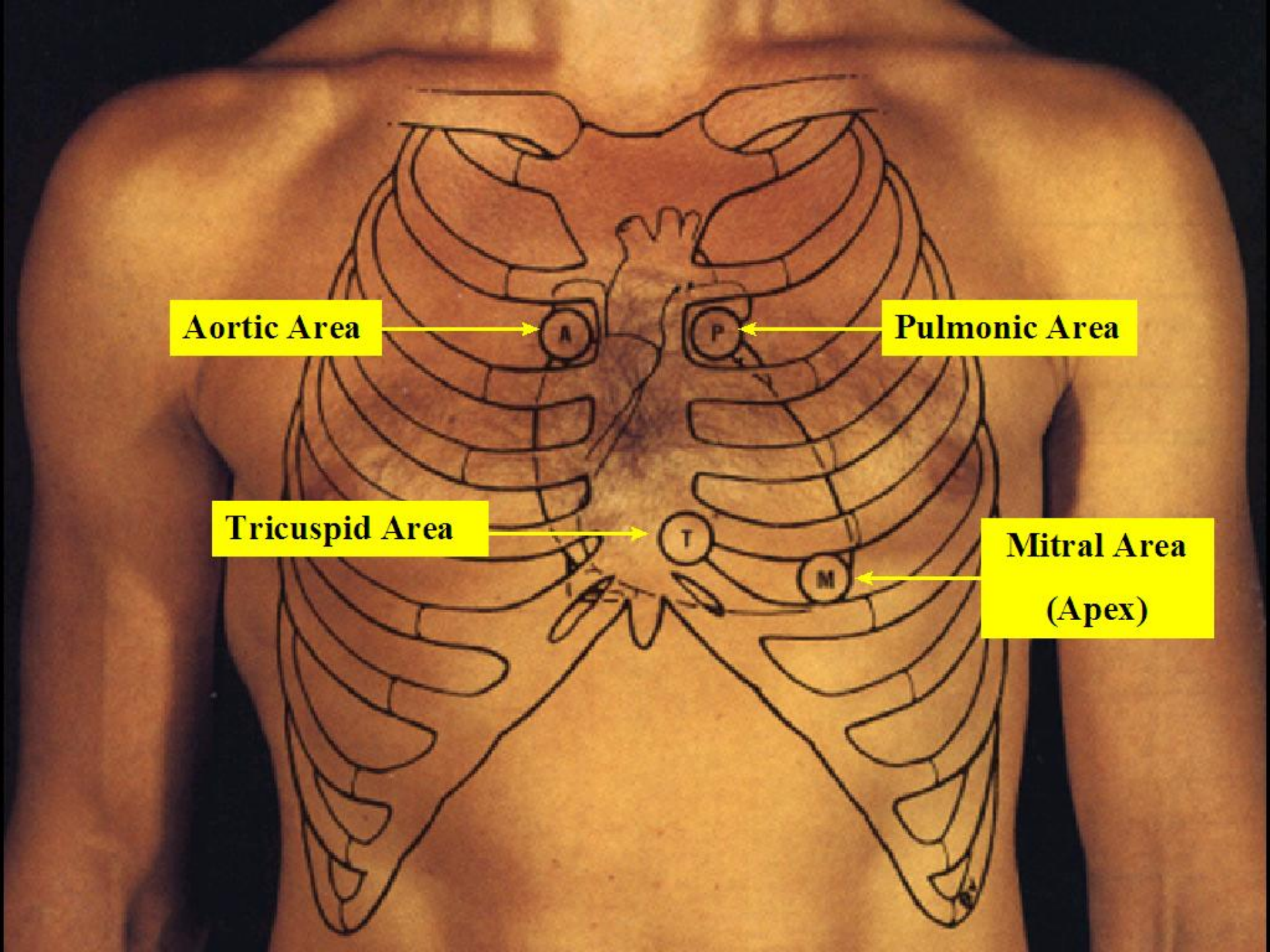

A
P
T
M
6th Intercostal Space
Anterior axillary line


A
P
T
Concentric
Left Ventricular
Hypertrophy
Eccentric
Left Ventricular
Hypertrophy

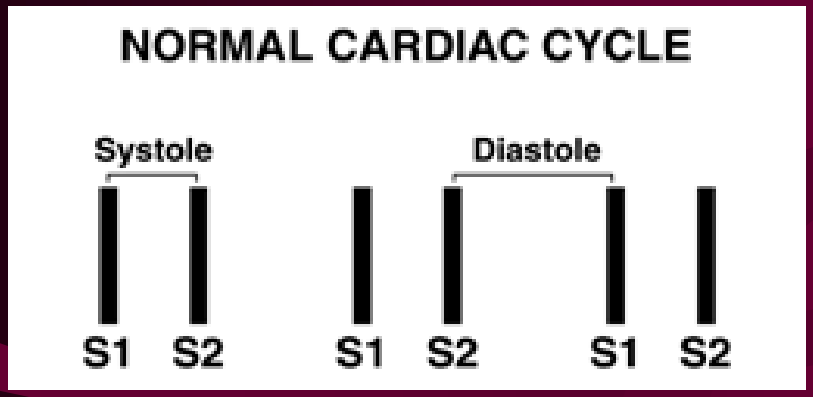
Auscultation

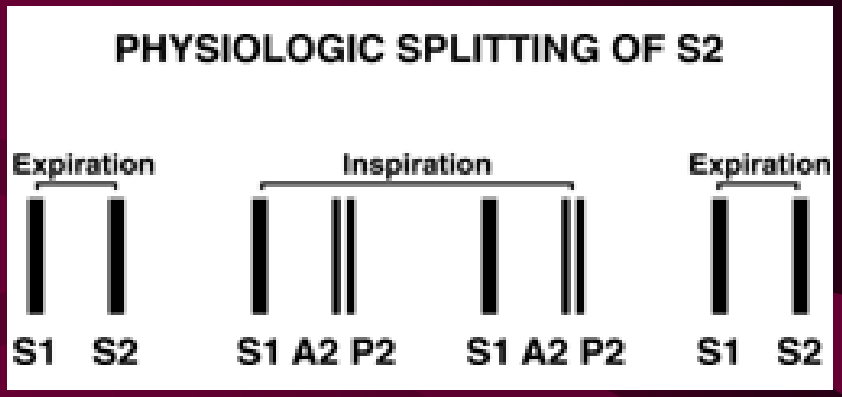
- Use both sides of the stethoscope to examine the heart
- Diaphragm is best for hearing high-pitched sounds, including S1, S2 and most heart murmurs
- Bell is bests for hearing low-pitched sounds, including S3, S4 and a few murmurs (e.g. mitral stenosis)
- Use LIGHT TOUCH when using the bell. Pressure turns it into a diaphragm

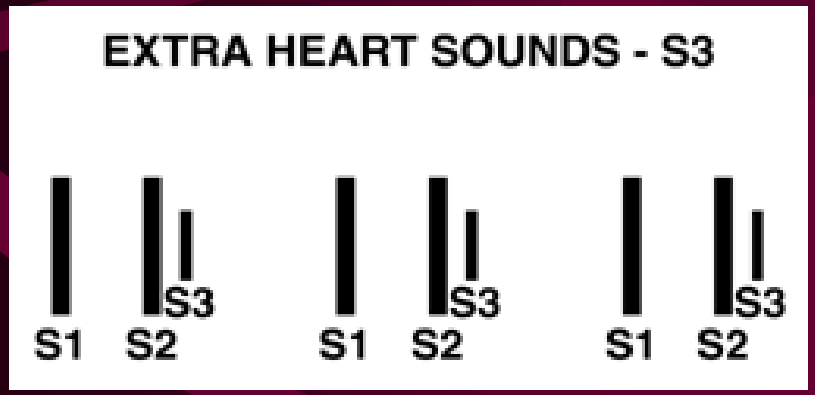
Heart sounds / Murmurs / Rubs

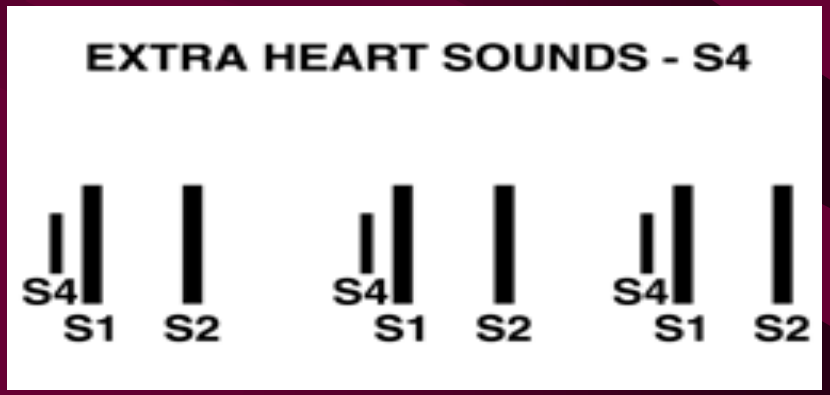

Aortic Area
A
Pulmonic Area
P
Tricuspid Area
T
Mitral Area
(Apex)
M

Heart Sounds

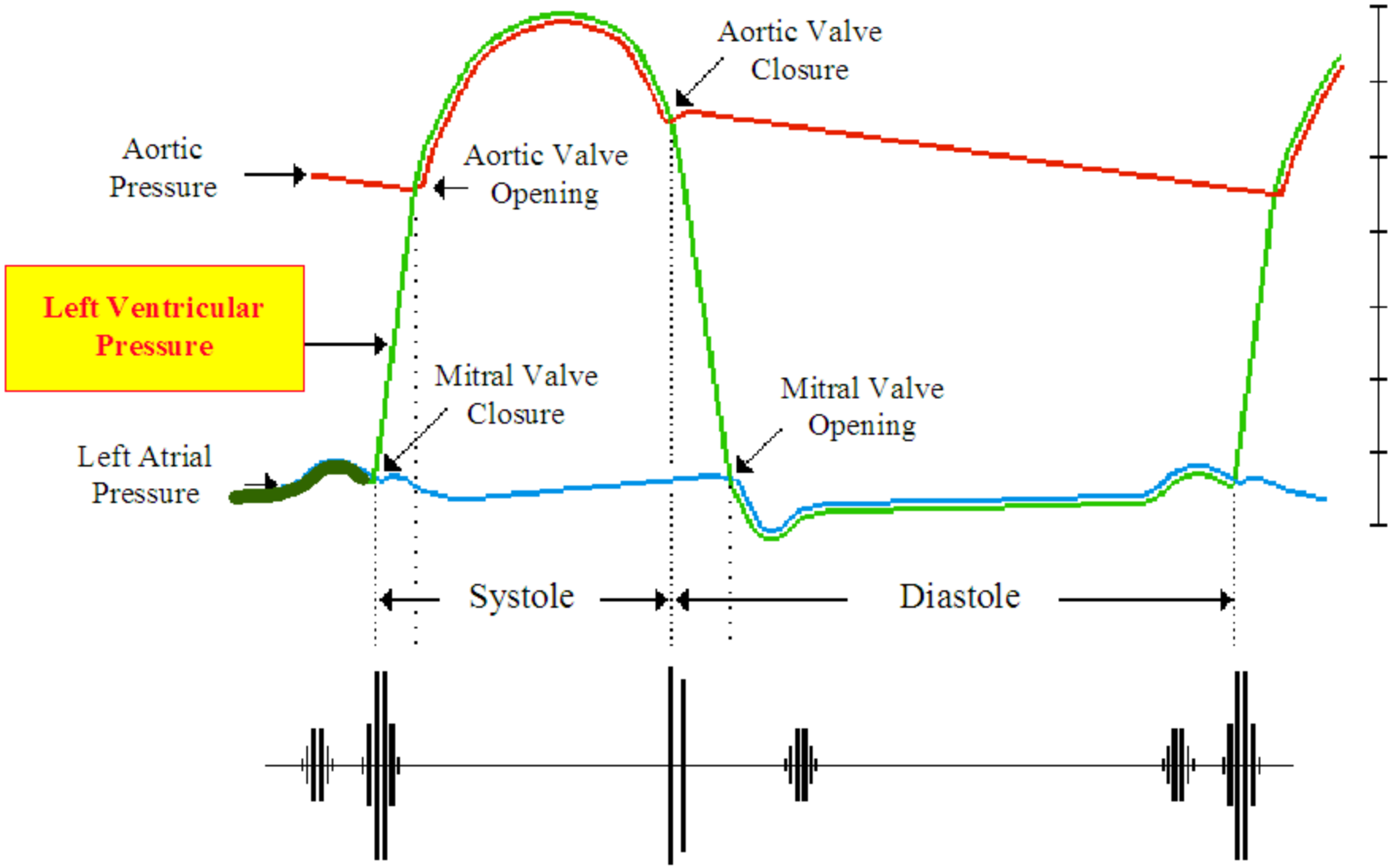








Timing of Heart Sounds



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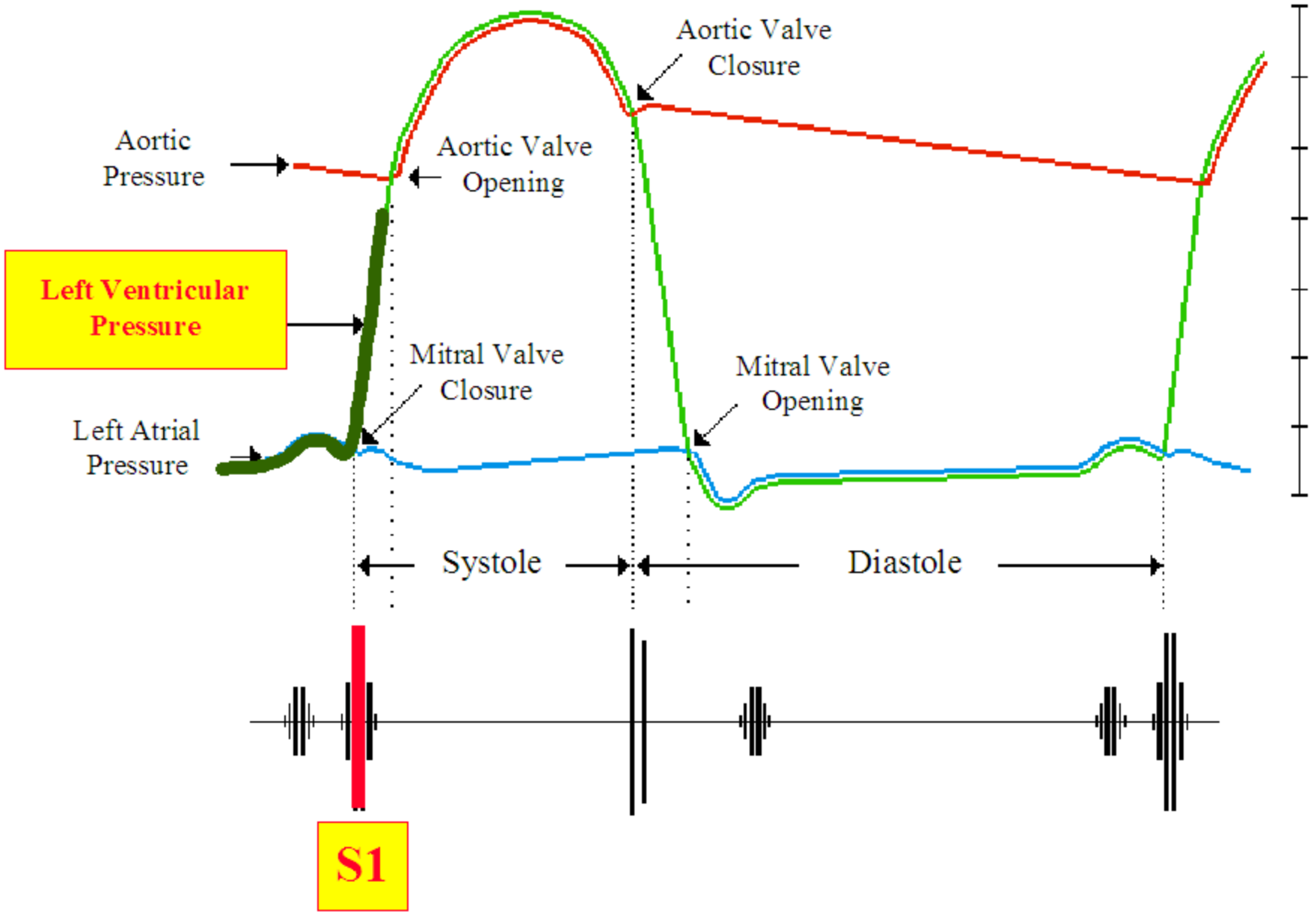

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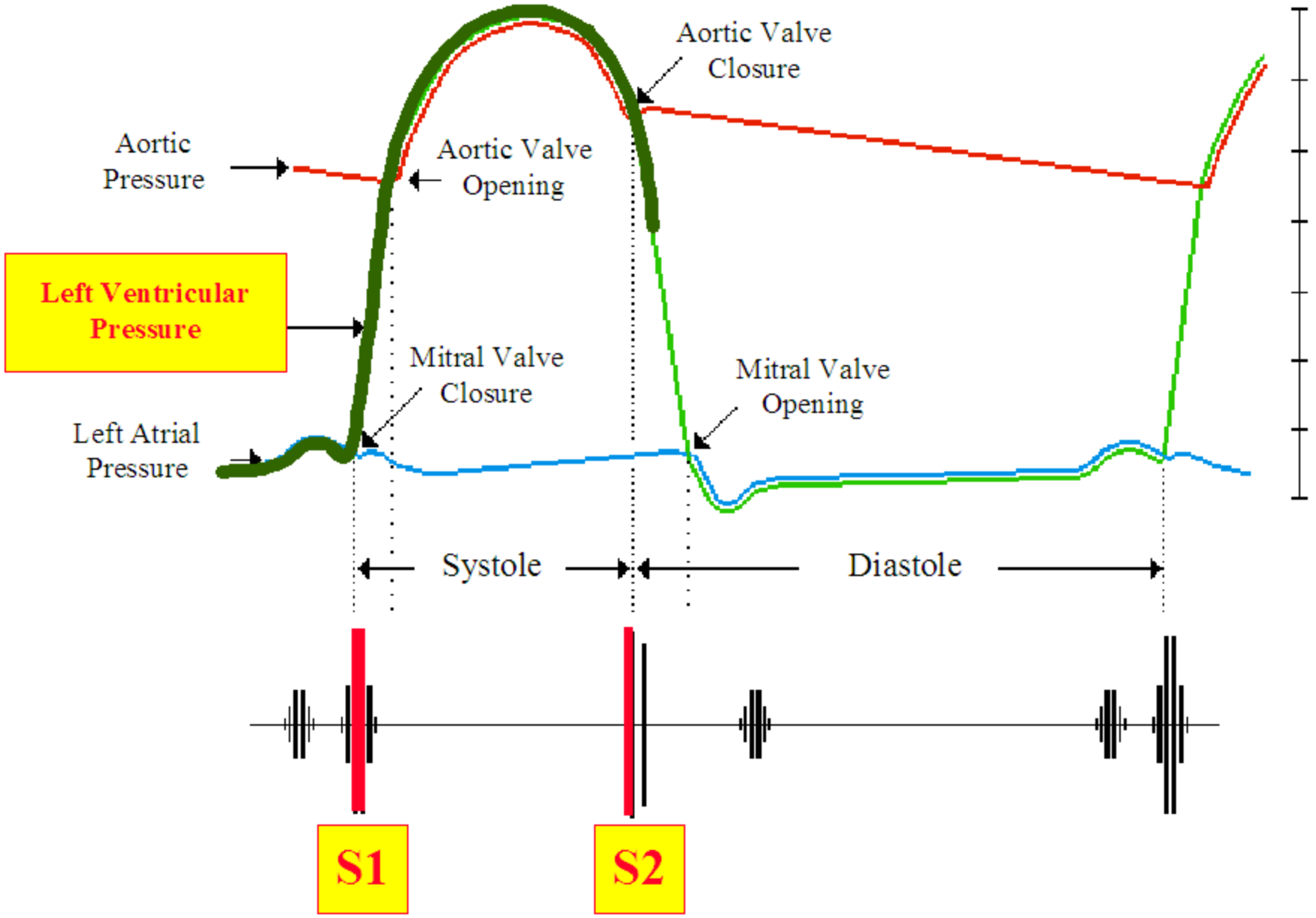

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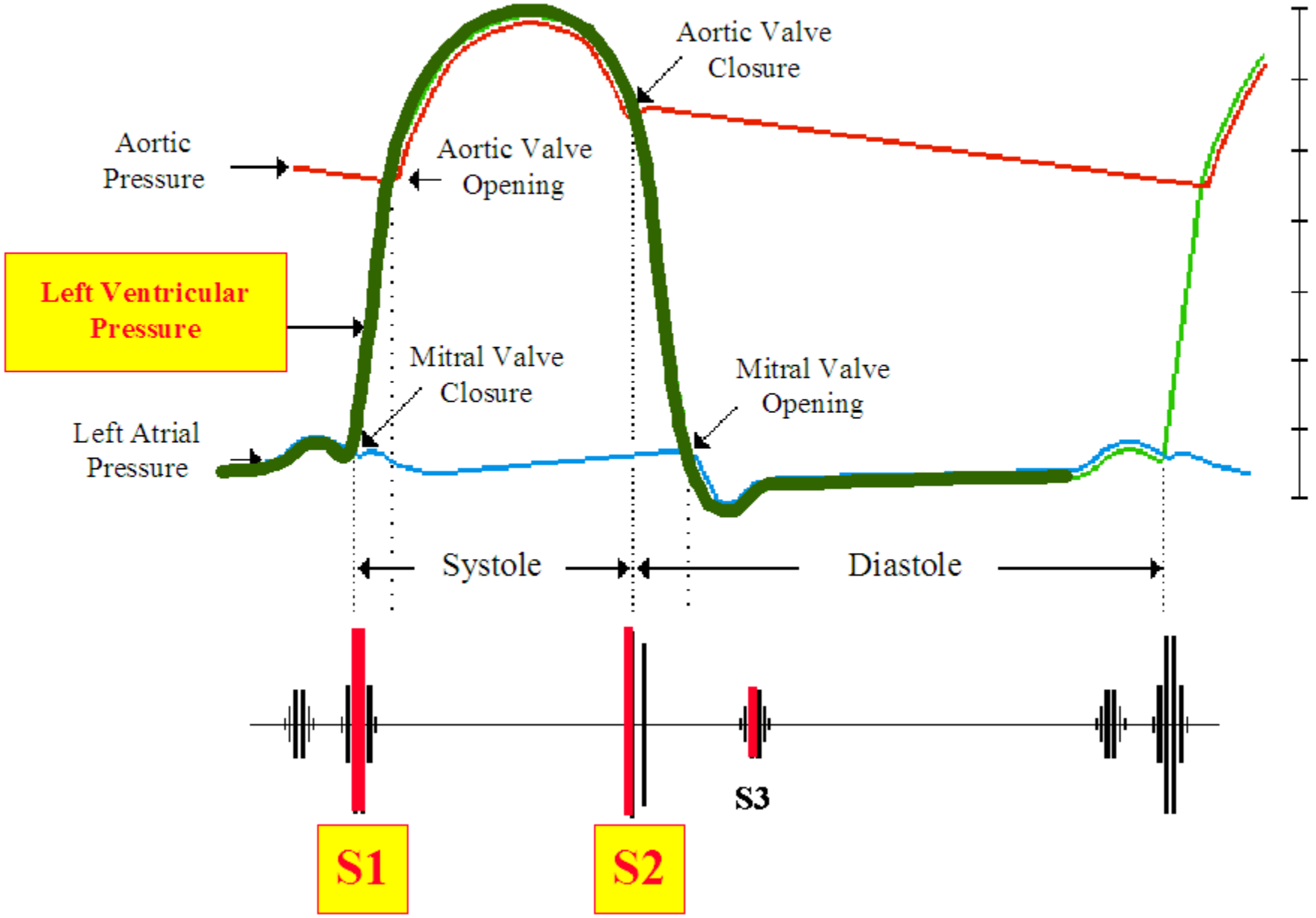

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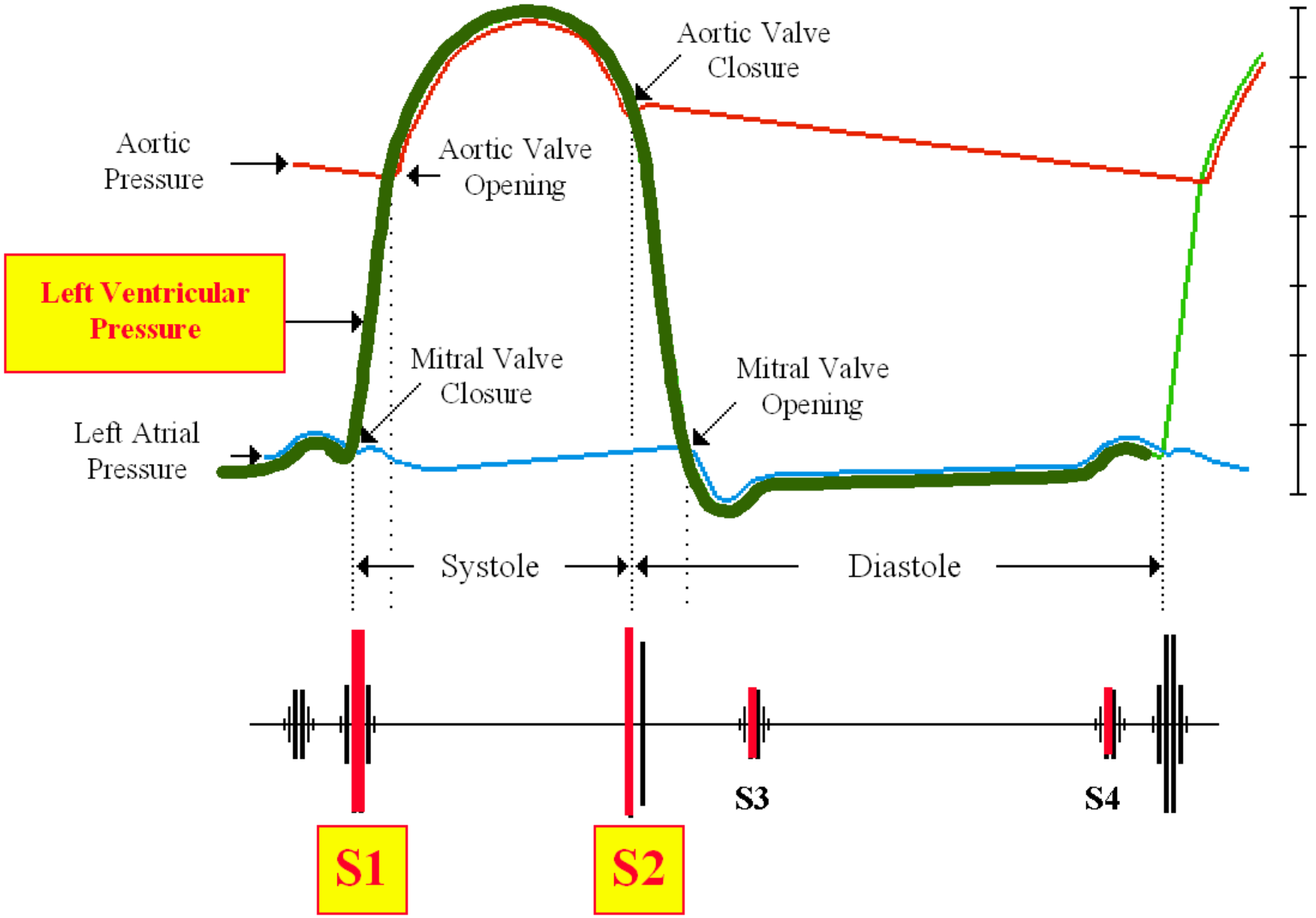
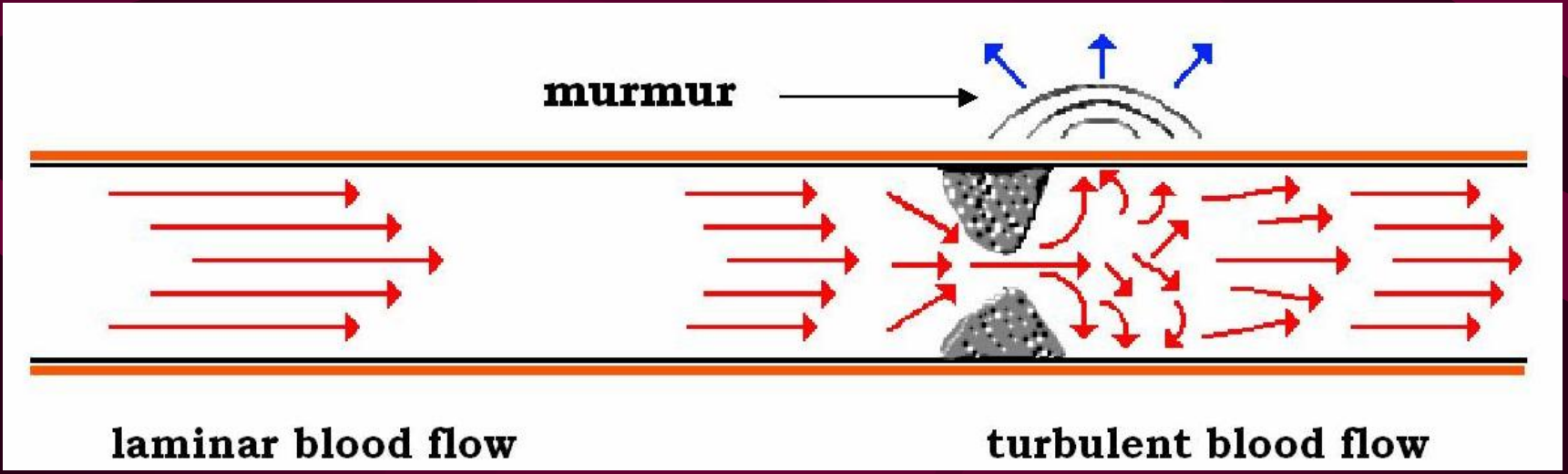


What are murmurs?

- Prolonged series of auditory vibrations
- Occasionally palpable – thrills
- They may be systolic, diastolic, or continuous (through both systole and diastole)



Auscultation

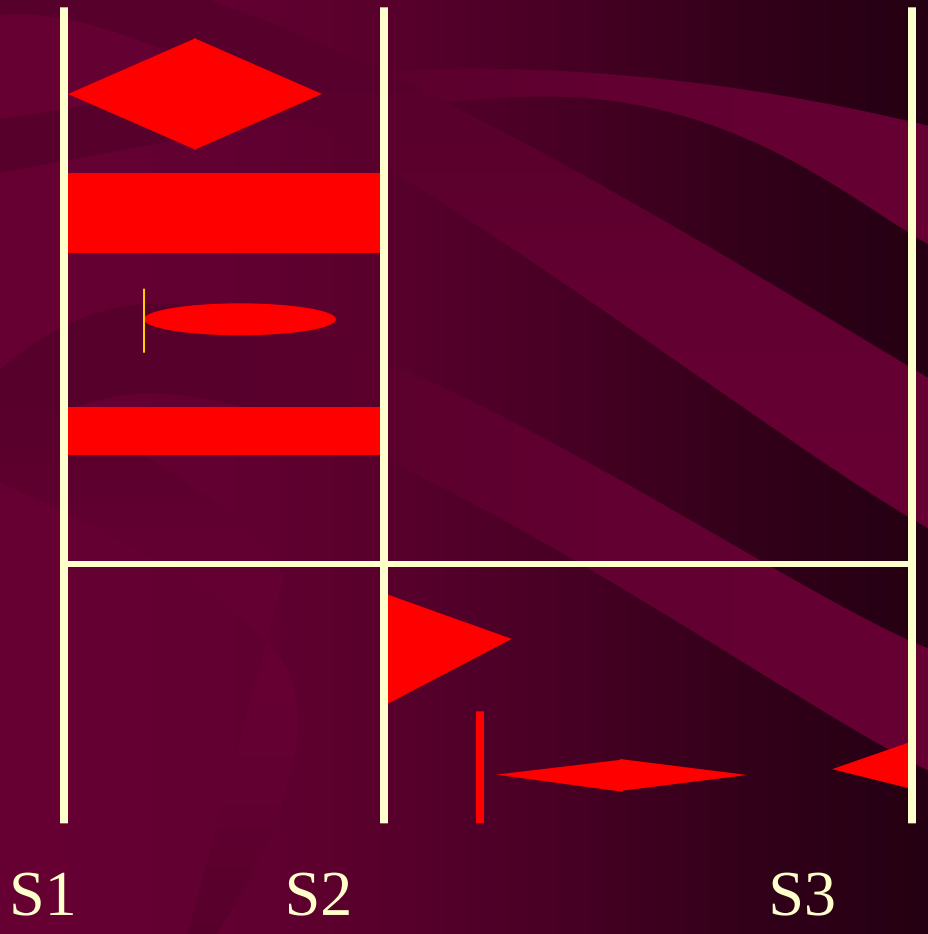
- Timing of murmur
  - Systolic
  - Diastolic
  - Continuous
- Site of maximal intensity
- Loudness
  - Grades I-VI
  - Thrill
- Pitch
- Radiation
- Dynamic maneuvers
  - Respiration
    - Left-sided ↑ on exp.
    - Right-sided ↑ on insp.
  - Valsalva
  - Squatting

How to grade a murmur

- I—don’t hear it immediately; very faint
- II—heard fairly easily as soon as you start auscultating the chest
- III—seems loud
- IV—has a thrill (i.e., you can feel it when you palpate the precordium)
- V—thrill present & heard with only the edge of the stethoscope touching the chest wall
- VI—thrill present & heard with the stethoscope just above the precordium, not touching the skin

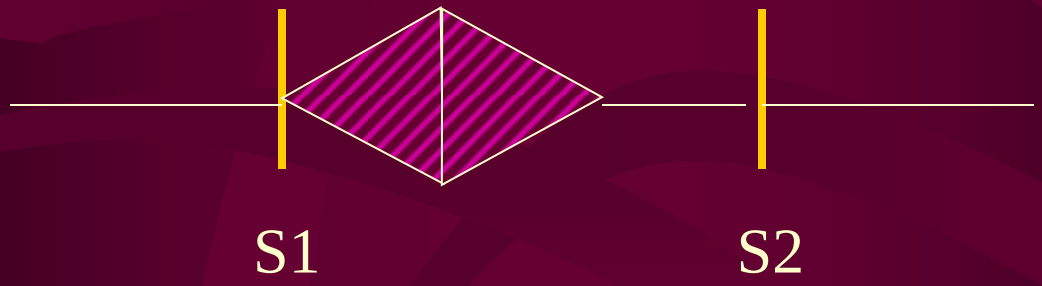
Common Murmurs and Timing

- **Systolic Murmurs**
- Aortic stenosis
- Mitral insufficiency
- Mitral valve prolapse
- Tricuspid insufficiency
- **Diastolic Murmurs**
- Aortic insufficiency
- Mitral stenosis



Innocent Murmurs
Common in asymptomatic adults

- Characterized by
  - Grade I – II @ LSB
  - Systolic ejection pattern - no ↑ with Valsalva



  - Normal precordium, apex, S1
  - Normal intensity & splitting of second sound (S2)
  - No other abnormal sounds or murmurs
  - No evidence of LVH

Characteristics
Not so Innocent Murmur

- Diastolic murmur
- Loud murmur - grade 4 or above
- Regurgitant murmur
- Murmurs associated with a click
- Murmurs associated with other signs or symptoms e.g. cyanosis
- Abnormal 2nd heart sound – fixed split, paradoxical split or single

Pericardial rub

- Scratching sound like friction between rough surfaces and has a superficial to and fro quality
- Best heard to the left of the lower sternum
- It is accentuated when patient leans forward and by pressure with stethoscope

Examination – other

- Percuss and auscultate lung bases
  - Left ventricular failure
  - Pleural effusion
- Tender hepatomegaly
- Pulsatile liver (tricuspid regurgitation)
- Ascites
- Splenomegaly
- Abdominal aortic aneurysm
- Peripheral edema
  - Pitting / non-pitting
- Achilles tendon xanthomata

Diagnosis

Elements of complete cardiac diagnosis include :

- *The underlying etiology*. Is the disease congenital, hypertensive, ischemic, or inflammatory in origin?
- *The anatomical abnormalities*. Which chambers are involved? Which valves are affected? Are they regurgitant and/or stenotic? Is there pericardial involvement?
- *The physiological disturbances*. Is an arrhythmia present? Is there evidence of congestive heart failure or myocardial ischemia?
- *Functional disability*. How strenuous is physical activity required to elicit symptoms? NYHA classification

Thanks For Your Attention!

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