Toppersnotes
Unleash the topper in you

NEET-PG

PART - C

VOLUME - VI

General Medicine - I

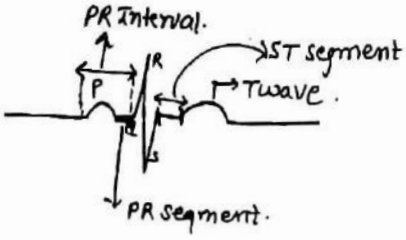
SIERRA INNOVATIONS

NEET PG

CONTENTS

ECG

ECG →



⇒ P wave → atrial depolarization.

[SA Nodal + AV Nodal depolarization cant see on ECG.

⇒ PR segment
- Have No wave
- measured in vertical direction (↑)

PR Interval.
- Have wave.
- measured in Horizontal direction [↔]

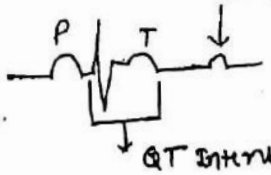
⇒ QRS complex → Ventricular depolarization.

⇒ J Point → Jxn b/w S + ST segment.

↓
Beginning of ST segment.

⇒ T wave → Ventricular Repolarization

⇒ QT Interval →
↓
Have QRS + T wave.



↓
[Vent dep + vent Reporaization]

PR Interval → dlt AV Nodal delay.

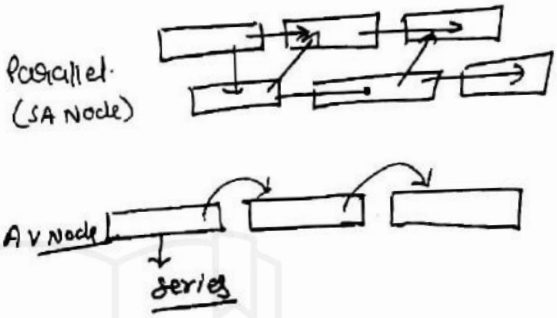
[AV Node only tissue in heart which is ca dependent conducting system]

Reason → ① AV Node is Ca^{++} dependent.

↓

(slow)

② AV Nodal fibres are arranged in series

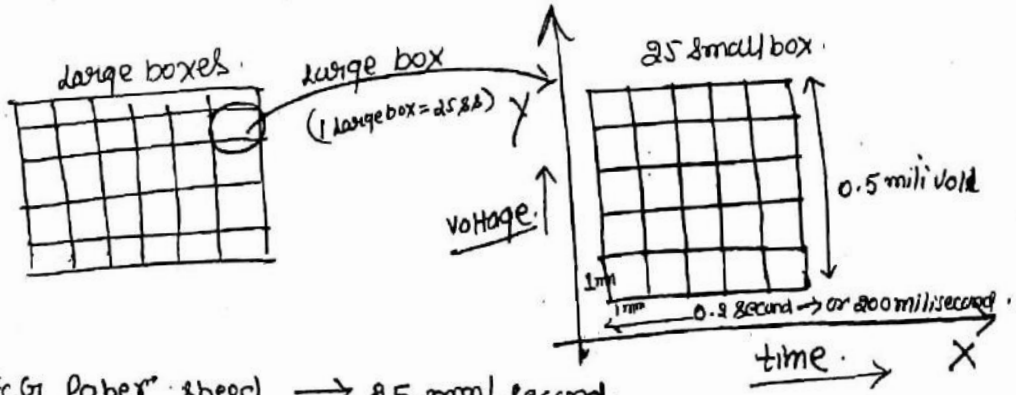


→ benefits of slowness of AV Node →

- Prevent ventricular fibrillation against atrial arythmia.

[AV Node → Guardian of Vent.]

Normal AV Nodal delay → 0.05 – 0.09 Second.



ECG Paper speed → 25 mm/second.

1 SS = .04 second
(x axis)

↓

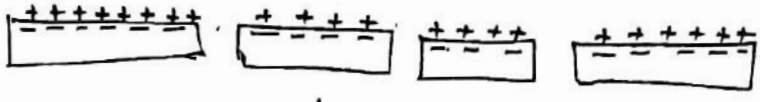
40 millisecond.

1 S = 25 mm

1 mm = 1/25 = .04 s.

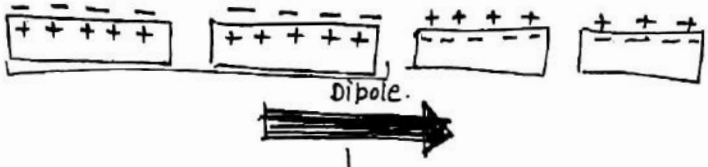
• 1 SS in y axis = 0.1 mV.

⇒ 4 myocardial fibres → [Net charge in body = 0]



→ Relative charge.

depolarization.

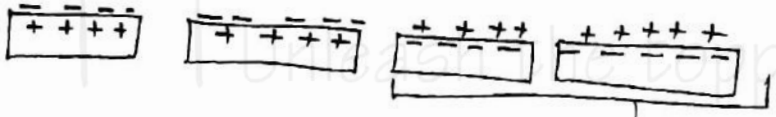


Dipole.

deflexition in ECG.

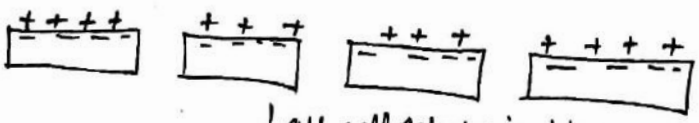
⇒ all cells depol.

No deflection in ECG.



dipole. Repolarized.

-ve deflection in ECG.



↓ all cell Repolarization.

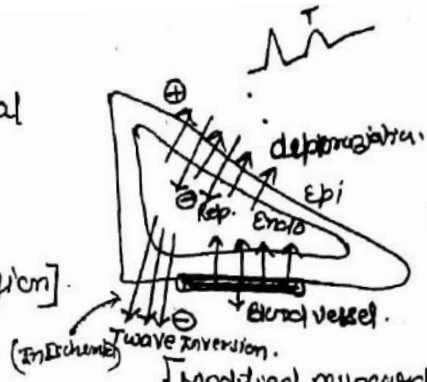
No deflection in ECG

→ last cell to depolarized will be the first cell to Repolarization.

⇒ Repolarization start in endocardial region

↓

[Epicardial region].



[Modified myocardial cells is conducting fibre]

⇒ Repolarization →

Epicardium ⟶ endocardium

⇒ Blood flow →

Epicardium ⟶ endocardium.

↓

[Suffering ∯ more from Ischemia]

↓

But actually subendocardium is most vulnerable part of Heart for Ischemia.

- Subendocardial Ischemia

↓

Reversal of Repolarization.

↓

[T wave Inversion] ⇒ {Ⓝ T↓ in V_1/aVR.}

⇒ V_1-V_3 Ⓝ T wave ↓ In Pediatric Population. (Juvenile T wave)

① depth of T wave <2 mm

↓

[Normal]

If > 2 mm

↓

Abnormal.

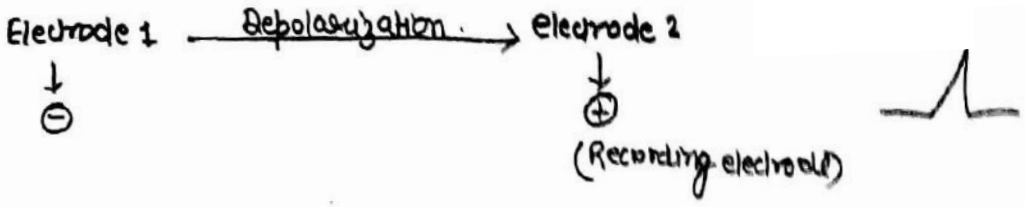
② NO ST segment depression.

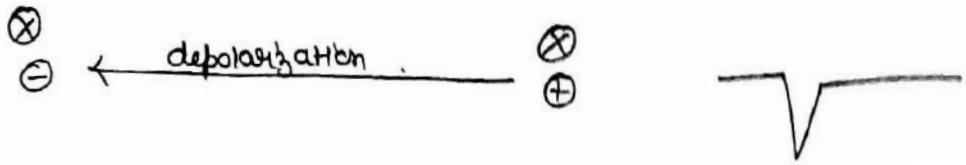
⇒ V_1-V_3 → Adult: Persistent T wave ↓ Ⓝ

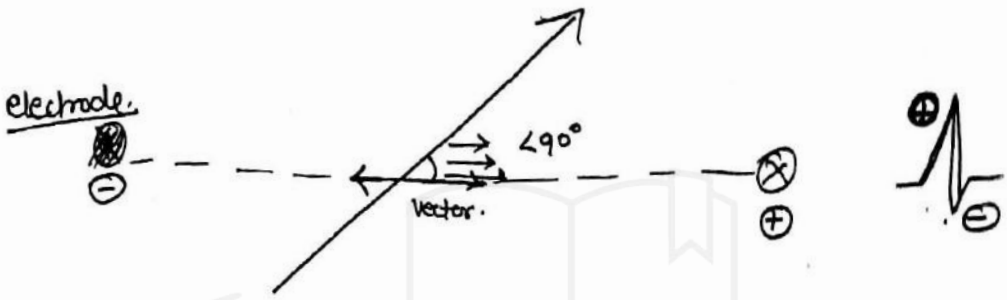
♀

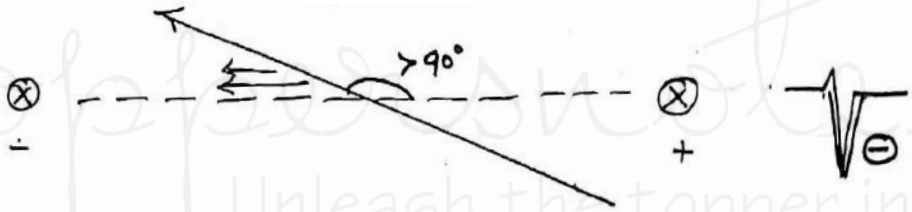
40 yrs.

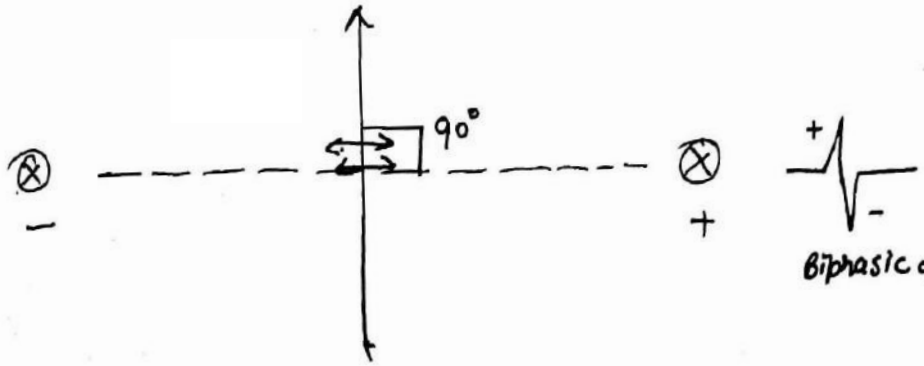
Axis →











① P WAVE → Best seen in II & V_1 (both are equally) ← Exam.

• Rule → Should be positive (fully)

• N width → < 2.5 mm

• N Height → < 2.5 mm.

> 2.5 mm.

Right atrial enlargment (RAE)

[P. Pulmonale]

mcc → Pul HTN (COPD)

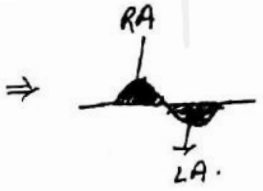
If > 2.5 mm width.

Left atrial Enlargment (LAE)

[called P Mitrale.] (Notched P wave)

Previously MS was the mcc of LAE

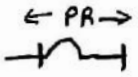
Now Syst HTN.



⇒ Biphasic pattern of P wave.

Pseudo 'P' Pulmonale → seen in • HYPOKALEMIA. • CAD } Neet 18

② PR Interval → ← PR →



• 0.12 – 0.25 second

• 3-5 SS.

< 0.12 S.
↓
Short PR.
↓
By pass present around AV Node.
↓
Prexcitation syndrome.

> 0.25 seconds
↓
Prolonged PR (AV Nodal Problem)
↓
AV Nodal Problem.

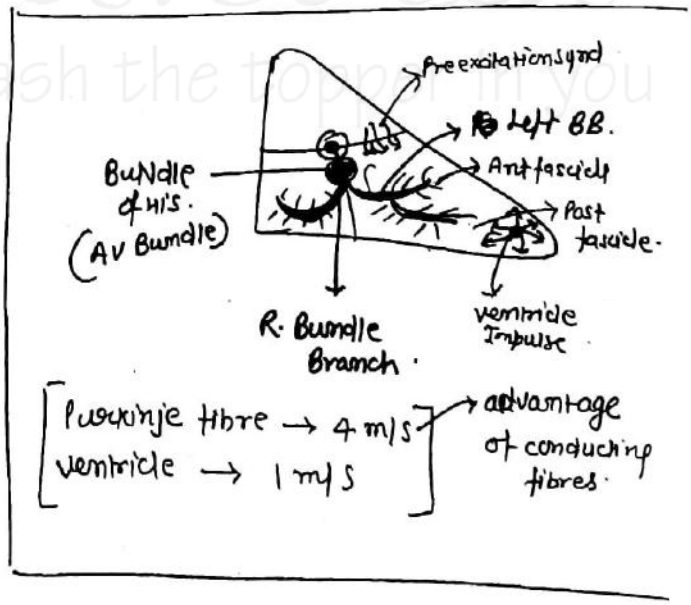
③ QRS complex :-

↓

Ⓝ → < 0.11S (< 0.12 second)
⇓
[3 SS.]
↓
Called Narrow (Normal)

> 0.11 S (> 3SS)
↓
Wide/Broad QRS
↓
[Pathological]

Wide/Broad QRS
↓
① Conduction Problem (BBB)
② Impulse originating in ventricle
↓
· fire seperately.
③ Pre excitation syndrome.



④

Heart Rate →

Regular HR

$HR = \frac{300}{\text{No of large Boxes}}$

e/w any 2 'RR'

eg- $\frac{300}{5} = 60$ / minute.

tells HR at Particular time.

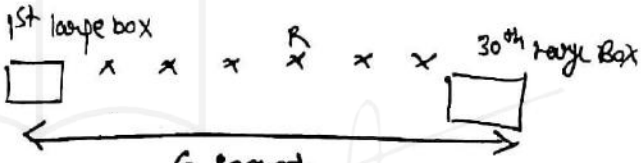
Irregular HR

5 X 10 = 50

6 X 10 = 60 second.

1 large box = 0.2 s

6 second = 30 large box.



[multiply by 10]

60 second. ⇒ ? R. wave X 10

[Overall HR]

Tachy → >100

< 3 large Boxes → tachy cardia

Brady → > 5 large boxes → Brady cardia.

→ <60

⑤ QT Interval →

tachy →  → tachy → Short QT

Prolonged QT ← Brady → 

- **Bazett's formula** → to correct QT interval

$$[QTc] = \frac{QT}{\sqrt{RR}}$$

QTc (0.35 - 0.45 s)

- < 0.35 s → Short QT
- > 0.45 s → long QT → risk → Sudden cardiac death

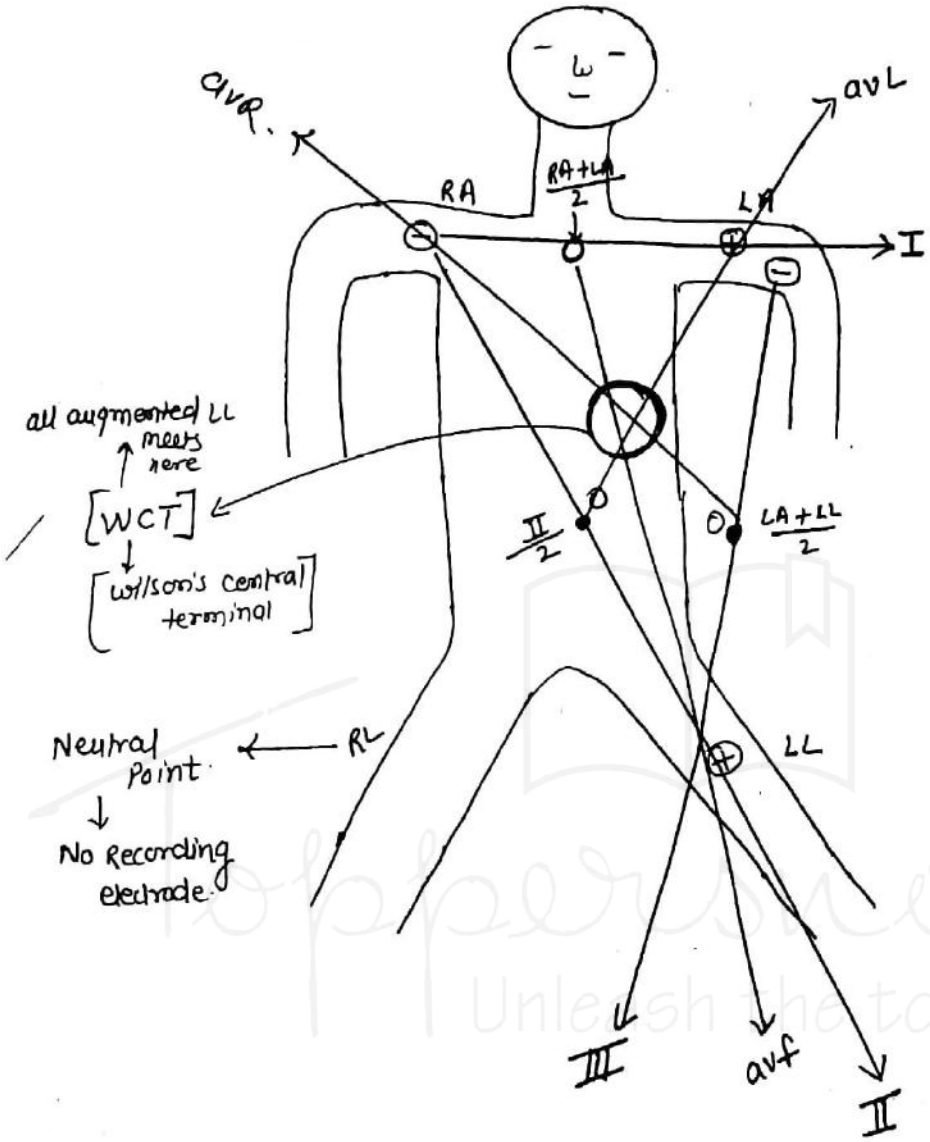
Lead System

Limb leads

- Bipolar limb leads → Standard leads → (Einthovan leads)
- unipolar limb leads → Augmented limb leads

→ fixed leads

Chest leads (Precordial leads) → $[V_1 - V_6]$ → flexible → can be less / more.



Lead I II III → Bipolar limb leads (B/c Potential difference B/w two leads)

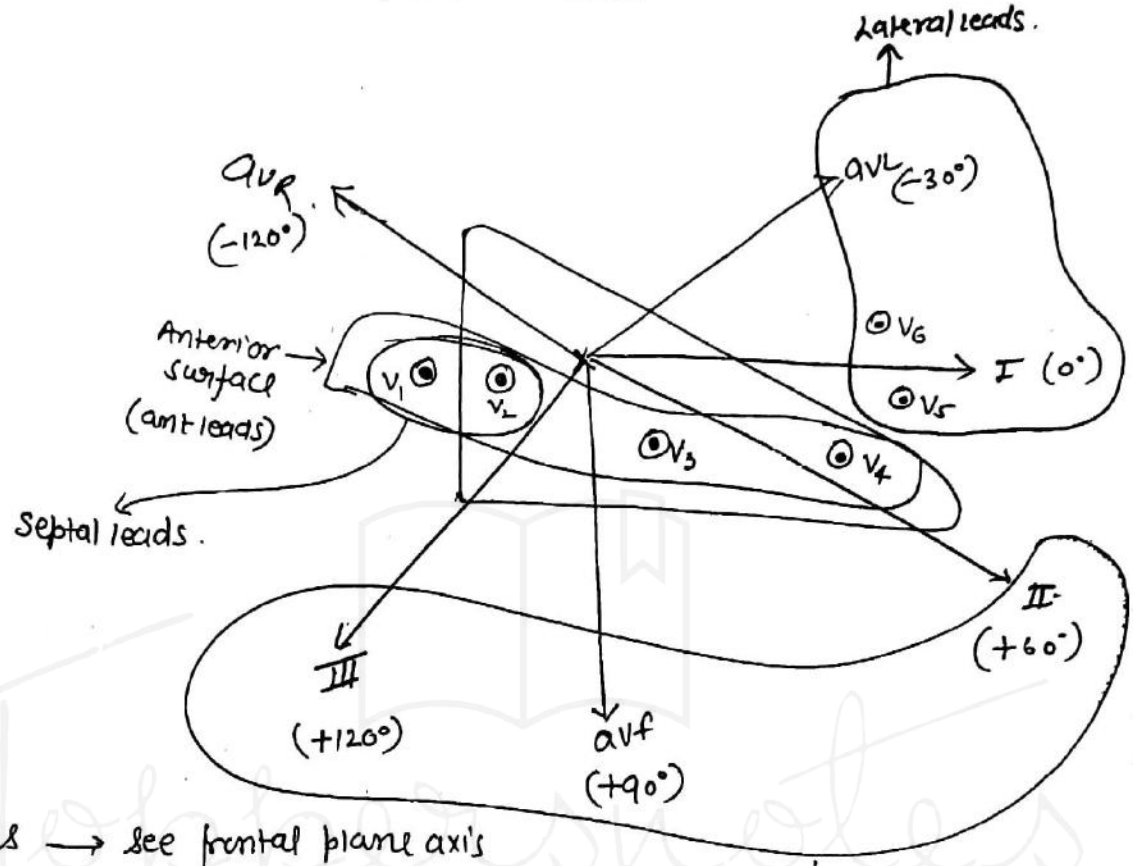
Einthoven Law → [equilateral triangle]

Rule 1 → $\boxed{I + II + III = 0}$

Rule 2 → $\boxed{I + III = II}$

Augmented limb leads →

- Start from 0 ⟶ Positive ⊕
- unipolar limb leads.



Limb leads → see frontal plane axis

Chest leads → Horizontal axial plane

V_1 V_2 → 4th I/C.S → Just to the Rt & Lt parasternal area

V_3 → B/W V_2 & V_4

V_4, V_5 V_6 → 5th I/C S

- V_4 → Midclavicular line
- V_5 → Ant axillary line
- V_6 → Midaxillary line.

II III aVf → Inferior leads

V_1 V_2 V_3 V_4 → ant leads

V_1 V_2 → Septal

aVL, V_5, V_6, I → Lateral leads

gold st → CAG.
↑
Not accurate
↑

ST elevation (ST↑) ↓

STEMI ↓

LAD →	• $V_1 - V_4$	AWMI (AWSTEMI)
RCA → (act marg br)	• II III avf	IWMI
LCX →	I, aVL, V_5 V_6	LWMI
Obtuse marginal branch of LCx →	I, aVL	High LWMI
very proximal LAD →	$V_1 - V_6$ ⊕ I, aVL	AL MI ↓ (ant lateral)
LAD →	$V_1 - V_6$	ext AWMI ↓ extensive
	• $V_1 - V_4$	Anteroseptal MI
	• $V_2 - V_4$	• AWMI
LAD. → ↓ (septal branches)	$V_1 - V_2$	Septal MI → usually ass with Ant-wall MI

Pitfalls of standard 12 leads ECG —

- → atrial MI cant be measure
- → Right ventricle Not usually seen → gold st → Right-sided leads (chest leads reverse ↑)
- → Post wall " " " → gold st → Post leads ↓ eg. → V_1 V_2 V_3 Placed on Post side on 5th ICS.

→ gold standard → "Esophageal leads" ↓

Now called Post leads ↓ V_7 V_8 V_9

Significant ST elevation → Minimum ≥1 mm atleast ≥2 anatomically contagious leads

↓

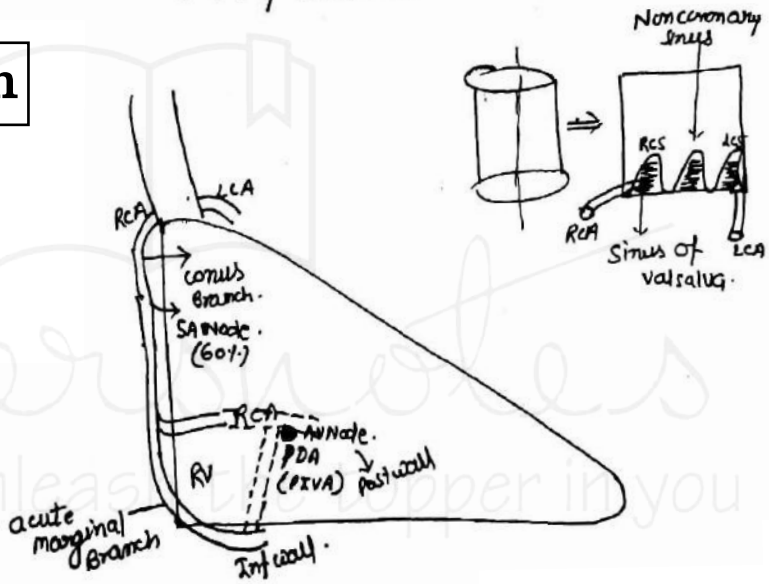
exceptions →

① Need More → V_3 V_4 → ♂ → ≥ 2 mm.
→ ♀ ≥ 1.5 mm

② Post / Right. V MI → ≥ 0.5 mm.
(Post leads / Right-sided)

→ Post wall MI → associated with Inf wall MI
→ True Post wall MI (Isolated) → Rare.

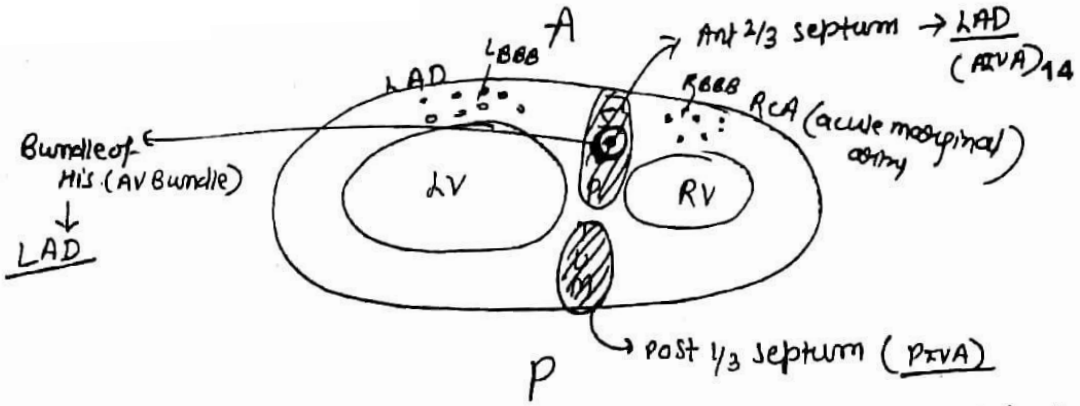
Coronary Circulation



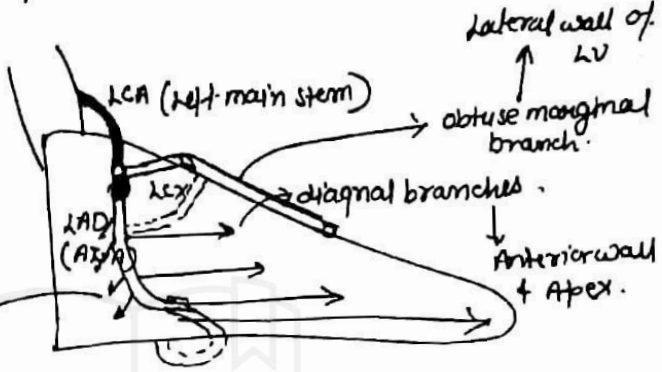
	LCA	RCA
Systole →	20%	50%
diastole →	80%	50%

Left ventricular failure
↓
[RCA → more depends on LV (systole]
↓
fails Right ventricular failure

RCA →
- conus
- SA Node (60%) → cases
- Acute marginal br → Inferior wall
- AV Node (90% cases) ← PIVA → Posterior wall.
  - → Post 1/3 Septum.



LCA →



Septal Branches
↓
Remaining part of septum (Ant 2/3)
↓
Via LAD

→ Lcx → Posteriorly anastmose with → RCA
→ AIVA → ant " " " → PIVA (LAD)

- Obtuse marginal branch → Lateral wall of LV
- LAD → diagnonal branches → Ant wall & Apex
  → Septal branches → Ant 2/3 septum + AV Bundle (Bundle of His)

→ mc site for atherosclerotic plaque → Proximal LAD
→ 2nd mc " " " " → RCA
→ least comm (Isolated) " " " → obtuse marg branch of LCx.

STEMI

4 stages →

Stage I → Hyperacute stage → Tall T wave →

→ Limb leads → > 1 large boxes (> 5 mm)

→ Chest leads → > 2 large boxes (> 10 mm)

↓

• Best chest leads ($V_2 - V_4$) → called Precordial leads

Stage II → Acute stage → ST elevation

↓

Nonpathognomonic.

Stage III → subacute stage.

→ ST elevation + T wave ↓

Stage IV → chronic stage.

→ Pathological Q wave -

depth > 2 mm

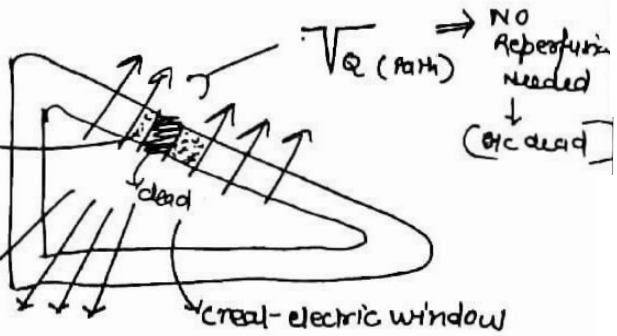
width > 1 mm.

↓

Pathognomonic of STEMI

↓

[Indicate dead myocardium]



√Q (Path) → NO Reperfusion Needed

↓

(Mc dead)

① Chest pain

② Injury current → ST elevation.

Reperfusion.