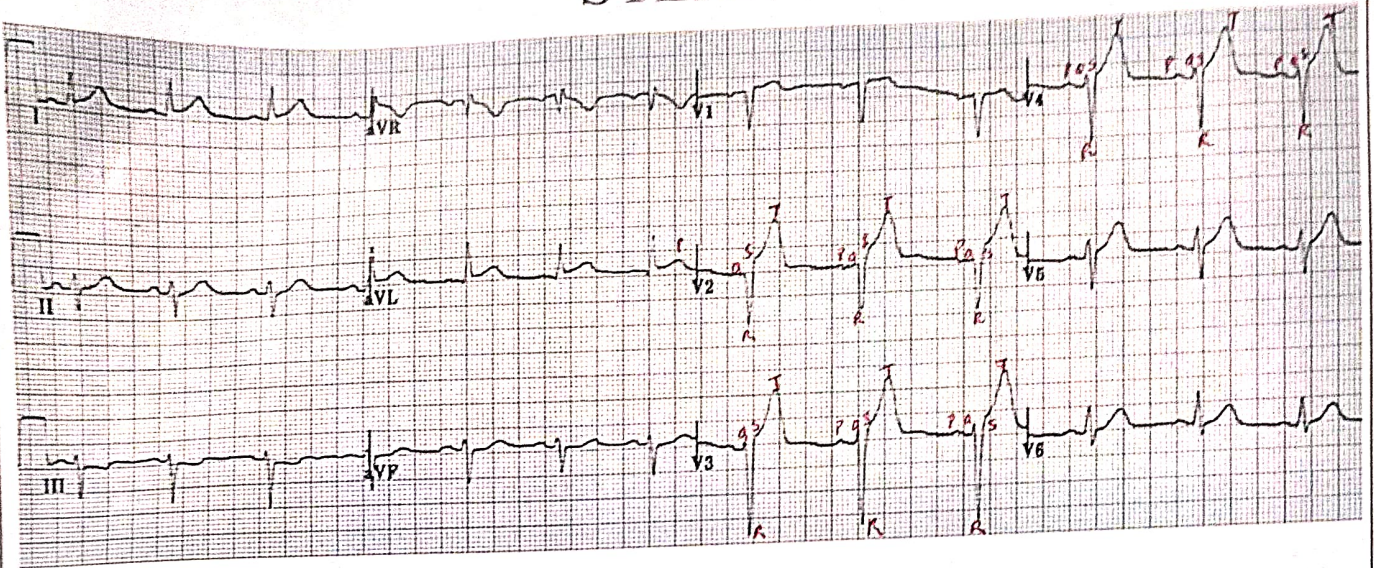


STEMI



* Diagnostic criteria:-

- $\geq 1\text{mm}$ (0.1mV) ST elevation in ≥ 2 contiguous limb leads
- $\geq 2\text{mm}$ in ≥ 2 contiguous chest leads ($V_2 - V_3$ slightly higher cutoffs)

→ In the given ECG: Leads $V_2 - V_4$ show ST elevation which means that it is an anterior wall MI (LAD)

How to localize STEMI?

- Inferior wall (RCA): Leads II, III, aVF will show ST elevation & reciprocal depression in I, aVL.

- Anterior Wall (LAD): Leads $V_1 - V_4$

- Lateral Wall: Leads I, aVL, V_5, V_6

• Treatment :- I) Immediate Action: Admit, monitor (ECG, SpO_2 , BP)
IV Access

Initial drugs: Aspirin - 300mg chewed

Second antiplatelet: Clopidogrel

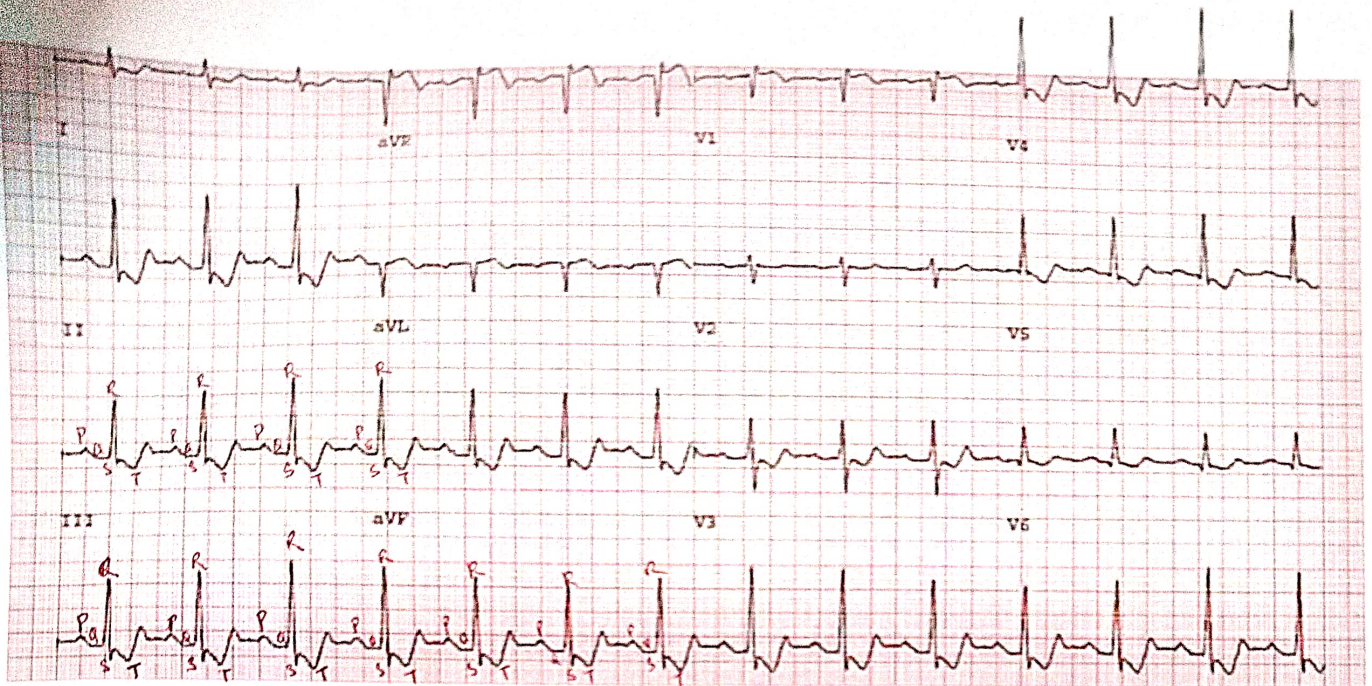
Nitrates - Sublingual nitroglycerin

II) Reperfusion Therapy: Definitive → Primary PCI within 90 mins

If unavailable → Thrombolysis: Tenecteplase } single IV bolus in
Streptokinase } weight based dose
ranging from 30 to 50mg

III) Anticoagulation: Heparin (UFH or LMWH)

NSTEMI



* Typical ECG findings :-

- 1) ST segment depression : ≥ 0.5 mm depression in ≥ 2 contiguous leads
- 2) T wave inversion : symmetrical, deep T inversion

NOTE : Early NSTEMI can have normal ECG

Diagnosis depends on Cardiac Biomarkers: Troponin I > 0.04 ng/mL
↳ largely based on clinical presentation Troponin T > 14 ng/L

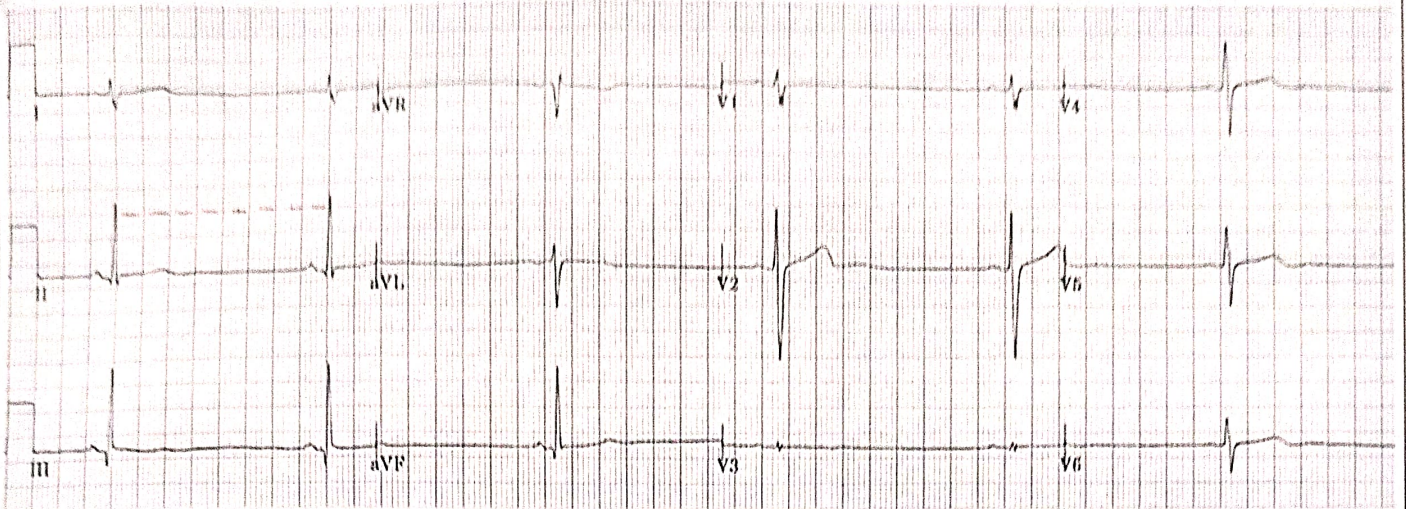
⇒ This ECG shows classic pattern of NSTEMI in leads II, III, aVF - probably inferior wall MI.

Treatment : Antiplatelets : Aspirin (loading dose) : 160-325mg chew & swallow
Clopidogrel : 300mg oral

Anticoagulation : Low molecular weight Heparin : 5000 unit - BD SL.

Statins : ATORVASTATIN

SINUS BRADYCARDIA



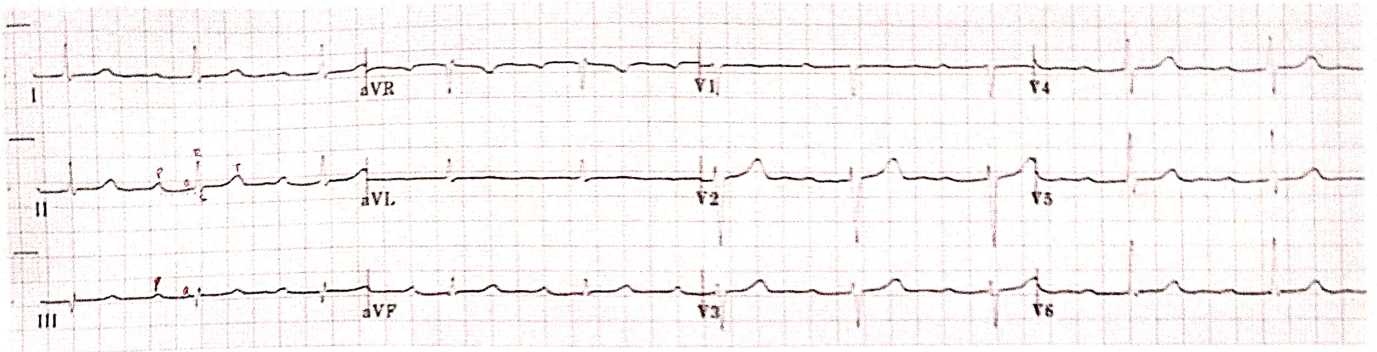
Heart Rate = $300 \div$ no. of large squares

In this case; HR = $\frac{300}{8} = 37.5$ /min

Treatment : Asymptomatic \rightarrow no treatment needed
Symptomatic (hypotension, syncope, dizziness, chest pain)

First line: Atropine = 0.5mg IV Bolus
Repeat every 3-5min
Max dose = 3mg

HEART BLOCK - 1st degree



Delayed conduction from atria → ventricles

- ① PR interval > 200 ms (0.20 sec)
that is > 5 small squares
- ② P wave before every QRS - no dropped beats
- ③ Regular rhythm
- ④ QRS - (N)

In this ECG, the PR intervals = 7 small squares

$$\begin{aligned} \text{PR intr: } & 7 \times 0.04 \text{ seconds} \\ & = 0.28 \text{ or } 280 \text{ milliseconds} \end{aligned}$$

∴ PR interval prolongation ✓

Causes: ↑ vagal tone; Drugs: β blockers
 Ca^{2+} channel blockers
Digoxin

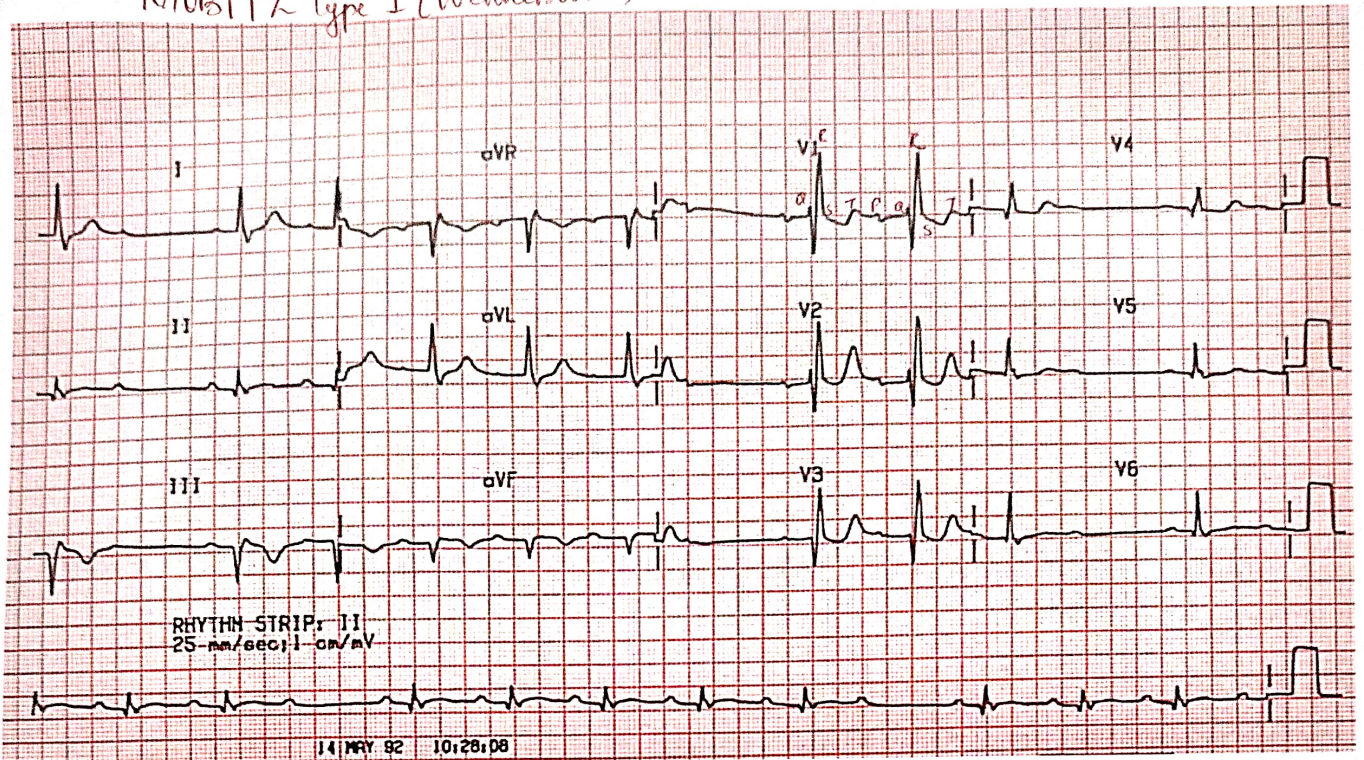
Inferior MI
Electrolyte imbalance

Treatment :- 1) Asymptomatic → No Rx
2) If due to drugs: stop or ↓ dosage.

HEART BLOCK - 2nd degree

MOBILTZ Type I (Wenckebach)

Some atrial impulses fail to conduct to ventricles → Intermittent dropped QRS

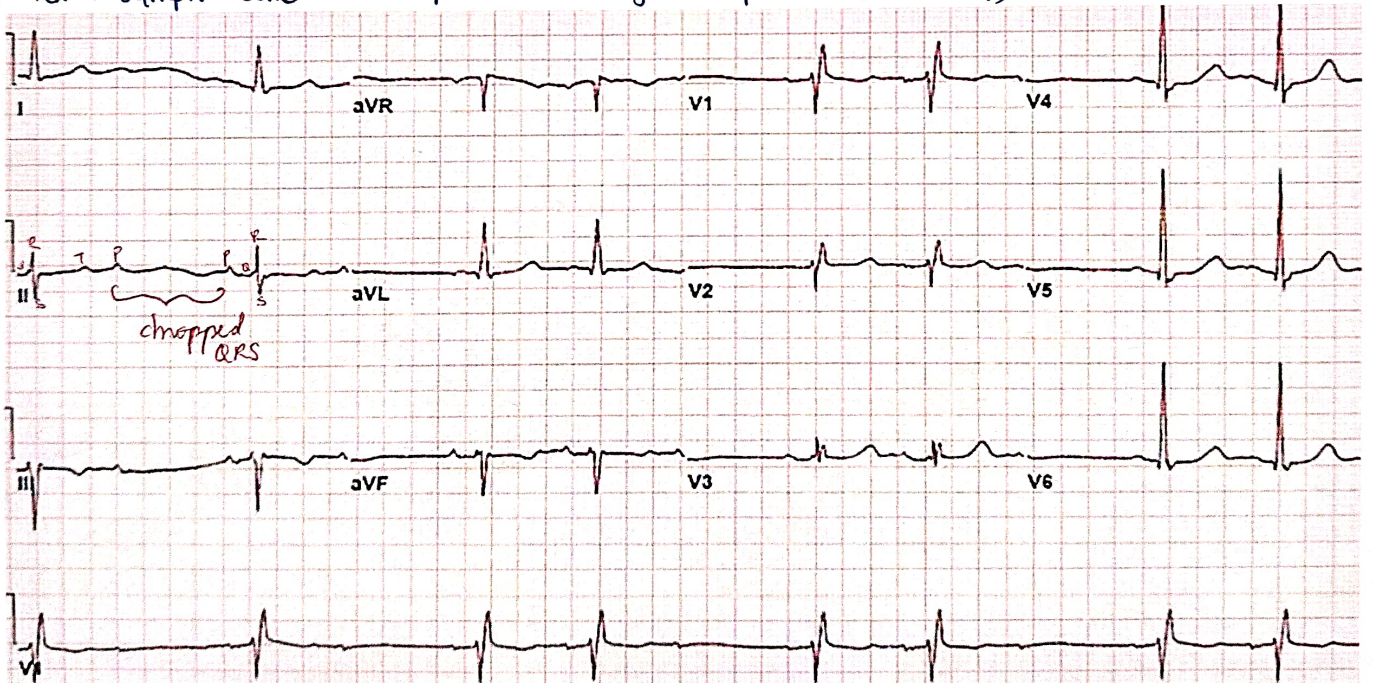


- Progressive prolongation of PR interval
- then one QRS is dropped

Site: AV node

Rx: Symptomatic: Atropine - 0.5mg IV (repeat upto 3mg)

MOBILTZ Type II



PR Interval constant.

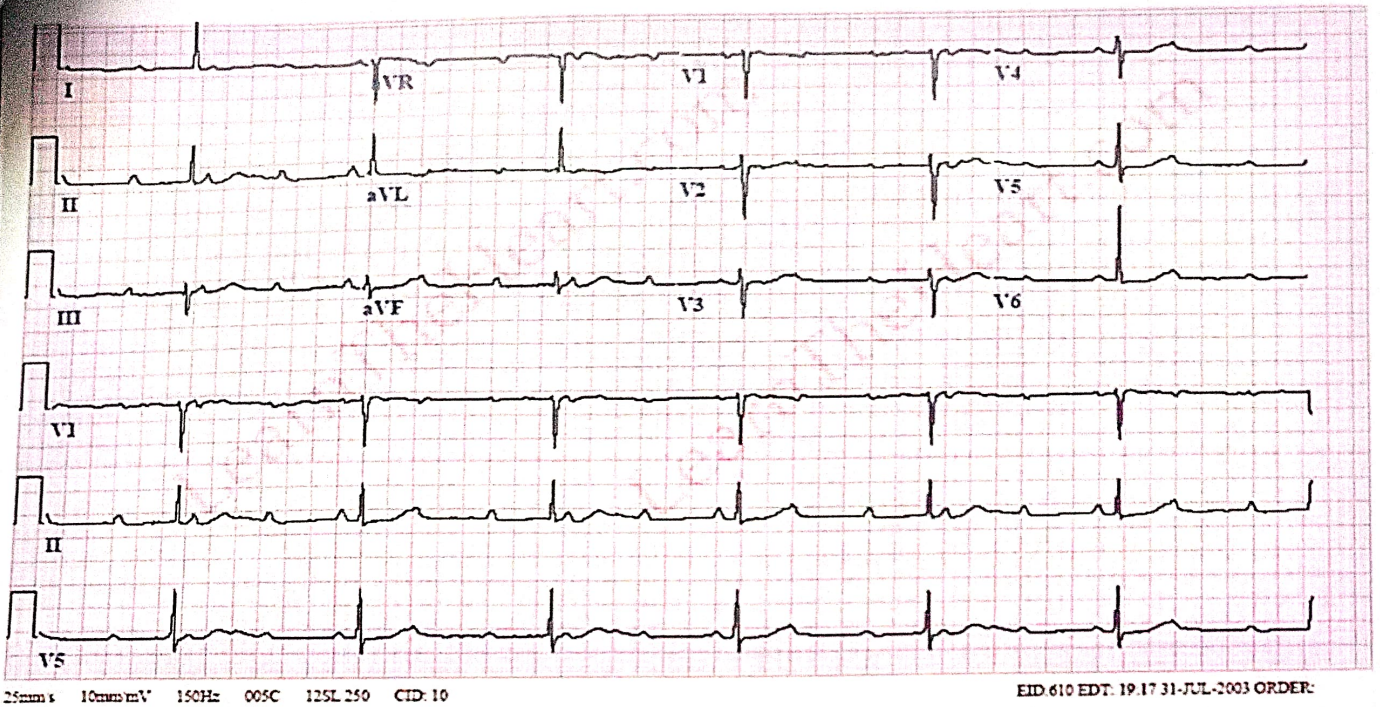
Suddenly QRS drops.

Site - below AV node

Rx: Immediate: temporary pacing

Definitive: Permanent pacemaker

HEART BLOCK - 3rd degree



* No conduction from atria to ventricles.
Atria & ventricles beat independently

Findings = (1) AV dissociation

2) P waves regular (~60-100/min)

3) QRS complexes regular but slow

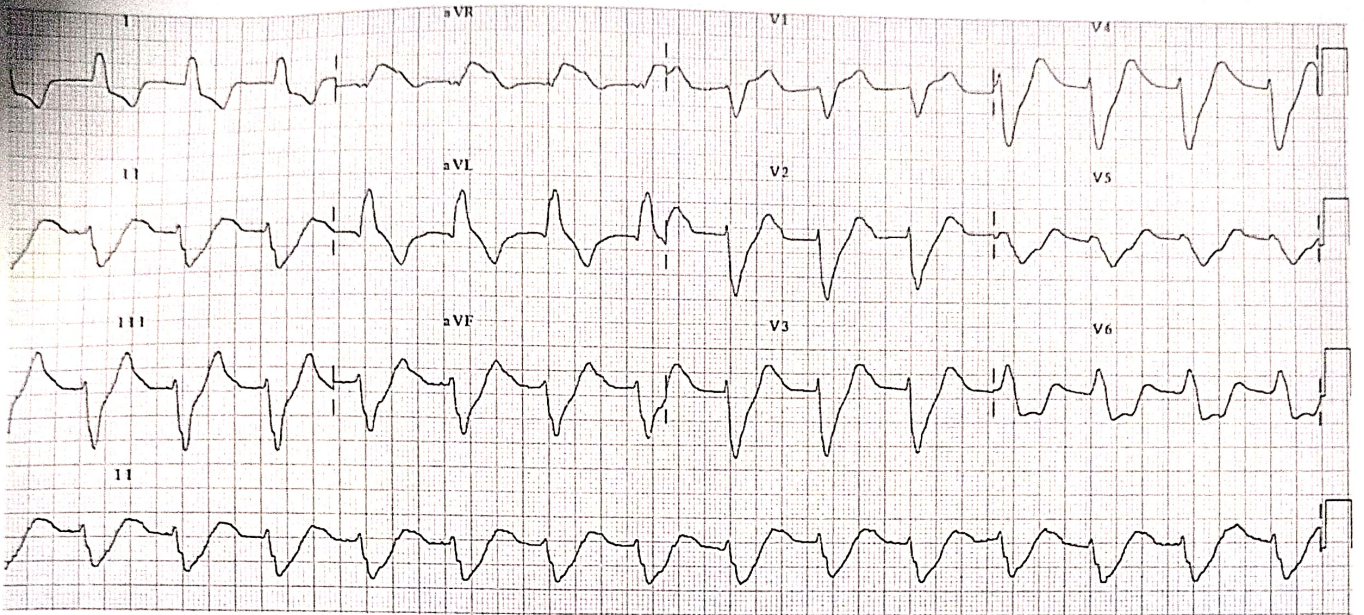
Ventricular escape rhythm: 40-60/min → functional (narrow QRS)
<40/min → ventricular (broad QRS)

4) PR interval variable

Treatment: Immediate management:

- ① Temporary pacing
- ② Drugs: Atropine - 0.5mg IV
Dopamine - 5-20mcg/kg/min
- ③ Definitive: Permanent pacemaker

HYPERKALEMIA



- * As potassium rises \rightarrow cardiac conduction gets suppressed progressively
- ECG changes :- Tall, peaked, tented T waves (Early K^+ 5.5-6.5 mmol/L)
- Moderate (K^+ 6.5-7.5) P wave flattening \rightarrow disappearance
PR prolongation
- Severe ($K^+ > 7.5$) - widened QRS complex
Sine wave pattern (QRS merges \bar{c} T)

Treatment :- 1) Stabilize cardiac membrane: Calcium gluconate : 10ml of 10%
IV over 2-5 minutes

2) Shift potassium into cells: Insulin + glucose
10 units insulin + 25g glucose IV

Salbutamol: nebulized

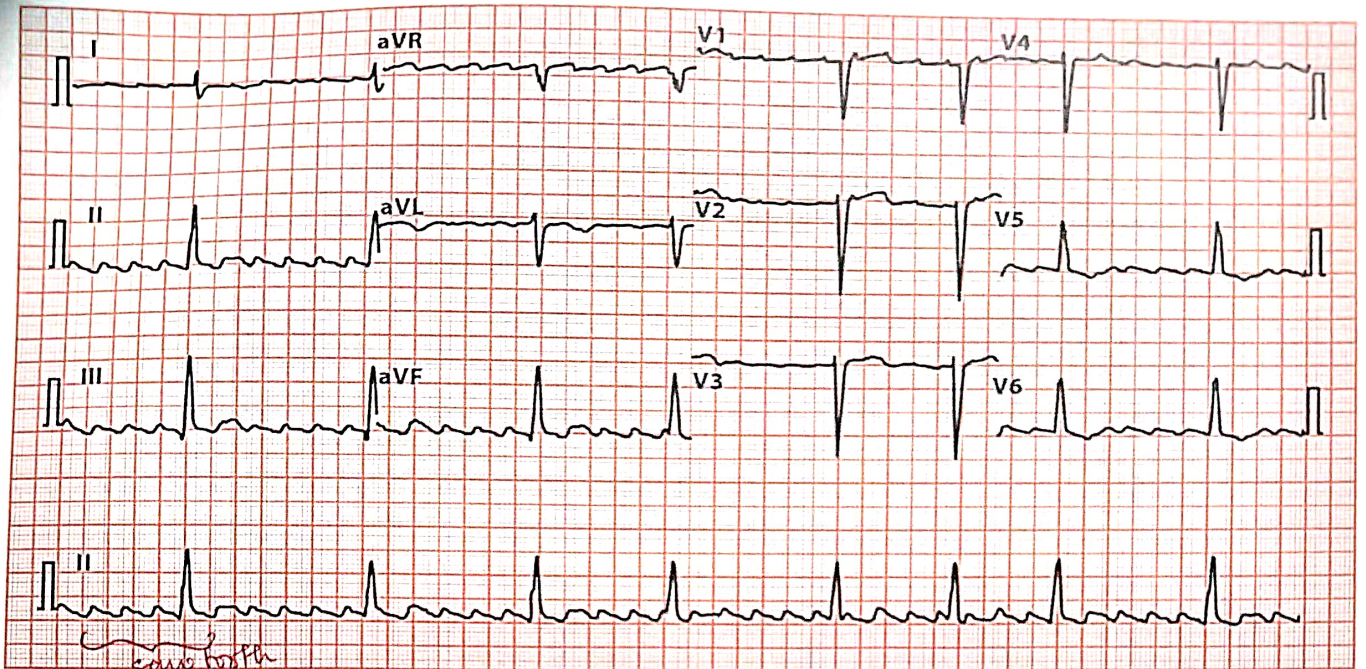
Sodium bicarbonate: if acidosis persist

3) Remove potassium: Loop diuretics: Furosemide

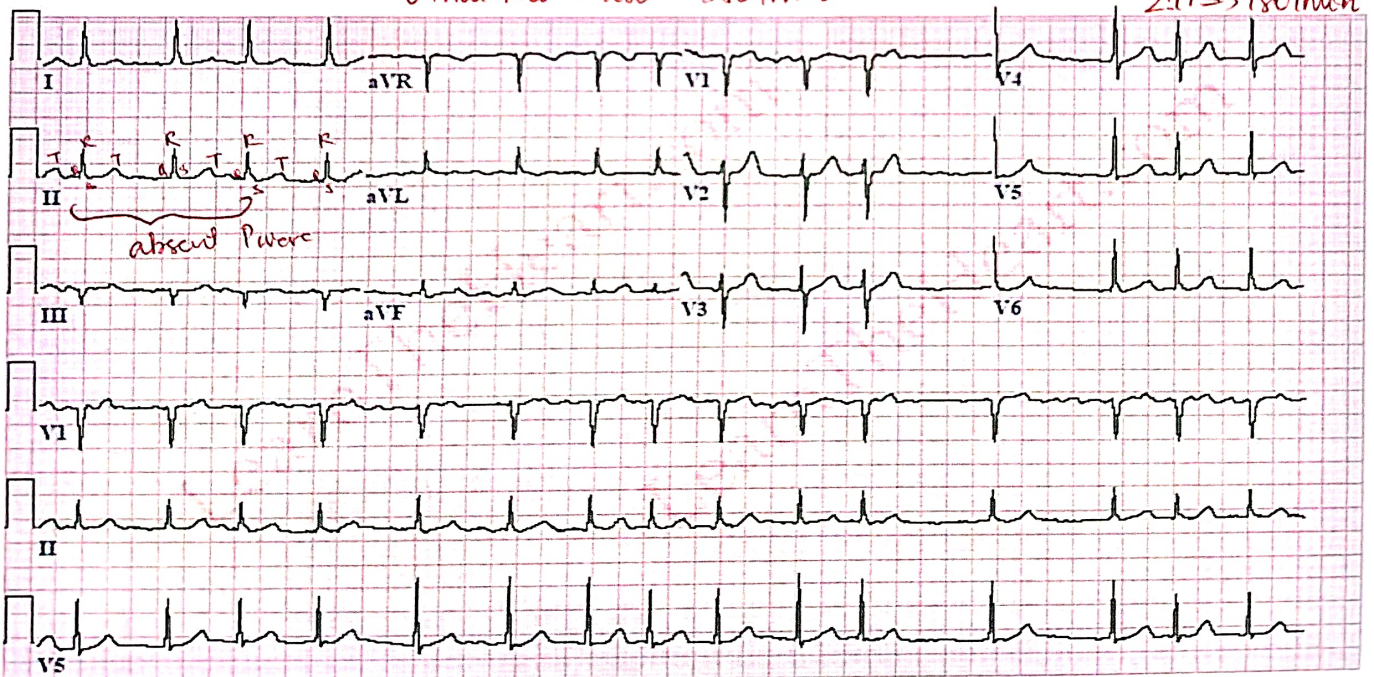
Potassium Binders: Sodium polystyrene sulfonate

4) Dialysis (continuous) in severe or refractory cases.

TACHYCARDIA- NARROW QRS COMPLEX



↳ Atrial flutter : no normal P waves - replaced by flutter (F) waves
 Sawtooth pattern (II, III, aVF)
 Atrial rate = 250 - 350/min Ventricular rate depends on block
 2:1 ⇒ 150/min



25mm/s 10mm/mV 40Hz 005C 12SL 254 CID: 27

EID:608 EDT 15:33 25-OCT-2003 ORDER

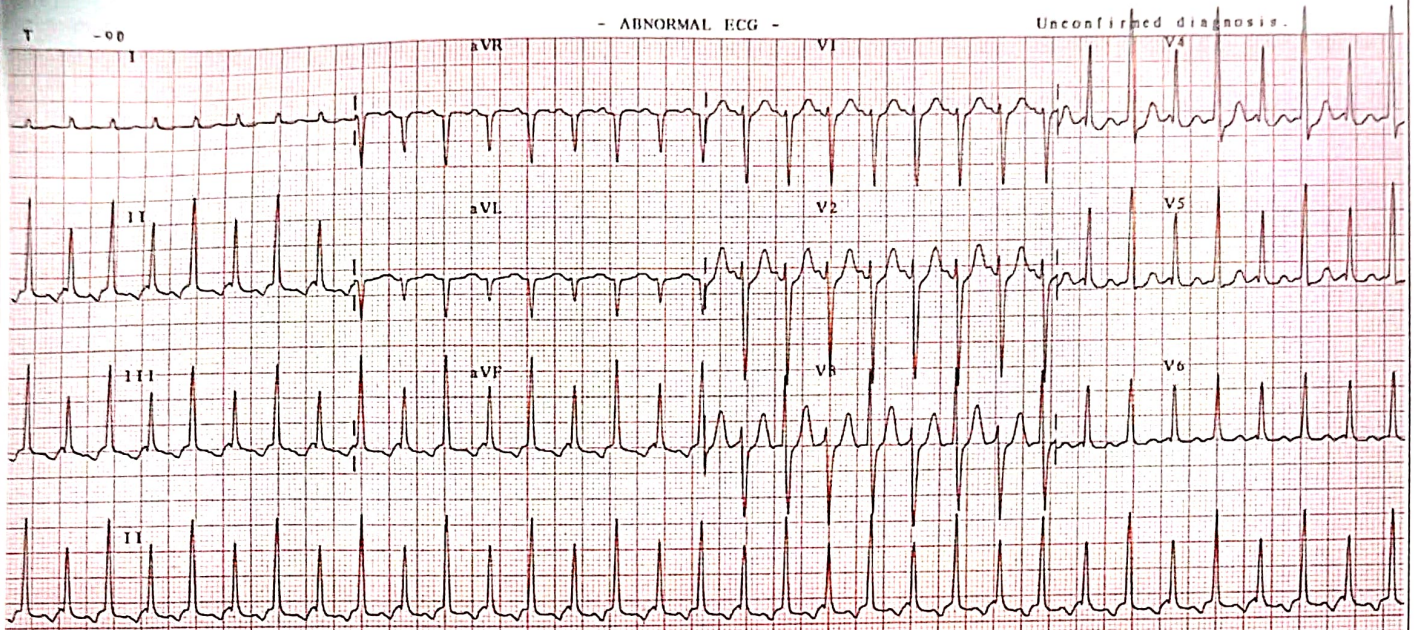
Atrial fibrillation :- Irregularly irregular rhythm (no predictable pattern in RR interval)
 No P waves
 Normal or narrow QRS.

- Treatment of Atrial flutter:
- 1) Rate control: Beta Blockers - Metoprolol
Calcium channel blockers - Diltiazem
 - 2) Rhythm control: Electrical cardioversion
Drugs: Amiodarone
Ibutilide
 - 3) Definitive treatment: Radiofrequency ablation
 - 4) Anticoagulation: Use CHA₂DS₂ VASc score
Prevent stroke

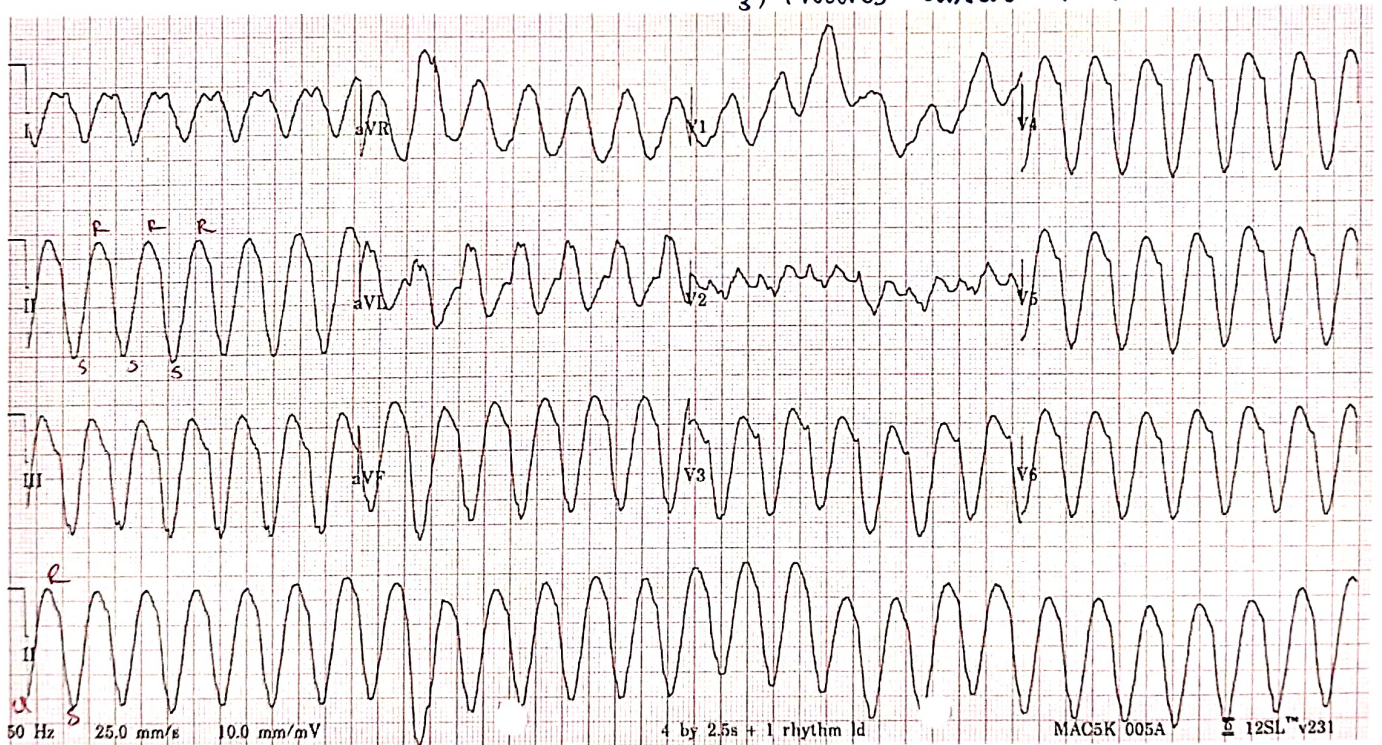
Treatment of Atrial fibrillation:

- 1) Rate control: Beta Blockers: Metoprolol
Non DHP CCB: Diltiazem
Digoxin - in heart failure
- 2) Rhythm control: Electrical cardioversion
Drug: Amiodarone
Flecainide
- 3) Anticoagulation: Warfarin
DOAC (e.g. apixaban, rivoroxaban)
↓
Use CHA₂DS₂ VASc score: $\geq 2 \rightarrow$ anticoagulate

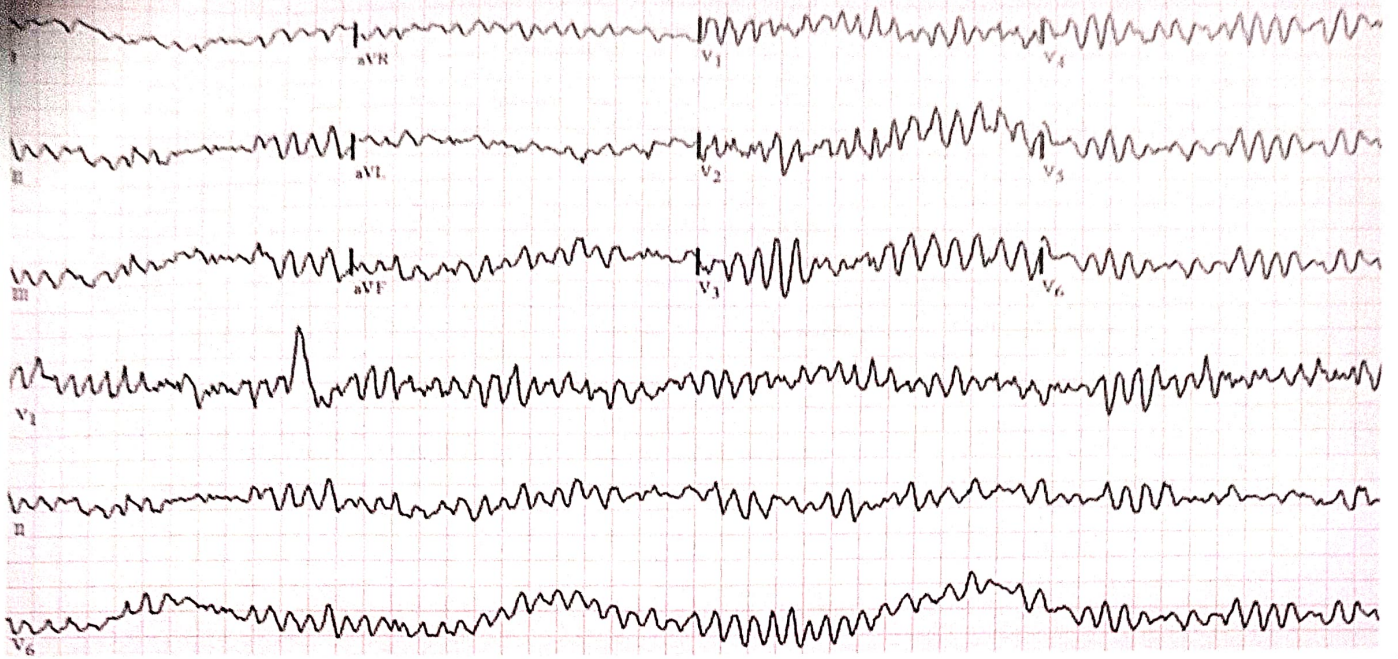
TACHYCARDIA- WIDE QRS COMPLEX



↳ Supraventricular tachycardia (SVT) : 1) Regular narrow complex tachycardia (150-200/min)
 2) QRS narrow (<120ms)
 3) P waves - absent or hidden



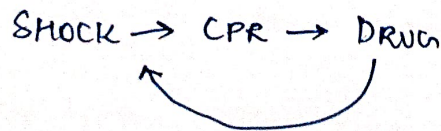
↳ Ventricular tachycardia : 1) Wide complex tachycardia : QRS > 120ms
 2) Rate : 150 - 250 /min
 3) Regular rhythm
 4) AV dissociation: P wave independent of QRS
 5) Capture beats : normal beats appears suddenly
 Fusion beats : mixed morphology



- ↳ Ventricular fibrillation:-
- 1) Completely irregular chaotic waveform
↳ No pattern at all
 - 2) No p waves, no QRS, no T waves.
 - 3) No isoelectric baseline activity

Types: Coarse VF - larger waves
Fine VF - smaller waves

- ⊗ Treatment:
- ① Defibrillation - unsynchronized shock as early as possible
 - ② CPR - start immediately, continue between shocks
 - ③ Drugs: Epinephrine: 1mg IV every 3-5min
Amiodarone: 300mg IV bolus then 150mg if needed



* Treatment of SVT:

1) Unstable SVT → hypotension
Chest pain
Shock

Rx: Immediate synchronized cardioversion

2) Stable SVT: Step 1: Vagal maneuvers : Valsalva
Carotid sinus massage

Stimulate vagus → slows AV node

Step II: Adenosine: 6mg IV rapid bolus
If no response: 12mg
Can repeat once (12mg)

Step III: If not responding → VERAPAMIL

Long term :- RFA

* Treatment of Ventricular tachycardia:-

Step 1: Check pulse + stability

1.) Pulseless VT: Defibrillation
CPR

2) VT with pulse but unstable: Synchronized cardioversion

3) Stable VT: Amiodarone: 150mg IV over 10min
then infusion

⇒ Torsades De Pointes: Magnesium Sulphate: 2g IV