

# Skipped a beat..... and then Some

CASE PRESENTATION BY:

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JR I - EMERGENCY MEDICINE

# History

52 year old female patient brought to EM at  
2 a.m.

Chief complaints:

Retrosternal chest pain since past 4 hours

# Primary Survey

- Airway

Patent

- Breathing

Respiratory Rate:18bpm

SpO<sub>2</sub>:97% @RA

Normal Vesicular Breath Sounds

No adventitious sounds

- Circulation

Pulse:106/min

B.P. :120/80 mmHg

No peripheral signs of shock

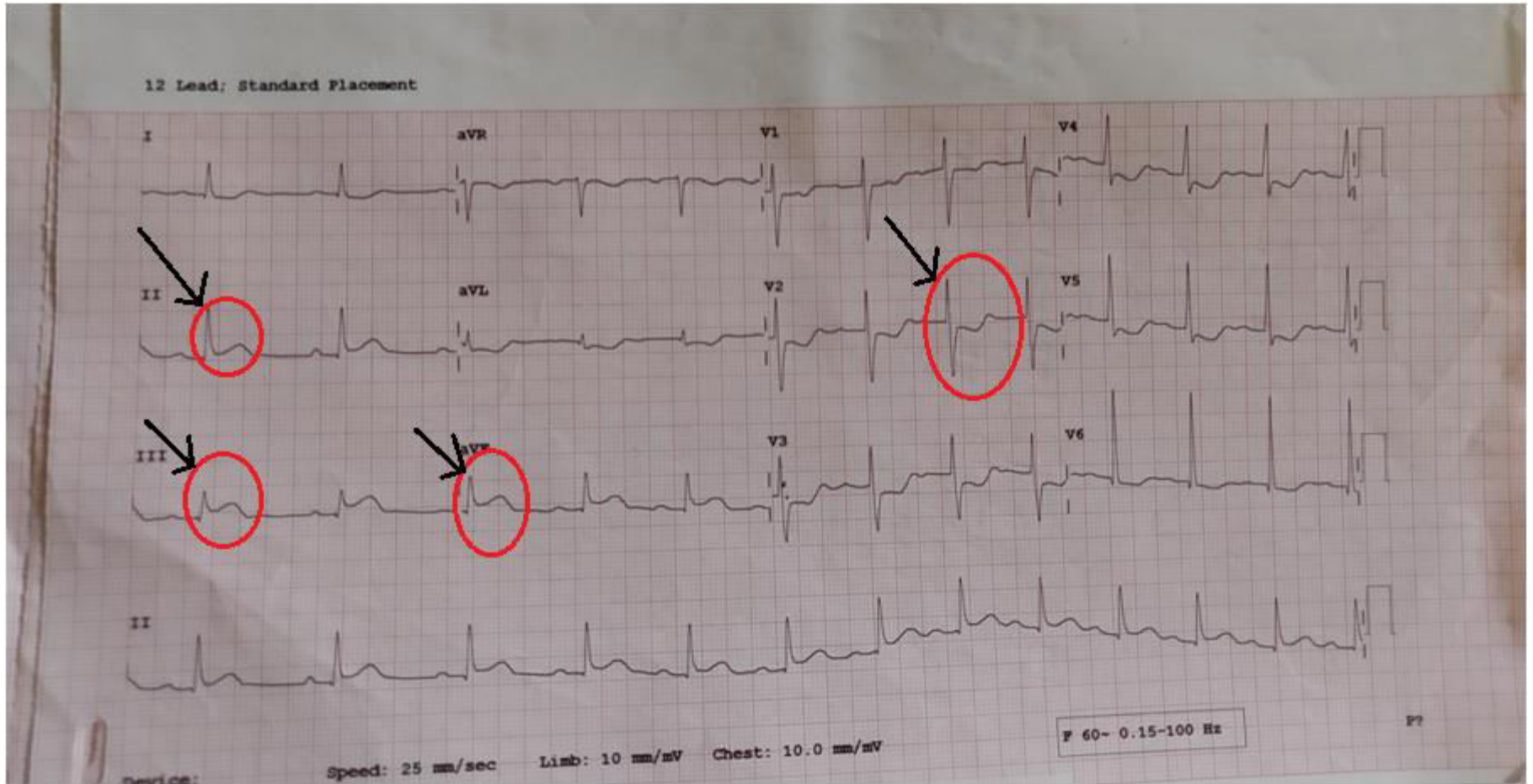
Normal CRT(Capillary Refill Time)

- Disability

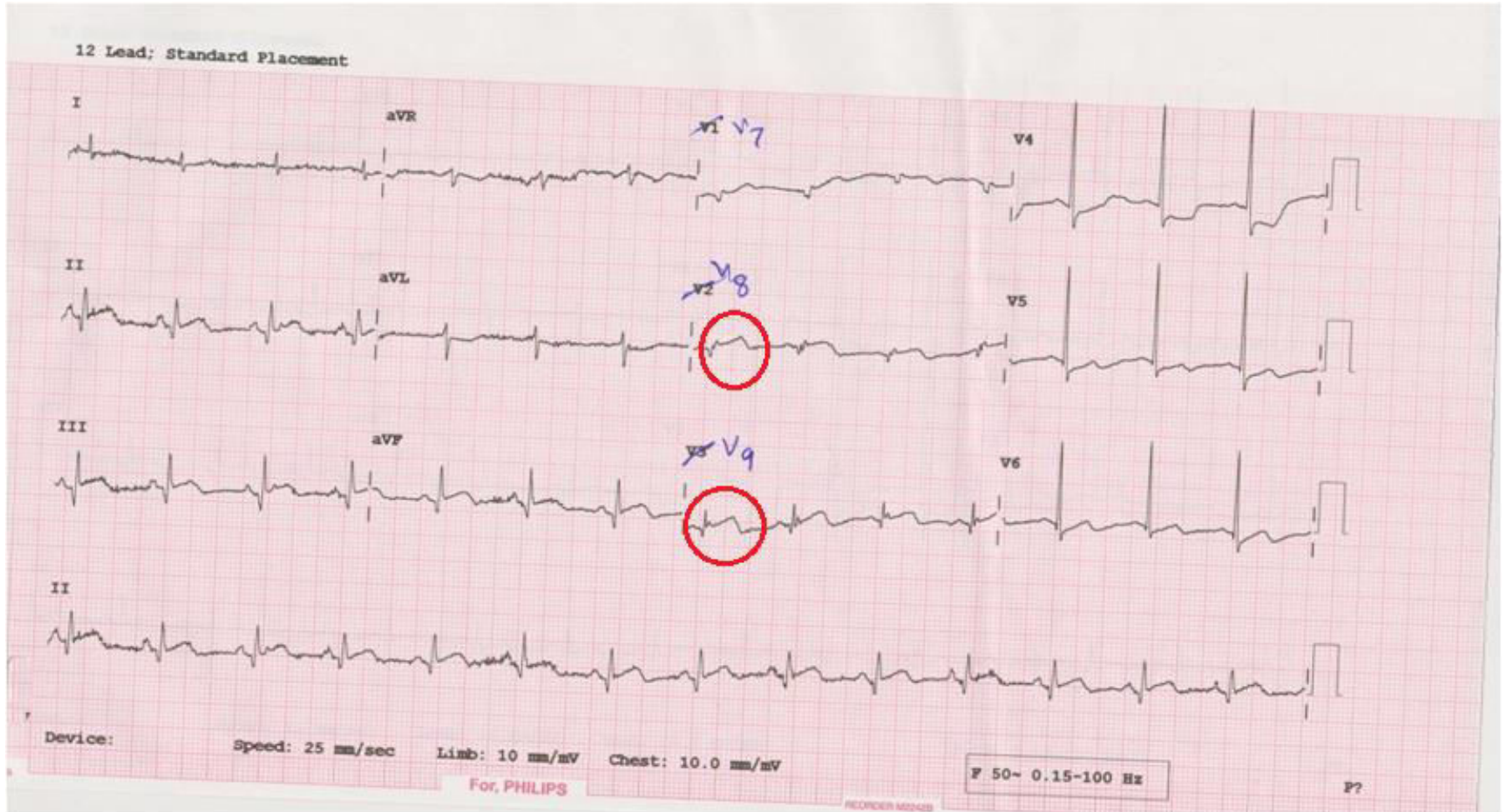
GCS: E<sub>4</sub>V<sub>5</sub>M<sub>6</sub>

Pupils: Normal and Reactive to light

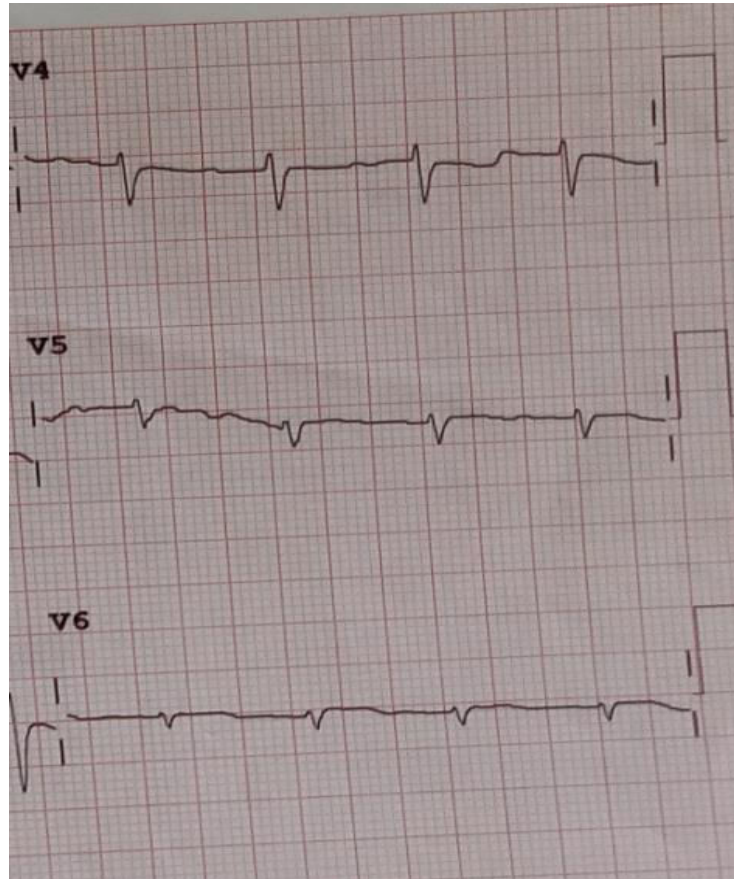
# ECG



# Posterior ECG



# Right Sided ECG



# Diagnosis

Infero Posterior Wall MI



- Loading dose given: Aspirin 325mg  
Clopidogrel 300mg  
Atorvastatin 80mg
- Trop T : positive
- Cardiology consultation was taken.
- Thrombolysis with Tenecteplase at 0.5mg/kg (35 mg) dose was planned.

Thrombolysis checklist was referred.

There were no contraindications.

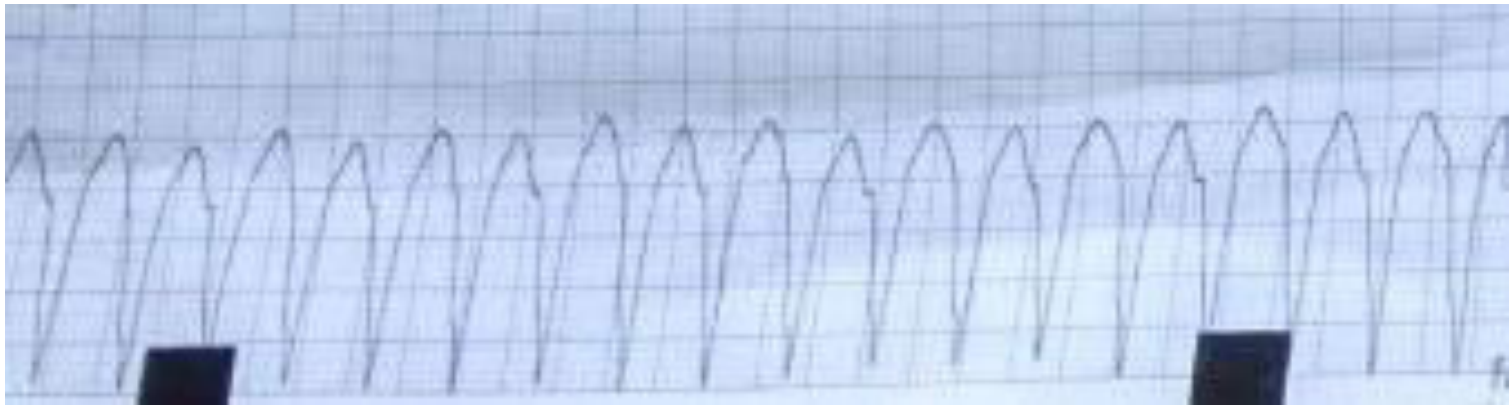
The benefits and risks explained.

Thrombolysis consent was taken.

History revealed that patient was a K/C/O DM  
and HTN on treatment.

# Events prior thrombolysis

- Patient suddenly became unresponsive
- Pulseless
- Rhythm was Ventricular Tachycardia
- CPR started
- Patient was defibrillated.





- Compressions resumed after defibrillation
- Patient achieved an organized rhythm
- Return Of Spontaneous Circulation (ROSC) attained.

# On Examination after ROSC

Patient was conscious and oriented

GCS : E<sub>4</sub>V<sub>5</sub>M<sub>6</sub>

Pulse :100 pm

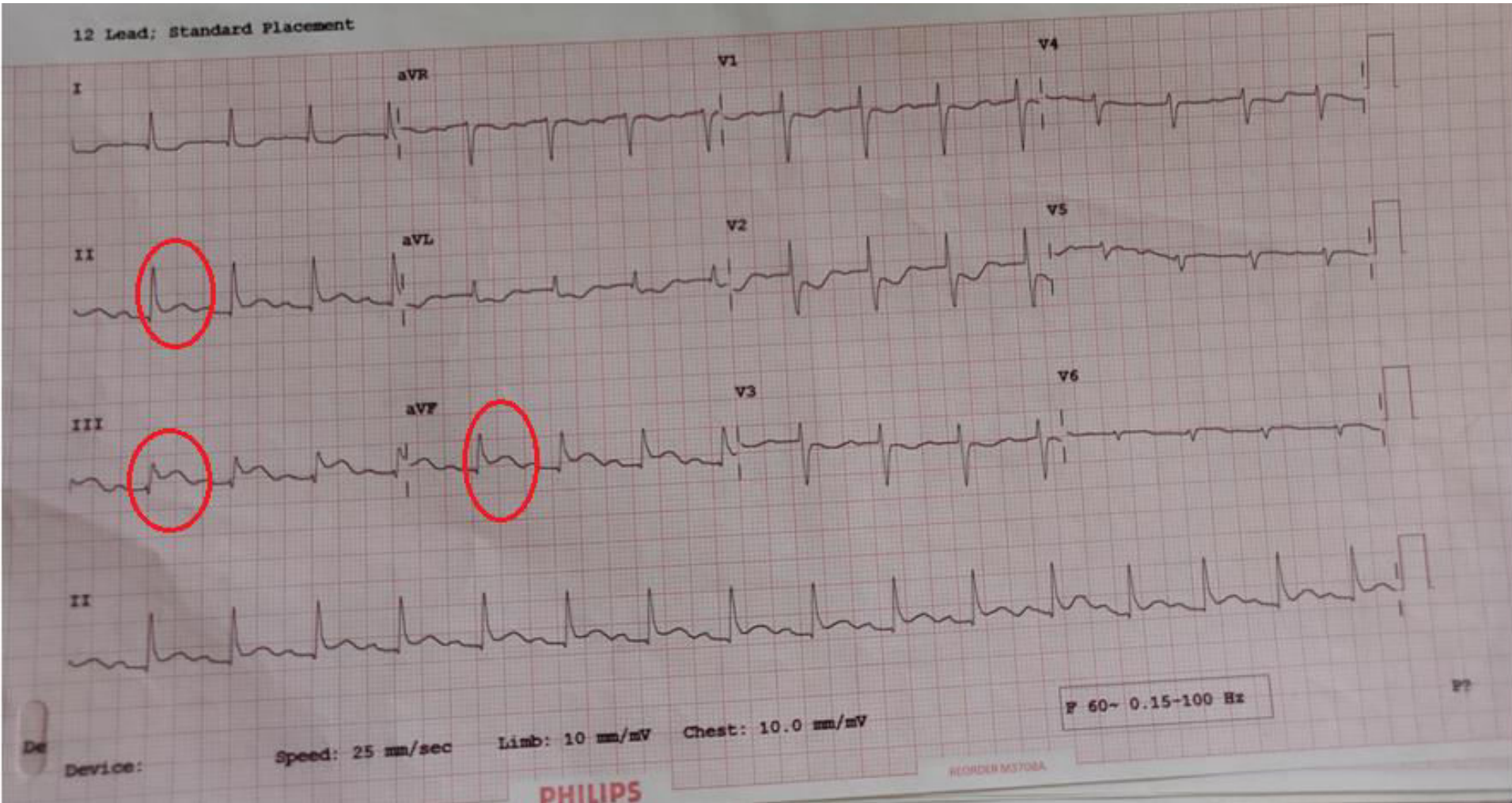
B.P. :130/80mmHg

RR :17 bpm

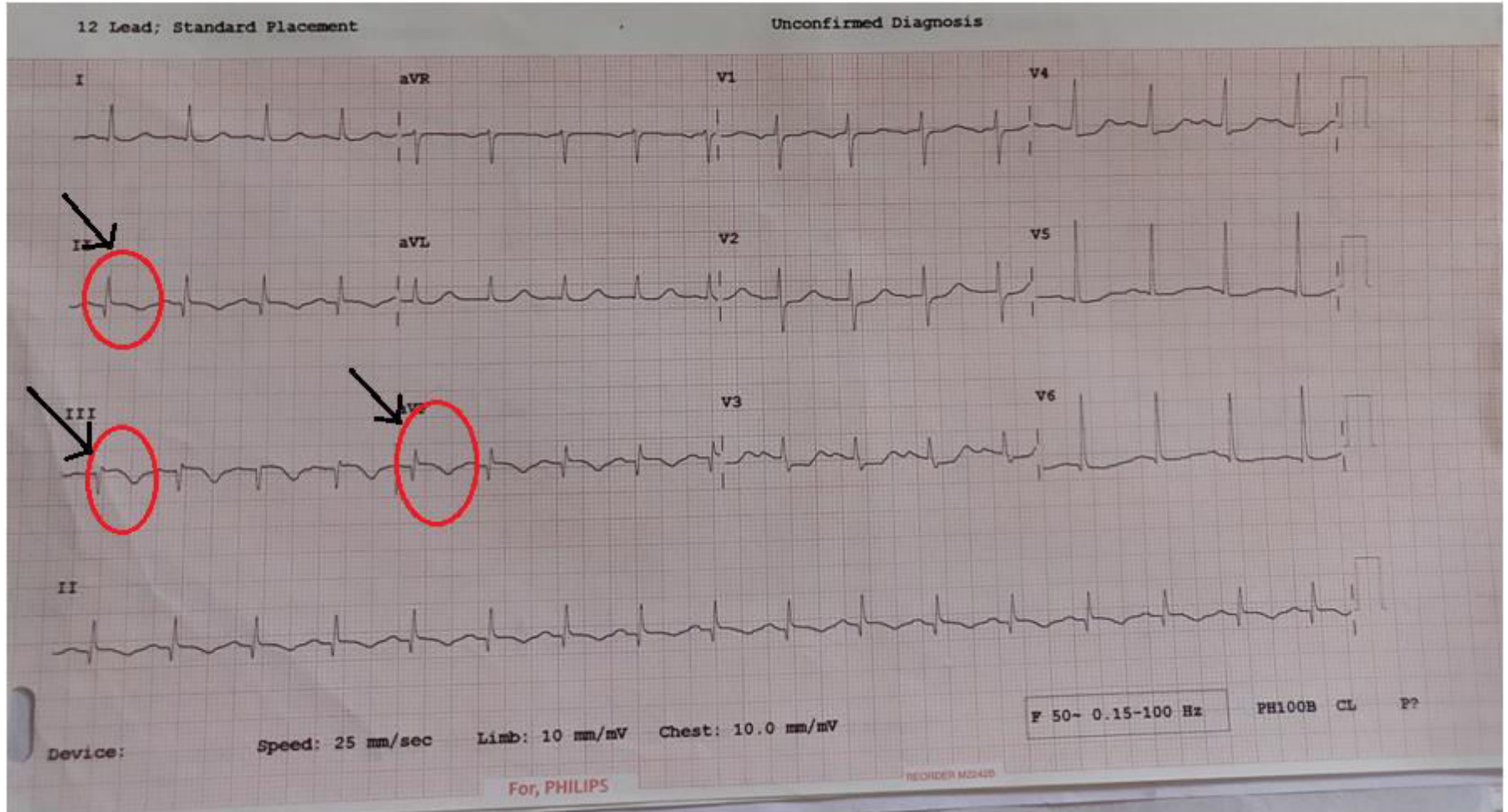
SpO<sub>2</sub> :97@RA

Post ROSC ECG taken

# Post ROSC ECG



# Post Thrombolysis ECG



# Investigations

Hb:9.8

TLC:16000 cells/mm<sup>3</sup>

Platelets: 3.0 lacs/mm<sup>3</sup>

RFT:

Urea:22mg/dL

Creatinine:0.7mg/dL

Serum Sodium:143mmol/L

Serum Potassium:4.1mmol/L

HIV , Hepatitis B negative



# Post Thrombolysis Care

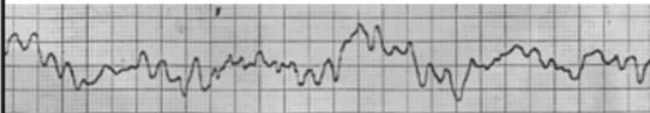
- Patient was shifted to the cardiac ICU for further care and management.

# Discussion

## Cardiac Arrest Definition

- Cardiac arrest is defined as the cessation of normal circulation of the blood due to failure of the heart to contract.

## Cardiac Arrest Rhythms

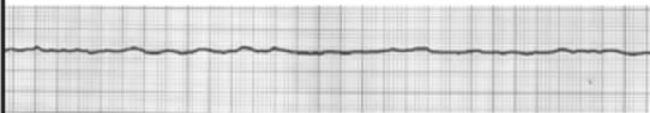


### Coarse Ventricular Fibrillation

(Note the chaotic, irregular electrical activity)



Shock



### Fine Ventricular Fibrillation

(Note the low-amplitude, irregular electrical activity)



Shock

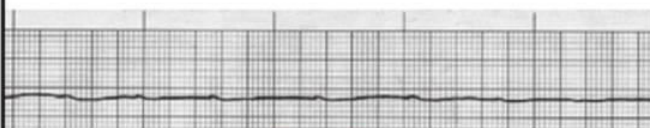


### Ventricular Tachycardia

(Note the rapid, wide complexes)



Shock  
if no  
pulse



### Asystole

(Note the absence of electrical activity)



CPR



### Pulseless Electrical Activity (PEA)

(Any organized ECG rhythm with no pulse)

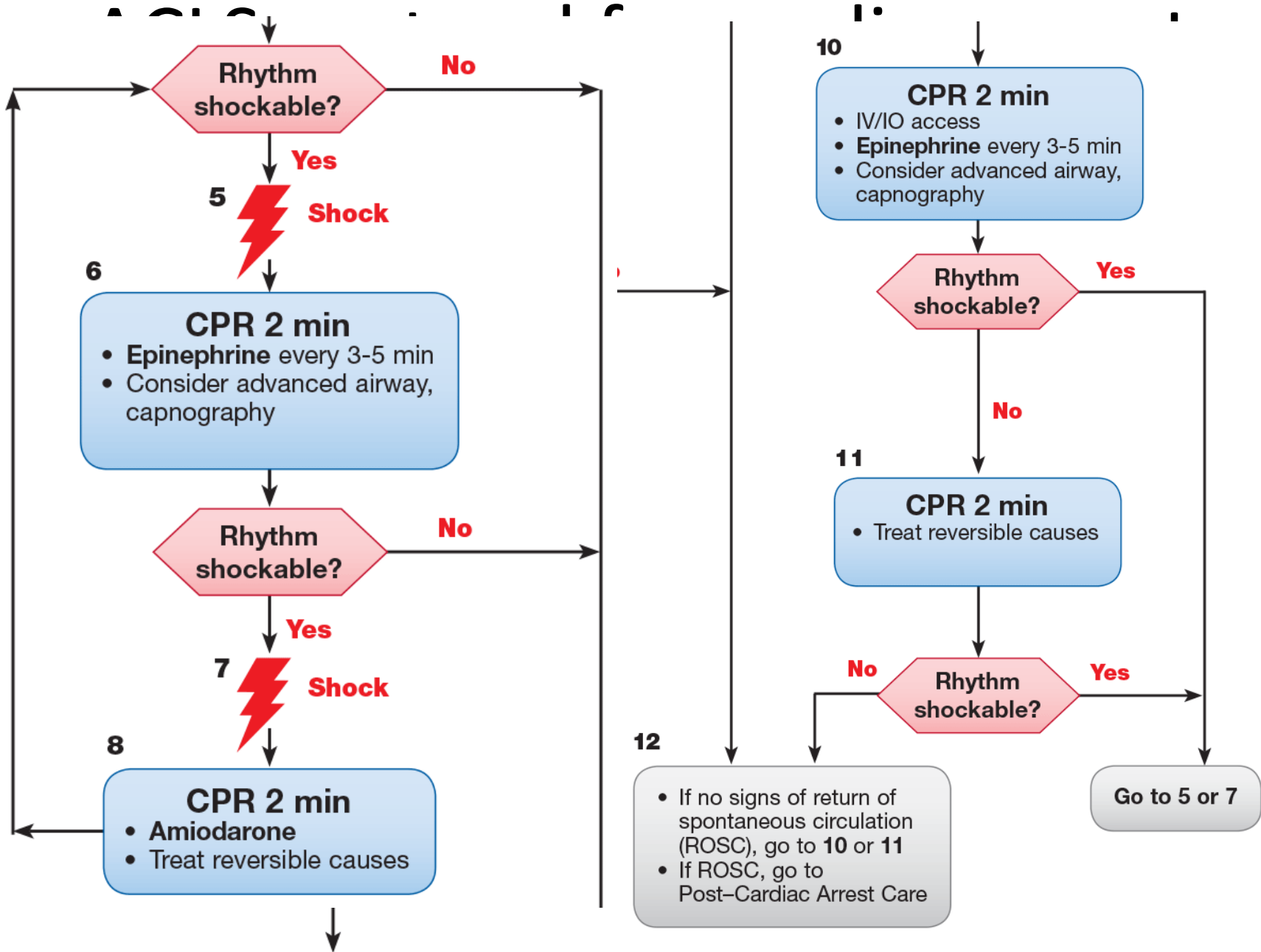


CPR

# Cardiac Arrest Rhythms

## Flat Line Protocol

- Proper leads connection
- Carotid pulse palpation
- Maximum gain of rhythm strip voltage is attained.



# Reversible Causes

- Hypoxia
- Hypovolemia
- H<sup>+</sup> ion
- Hypothermia
- Hypo/Hyperkalemia
- Tension Pneumothorax
- Thrombus Pulmonary
- Thrombus Cardiac
- Toxin
- Tamponade

# Causes Of Cardiac Arrest

## Major causes of sudden cardiac death

Ischemic heart disease
Coronary artery disease with myocardial infarction or angina
Coronary artery embolism
Nonatherogenic coronary artery disease (arteritis, dissection, congenital coronary artery anomalies)
Coronary artery spasm
Nonischemic heart disease
Hypertrophic cardiomyopathy
Dilated cardiomyopathy
Valvular heart disease
Congenital heart disease
Arrhythmogenic right ventricular dysplasia
Myocarditis
Acute pericardial tamponade
Acute myocardial rupture
Aortic dissection
No structural heart disease
Primary electrical disease (idiopathic ventricular fibrillation)
Brugada syndrome (right bundle branch block and ST segment elevation in leads V1 to V3)
Long QT syndrome
Preexcitation syndrome
Complete heart block
Familial sudden cardiac death
Chest wall trauma (commotio cordis)
Noncardiac disease
Pulmonary embolism
Intracranial hemorrhage
Drowning
Pickwickian syndrome
Drug-induced
Central airway obstruction
Sudden infant death syndrome

65-70 %

10%

5-10%

15 to 35%

- Coronary Artery Disease (CAD)[1] with MI or Angina
- Coronary Artery Embolism
- Non atherogenic CAD like dissection, arteritis etc.
- Coronary Artery Spasm

# ROSC

- Return of spontaneous circulation is resumption of sustained perfusing cardiac activity associated with significant respiratory effort after cardiac arrest.
- Signs of ROSC include breathing, coughing, or movement and a palpable pulse or a measurable blood pressure.

# Post-cardiac arrest syndrome

- Post-cardiac arrest syndrome is a unique and complex combination of pathophysiological processes, which include
  1. post-cardiac arrest brain injury,
  2. post-cardiac arrest myocardial dysfunction, and
  3. systemic ischemia/reperfusion response.
- This state is often complicated by a fourth component:
  4. the unresolved pathological process that caused the cardiac arrest.



# Take Home Message

The chances of survival in witnessed cardiac arrest is improved if prompt and systematic ACLS protocol is implemented.

# References

- [Resuscitation](#). 2015 Feb;87:63-8. doi: 10.1016/j.resuscitation.2014.11.007. Epub 2014 Nov 27- **Causes of in-hospital cardiac arrest - incidences and rate of recognition.**
- **Journal of the American College of Cardiology** [Volume 53, Issue 5, February 2009](#) DOI: 10.1016/j.jacc.2008.08.076. **Survival and Neurologic Recovery in Patients With ST-Segment Elevation Myocardial Infarction Resuscitated From Cardiac Arrest** Vinay R. Hosmane, Nowwar G. Mustafa, Vivek K. Reddy, Charles L. Reese IV, Angela DiSabatino, Paul Kolm, James T. Hopkins, William S. Weintraub and Ehsanur Rahman

**THANK YOU**

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