Case 12

You are an F2 working in the emergency department at General Hospital. Your consultant is Dr Bain.

Your bleep number is 1789

Patient name: Joseph Delacroix

Date of birth: 5th May 1964

Patient number: X543109675

Mr Delacroix is admitted to the emergency department with central crushing chest pain, radiating into his left arm, which started 2 hours previously. He is pale, sweaty and has vomited once during transfer.

His past medical history includes hypertension and stable angina. He has a thirty-pack-year smoking history.

On examination airway is patent and both lungs are clear on auscultation. Heart sounds I – II + 0. Capillary refill time <3 seconds. Abdomen soft and non-tender.

Investigations

Pulse	79 beats per minute
Blood pressure	142/94 mmHg
Respiratory rate	28 breathes per minute
Oxygen saturations	94% (room air)
Temperature	36.4 degrees Celsius

Chest x-ray and routine blood tests pending.

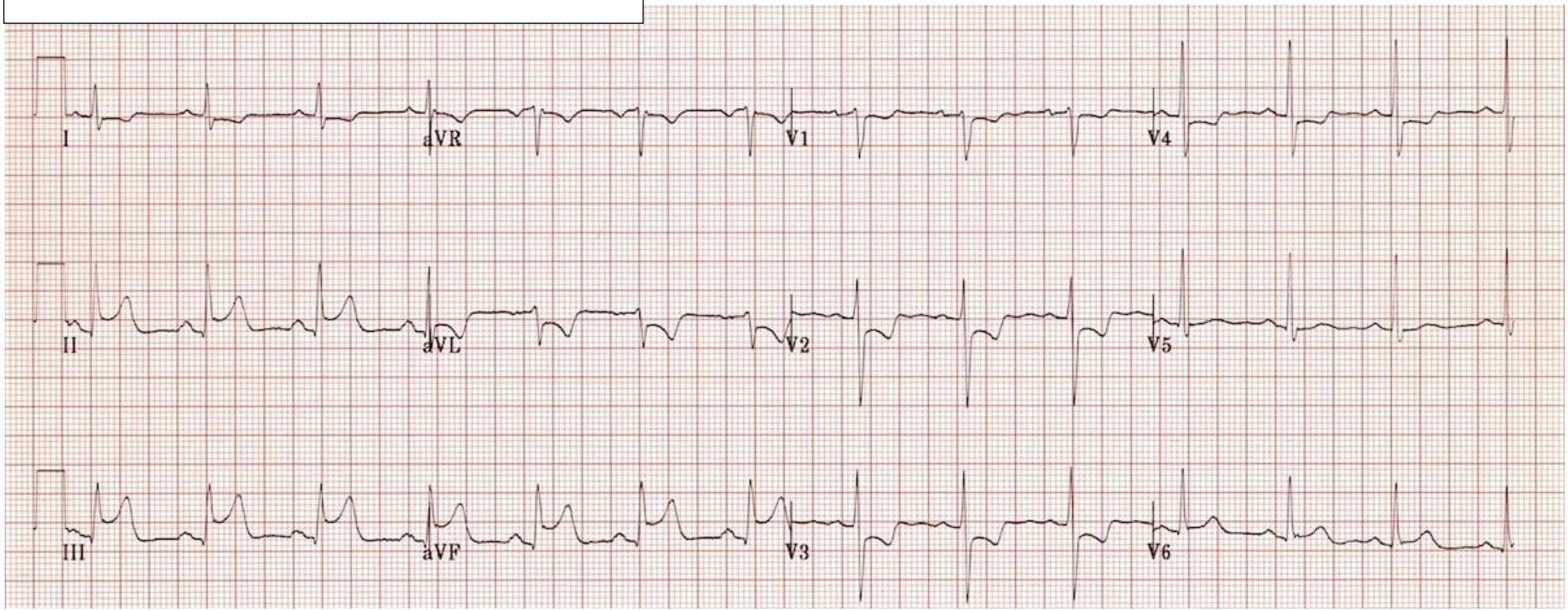
ECG results are below:

Task

Please report and interpret the results of the ECG on hospital notepaper. Comment on the rate, rhythm, axis, P waves, PR interval, QRS complex, T waves, ST segment and QT interval.

Make sure to include the most likely diagnosis and what the next steps in management should be.

Patient: Joseph Delacroix
DOB: 05/03/1964 Hospital #: X543109675
Time: 09:50 Date: 22/03/2023
Paper speed 25mm/sec. Calibration 10mm/mV
QT/QTc: 350ms/426ms



Hospital: General Hospital **Patient name:** Joseph Delacroix

Ward: ED **Date of birth:** 05/05/1964

Consultant: Dr Bain **Hospital number:** X543109675

Date/Time	Documentation
22/03/2023	FRED JONES FY2
1000	Report on 12-lead ECG for Joseph Delacroix, DOB
i.e. today's date	05/05/1964
	recorded today (22/03/23) at 0950 due to presentation with
	central chest pain, nausea and vomiting.
	Paper speed: 25mm/sec, calibration gain: 10mm/mV
	Rate: 78bpm
	Rhythm: regular – sinus rhythm
	Axis: normal
	P waves: normal
	PR interval: normal
	QRS: <0.12, normal
	T waves: inversion in I, aVL, V2, V3 and V4
	ST segment: elevation in leads II, III and aVF with reciprocal
	depression in aVL. Further ST depression in V2, V3 and V4.
	QTc: 426ms, normal (≥450 for men, ≥460 women = abnormal)
	No previous ECGs for comparison
	Impression: acute inferior ST elevation myocardial infarction
	Plan:
	1. IV Morphine for pain + antiemetic for nausea
	2. 300mg loading dose of aspirin F. Jones
	3. Urgent cardiology referral for ?PCI FRED JONES (FY2)
	Bleep: 1789

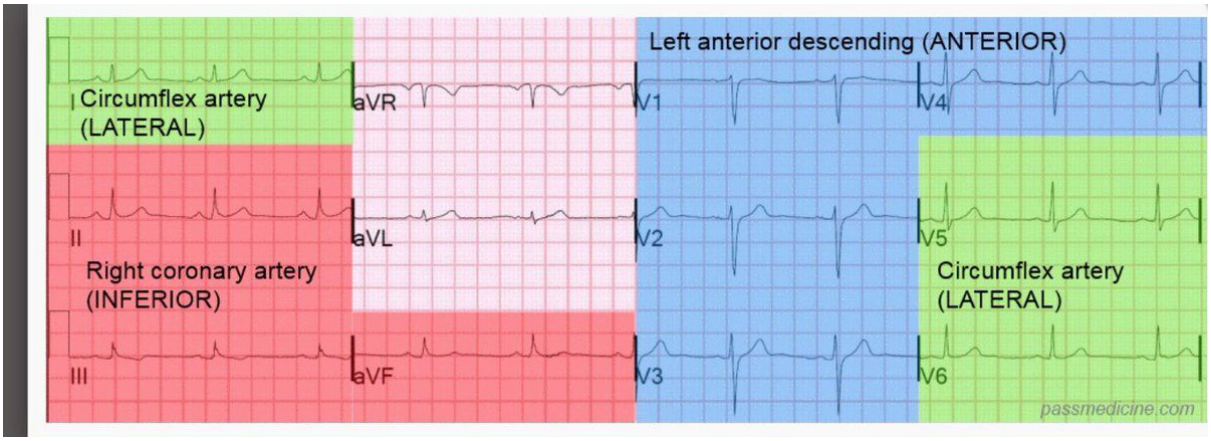
Explanation

The patient's history and symptoms are suggestive of an acute coronary syndrome (PMHx: hypertension and stable angina, risk factors: age, sex, smoking, Sx: central crushing chest pain etc.)

This is supported by the ECG which shows a pattern typical for an inferior STEMI:
1. ST elevation in leads II, III, aVF
2. Reciprocal ST depression in aVL
3. Progressive development of Q waves in II, III and aVF

This is caused by occlusion of the right coronary artery in the majority (~80%) of cases.

You can localise a STEMI to its corresponding ECG leads/arteries using the following map:



Regarding early management of STEMIs, the visual summary from NICE is particularly useful:

https://www.nice.org.uk/guidance/ng185

You might also want to refer to the *Acute Coronary Syndrome* treatment summary in the BNF in your exams:

https://bnf.nice.org.uk/treatment-summaries/acute-coronary-syndromes/

The ECG was taken from Life in the Fast Lane's Inferior STEMI page, which is itself a very useful learning resource (!):

https://litfl.com/inferior-stemi-ecg-library/