



ECG #6

WAMSS SGR 2022



Trigger

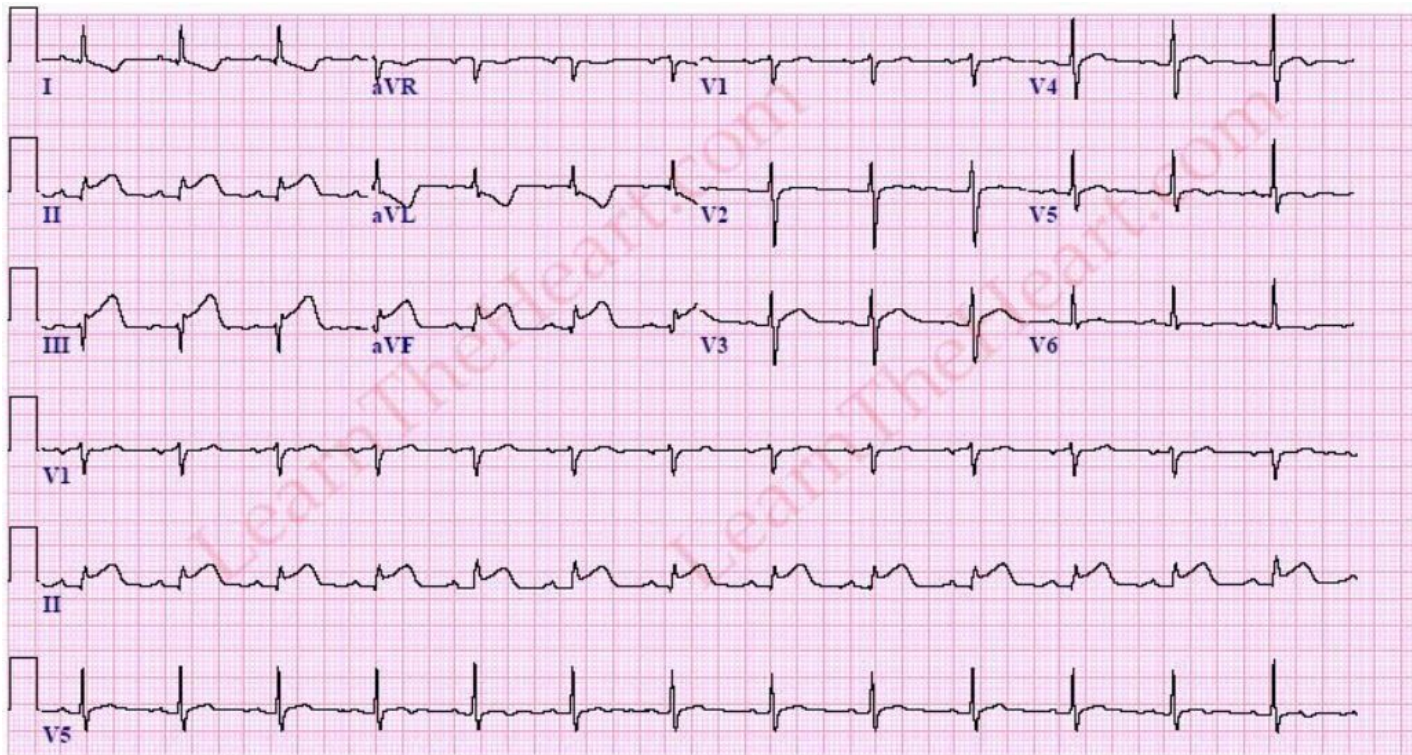
You are an intern in the ED. Mr. Jacobs, a 75M presents with retrosternal, crushing chest pain that radiates down his left arm. The pain was of sudden onset and has been ongoing for one hour. Mr Jacobs currently rates his pain at a 7/10 however before his GTN sublingual spray he rated the pain at an 8/10.

His father and older brother died of heart attacks in their 60s. He has a 20 pack-year history of smoking, and drinks 7 standards a night.

Mr Jacobs has a large body habitus, appears uncomfortable and is sweaty. He is currently hyperventilating.

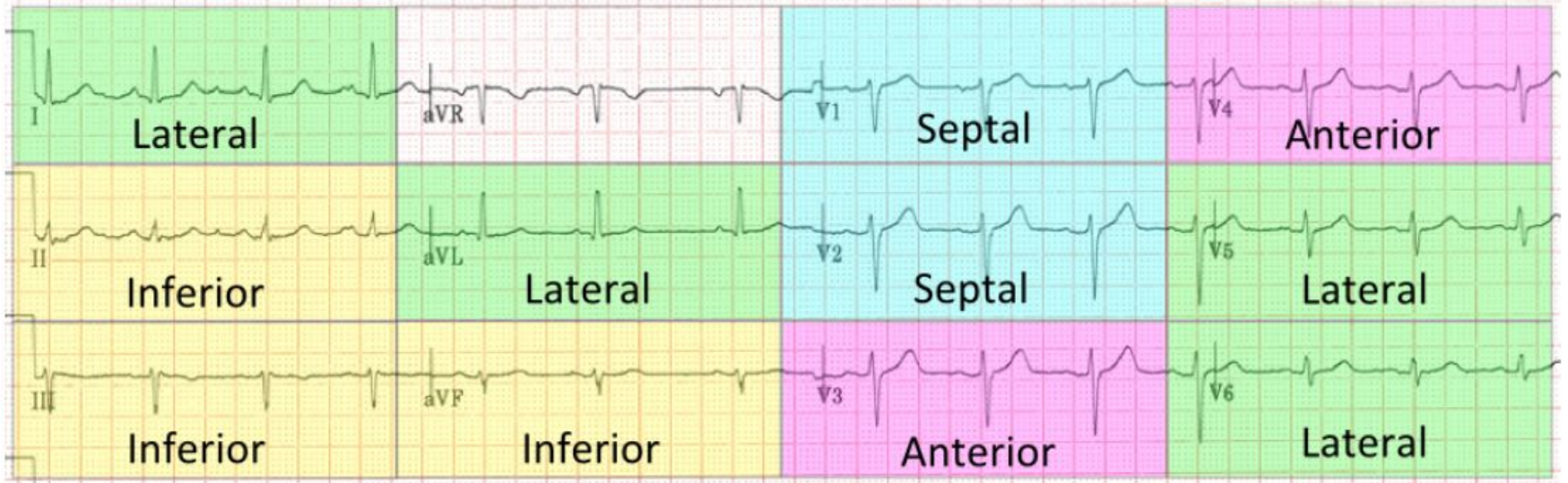
An ECG is performed as part of his initial workup.

Task: Interpret the ECG and provide a diagnosis.





| | |
|--------------------------------|---|
| Rate | 78 bpm |
| Rhythm | Sinus rhythm |
| Axis | Normal |
| Intervals (ref. ranges) | PR (120-200) – WNL QRS (<120) - WNL QT (<440) – WNL |
| Segments | ST elevation in II, III and aVF Reciprocal ST depression in aVL |
| Other morphology | Hyperacute (peaked) T waves in II, III and aVF T wave inversion in aVL Q waves in III |
| Interpretation | In summary, this is an ECG of a 75M presenting with chest pain, likely of cardiac origin. The ECG is abnormal, with ST elevation in leads II, III and aVF and reciprocal changes in aVL. There are early Q waves in lead III. My working diagnosis is an inferior STEMI so he needs to be reviewed urgently. |



<http://www.nataliescasebook.com/tag/s-t-elevation>



Follow-up Questions

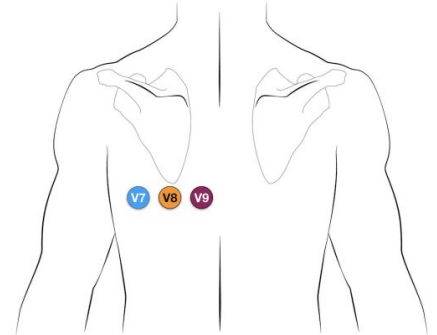
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1. How can we see a posterior MI on an ECG?
2. Other than ST elevation, what other finding on an ECG can be used to diagnose a STEMI?
3. What is your management plan for this patient?
4. List 5 complications of an MI.

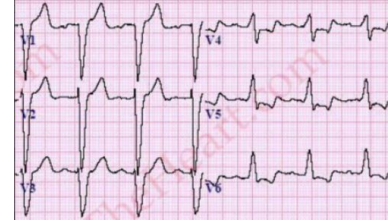
Question 1

- The posterior part of the heart is not directly visualised on a standard 12-lead ECG
- Therefore, we can look for reciprocal changes in the anteroseptal leads (such as ST depression)
- If suspicious of a posterior MI, posterior leads (V7-V9) can be placed on the patient



Question 2

- New left bundle branch block (although LBBB should be considered new unless there is evidence to the contrary)
- This is because ST elevation is difficult to see in the presence of LBBB
- For the budding cardiologists, Sgarbossa's criteria can be used to identify an MI in the presence of LBBB



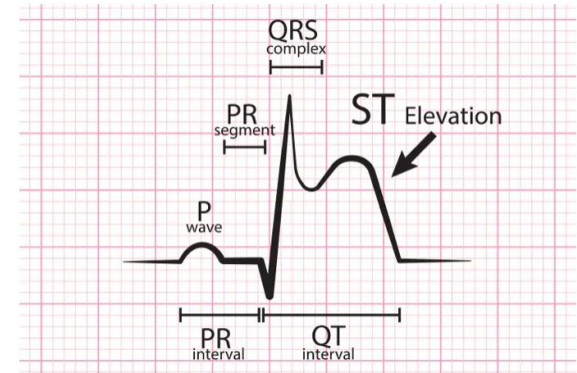
<https://www.healio.com/cardiology/learn-the-heart/ecg-review/ecg-topic-reviews-and-criteria/left-bundle-branch-block-lb-bb-review>

<https://litfl.com/left-bundle-branch-block-lbbb-ecg-library/>

<https://litfl.com/acute-coronary-syndromes/>

Question 2

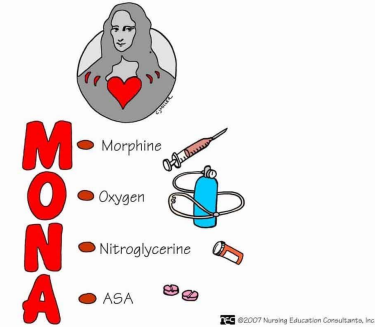
- Any of the following are criteria for diagnosing a STEMI:
 - $\geq 2.5\text{mm}$ ST elevation in V2-3 in men <40 , or $\geq 2.0\text{mm}$ elevation in V2-3 in men >40
 - $\geq 1.5\text{mm}$ ST elevation in V2-3 in women
 - $\geq 1\text{mm}$ ST elevation in other leads
 - New LBBB



Question 3

- ABCDE assessment, take bloods (including troponin)
- Call a code STEMI
- Aspirin (300mg stat dose)
- Oxygen (if SpO₂ < 93%)
- Opiate analgesia (can co-prescribe with an anti-emetic)
- GTN (unless patient is hypotensive or inferior STEMI (L₃>L₂))
- Call cardiology reg → go for percutaneous coronary intervention (PCI) asap
- If STEMI confirmed
 - Second anti-platelet e.g. clopidogrel 300-600mg, or ticagrelor 180mg
 - Heparin 5000IU
- Consider: secondary prevention e.g. statin, ACE inhibitor, beta-blocker

IMMEDIATE TREATMENT OF AN M.I.



Question 4

- **D**eath
- **A**rrhythmia
- **R**upture (of a free wall or papillary muscle)
- **T**amponade
- **H**eart failure

- **V**alve disease (e.g. acute mitral regurgitation)
- **A**neurysm (ventricular)
- **D**ressler's syndrome (autoimmune pericarditis post-MI)
- **E**mbolism (e.g. a left ventricular thrombus that embolises)
- **R**e-infarction





Thank you!

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