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Linked Lie

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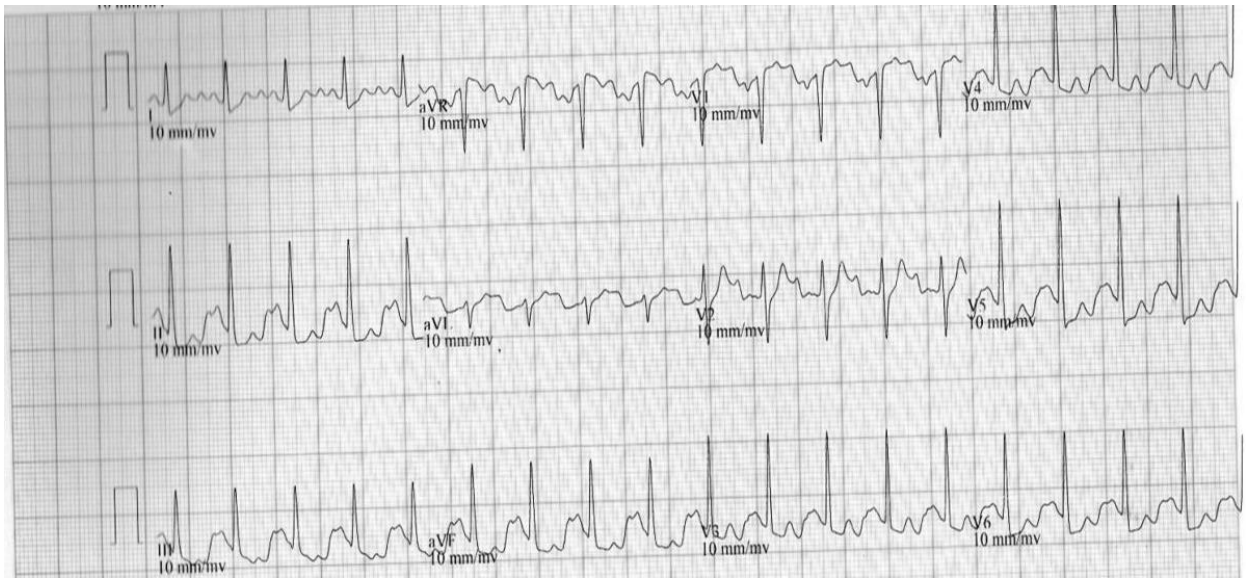


"Linked Lie"

This is the stress ECG of a 68-year-old man who c/o palpitations during 1st stage and exercise was stopped. This ECG is 1 minute into recovery.

What will you not do except:

1. IV adenosine
2. Early CAG
3. Start b blockers, antiplatelets and statins
4. Ask a question

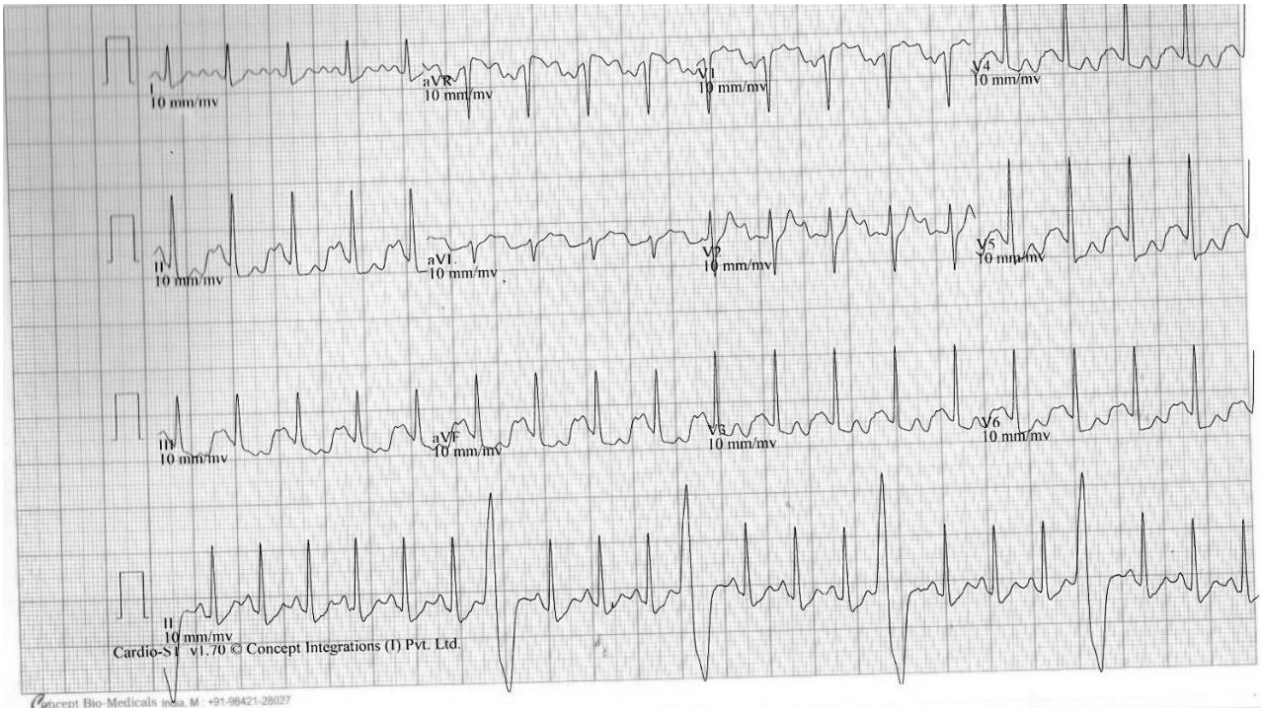
Answer 4:

ASK THE QUESTION → WHERE IS THE RAW DATA?

ECG Findings

The post-stress recovery ECG shows sinus tachycardia with inferolateral horizontal ST depression. There is ST elevation in avR. There are regular p waves in the ST segment which are non-conducted. The overall interpretation of this ECG is likely to be a significantly positive stress test, likely to be Triple Vessel Disease with Left Main Coronary Artery critical occlusion. In addition, there seems to be paroxysmal Atrial Tachycardia with a 2:1 ventricular response.

But, please look at the top of the ECG which says "Linked Medians" which indicates that leads L I to V6 (all 12 leads) are generated by the computer from the real raw ECG data of the patient. This type of linked medians is generated by the computer to give clean ECG complexes without muscle or somatic tremor artefacts as well as baseline wanderings which usually happen in real raw ECG data from the patient, who is exercising. It is important to realize that these linked medians which are generated by the computer are reliable only when the patient's real raw ECG data of the exercising patient is good and regular. If the patient's raw ECG data is corrupted due to muscle artefact or baseline wonderings due to inadequate preparation of the skin and poor contact of electrodes with the skin, the linked medians are not reliable, as the



computer tends to generate abnormal ECG complexes from the corrupted real raw data. This is what happened in this ECG. The real raw data of ECG is seen in the L II rhythm strip at the bottom which shows sinus tachycardia with fast upsloping ST depression and frequent ventricular ectopics (VPDs). If you compare this L II with the linked medians of L II above, both look completely different. The presence of frequent VPDs had confused the computer and the computer is generating a falsely abnormal ECG with ST depression and paroxysmal atrial tachycardia. But really patient had none of these changes according to raw data. The palpitation was due to VPDs rather than due to "Pseudo Atrial Tachycardia"

ECG with raw data in rhythm strip at the bottom; compare it LII in the 12 lead ECG which is linked to median

Clue:

As the linked medians in this ECG, are misleading as strongly positive stress test with Atrial Tachycardia, the linked medians are lying because the raw data in the L II rhythm strip at the bottom shows only fast upsloping ST depression and Ventricular Ectopics. Because of this the clue of "Linked Lie" is given.

Practical Implications:

If one believes the linked median in this ECG, the patient will be treated wrongly with anti-arrhythmic drugs as well as will be subjected to unnecessary intervention such as early Coronary Angiogram (CAG). This will result in excessive anxiety, dangers of anti-arrhythmic drugs as well as excessive expenditure of CAG. As far as real raw data, the patient does not require any of the above drugs or investigations. So, the lesson in reading the stress ECG recordings is that one should only look at raw data and not the computer-synthesised linked medians. To get clear raw data without artefacts, good skin preparation and proper application of electrodes are needed.