Diagnosing an MI: don't trust the monitor!
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Diagnosing an MI: don’t trust the monitor!

An elderly lady presented with chest pain at rest. The attending paramedics attached a Lifepak-12 (Physio-Control) monitor/defibrillator and recorded a 12-lead ECG (panel A). They then switched to monitor mode, and recorded three leads, which showed marked ST elevation (panel B). She was brought as an emergency to the cardiac catheter suite for primary angioplasty. Upon arrival, a repeat 12-lead ECG was normal, as were subsequent cardiac marker levels. She was diagnosed with unstable angina and discharged uneventfully 2 days later. Why did the monitor show a STEMI and the 12-lead not?

An electrocardiogram should be recorded with appropriate filtering to avoid distortion. The range 0.05 to 100 Hz will do this, but will allow baseline drift due to poor skin preparation and respiratory noise. Monitors are designed for a stable baseline and attenuate signals <1 Hz. Unless “linear phase” filters are used, some components of the QRS complexes will be delayed more than others and end up in the ST segment. This produces artefactual ST-segment elevation. Unfortunately, linear phase filters cause a time delay and are complex, so are not often used on monitors. So, know your equipment! Always do a 12-lead ECG before you reach for your thrombolytic or angioplasty balloon!

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REFERENCES