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Angina and i-Watch

Acute Chest Pain in the Era of Digital Watches

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A 38-year-old male smoker with serum LDL-cholesterol of 6.4 mmol/l and a family history of coronary artery disease (father with acute myocardial infarction at the age of 45), developed acute chest pain irradiating to the jaw and both arms at 6:46 a.m. He immediately recorded a single-lead ECG (corresponding to ECG lead I) with his digital watch (Apple Watch® with photoplethysmography sensor), which showed sinus rhythm with significant ST-segment depression (fig. 1A).

The patient took a nitro-glycerine pill and the pain resolved completely after a few minutes. A second single-lead ECG registered with his digital watch at 7:22 a.m. showed complete resolution of ST-segment depression (fig. 1B). Both ECGs were sent to his cardiologist by e-mail, who organised immediate admission at the emergency department. 12-lead ECG was normal, whereas high-sensitive troponin-T was slightly elevated with a value of 16 ng/l (cut-off 14 ng/l). Coronary angiogram documented a 50% stenosis of the right coronary artery and cardiac magnetic resonance imaging did not reveal any late gadolinium enhancement or signs of ischaemia.

The chest pain and the alterations on the single-lead ECG were most probably induced by vasospasm of the right coronary artery. Therefore, aspirin, high dose statins and a calcium channel blocker were initiated. Furthermore, the patient stopped smoking. After almost three years of follow-up, there have been no further episodes of chest pain.

Our case shows the potential role of digital watches in detecting transient acute transmural myocardial ischaemia – in our case most probably due to coronary spasm.

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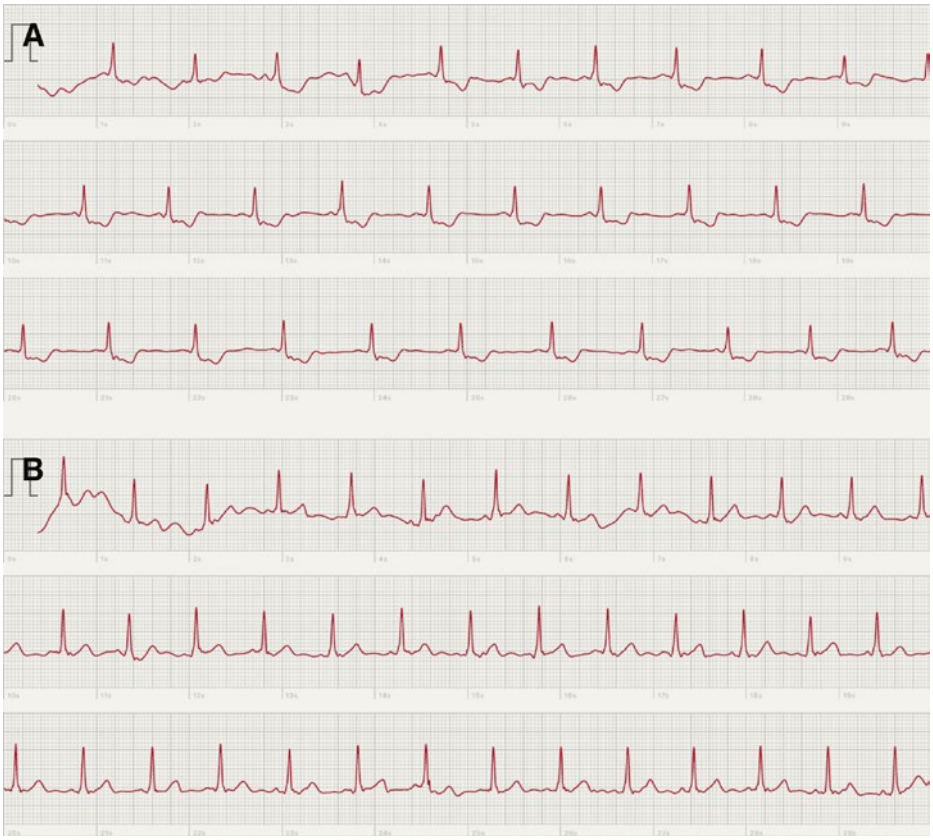

Figure 1: ECG.