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Transient abnormal Q waves during exercise electrocardiography: a new potential cause

Transient abnormal Q waves during exercise ECG are rare and not well understood. Electrical axis alteration caused by hyperventilation, rate related fascicular block, or reversible ischaemia have been considered as possible causes for this abnormality. We report a relatively new cause of transient Q waves during exercise testing.

A 45 year old asymptomatic man with diabetes was referred for an exercise test. Clinical examination and baseline 12 lead ECG were normal. The patient exercised for seven minutes 15 seconds (workload of 8.3 metabolic equivalents) on a Bruce protocol. He achieved a maximum heart rate of 166 beats/min and a blood pressure of 220/110 mm Hg. During peak exercise the treadmill report showed Q waves in lead I, II, AVF, V2–V6, which persisted for one minute post-exercise with the patient remaining asymptomatic. The appearance of Q waves during exercise was difficult to explain until we saw the long strip of real time lead II tracing at the bottom of the printout which showed no Q waves, indicating the reported Q waves were an artefact of computer processing.

Treadmill systems use various algorithms in order to avoid motion artefact and provide stable baseline recording and generate reasonable stable printouts. However, this process itself may create a different ECG. The long strip of lead II (at the bottom of the

figure) showed no Q waves whereas the linked median printout has generated new Q waves in leads at that time. Unless this possibility is kept in mind, misdiagnosis and unnecessary investigations may be done. A wider appreciation of similar abnormalities resulting from the computer processing of data during treadmill testing is warranted.

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