Correspondence

Chest pain - troponin and athletes

Dear Sirs.

We recently admitted two young men with chest discomfort suggestive of an acute coronary syndrome, who were troponin I positive.

One was a 26-year-old Caucasian with left-sided chest heaviness engaging in regular triathlons. While serial resting electrocardiograms were unremarkable, troponin I on admission and one month later were elevated at 0.1 and 0.09 mg/L, respectively (normal range 0-0.04). An echocardiogram was entirely normal. An exercise treadmill stress test (ETT) was performed to 13 minutes (99% target heart rate achieved) of a Bruce protocol without symptoms or changes in the ECG recordings.

The second was a 39-year-old Black male with chest pain and a troponin value of 0.09 mg/L. He was extremely muscular as a result of regular weight training, kick boxing, karate and 'cage-fighting'. The ECG showed resting T-wave inversion in leads V4–V6. The echocardiogram confirmed mild left ventricular hypertrophy (mean left ventricular wall thickness of 15 mm), no regional abnormalities and was otherwise a normal study. A Bruce protocol ETT was performed to 13 minutes (98% target heart rate achieved) without symptoms. The T-waves normalised within 30 seconds of starting the test, with no changes to suggest ischaemia throughout, or in recovery.

Both men were reassured and discharged. These cases represent examples of described elevations in troponins, and other cardiac biomarkers, seen in athletes.[1] Such examples are reported in marathon runners, tri-athletes and other competitors in extreme endurance events, with levels correlating to increased endurance time.[2]

The mechanism remains unclear. Proposals include transitory leakage of cardiac troponins from injured myocytes, reduced renal clearance, elevated levels of catecholamines and isoenzyme release from skeletal muscle biochemically altered by training. The latter is supported by marathon experience and age appearing to be significant predictors of post-marathon troponin elevation.[3]

Clinicians should be cautious of interpreting positive troponin values in such individuals.

Fady Magdy and Simon W Dubrey
Hillingdon Hospital, Uxbridge

References

1. Regwan S, Hulten EA, Martinho S *et al*. Marathon running as a cause of troponin elevation: a systematic review and meta-analysis. *J Intervent Cardiol* 2010;**23**:443–50.

2. Jassal DS, Moffat D, Krahn J *et al*. Cardiac injury markers in non-elite marathon runners. *Int J Sports Med* 2009;**30**:75–9.

3. Mingels A, Jacobs L, Michielsen E *et al*. Reference population and marathon runner sera assessed by highly sensitive cardiac troponin T and commercial cardiac troponin T and I assays. *Clin Chem* 2009; **55**:101–8.