

Clinical chemist: what is your guess?

AUTHORS:

Richard Body^{a, b, c} and Garry McDowell^{a, c}

Affiliations:

a: Cardiovascular Sciences Research Group, The University of Manchester, Oxford Road, Manchester, M13 9WL, United Kingdom

b: Emergency Department, Central Manchester University Hospitals Foundation NHS Trust, Oxford Road, Manchester, M13 9WL, United Kingdom

c: Healthcare Sciences Research Group, Manchester Metropolitan University, Chester Street, Manchester, M1 5GD, United Kingdom

Corresponding author and address:

Prof. Richard Body

Professor and Consultant in Emergency Medicine; Research Director, Emergency Medicine and Intensive Care Research Group; and Honorary Senior Lecturer in Cardiovascular Medicine

Emergency Department, Manchester Royal Infirmary, Oxford Road, Manchester, M13 9WL, United Kingdom

Email: richard.body@manchester.ac.uk

Telephone: 00 44 7880 712 929

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The Rise and Fall of Cardiac Troponin

A 65 year old man presents to the Emergency Department (ED). He reports experiencing a 20-minute episode of central chest pain with an aching character and no radiation. He has no significant past medical history. Serial electrocardiograms show no ST segment or T wave abnormalities.

High-sensitivity cardiac troponin T (hs-cTnT) concentrations (Roche Elecsys, 99th percentile 14 ng/L, co-efficient of variation <10% at 13 ng/L) were as follows:

14:00	:	9 ng/L
17:00	:	16 ng/L [reference range 2 to 14 ng/L]

Questions

1. When is the cardiac troponin delta useful?
2. How is the absolute delta calculated for a hs-cTn assay?
3. Has this patient had an acute myocardial infarction?

Answers

The universal definition of MI requires a rise and/or fall of cardiac troponin with at least one value above the 99th percentile (1). Calculation of a cardiac troponin is important to distinguish whether a serial change of cardiac troponin is from an acute vs chronic pathophysiology. The optimal for the hs-cTnT assay has been shown to be an absolute change between 2 serial cardiac concentrations of 7 ng/L, when an initial concentration is less than the 99th percentile (2,3). Here, the absolute change in cTnT met the criteria for an acute, evolving injury, i.e., MI. The absolute will be different for hs-TnI assays, as assays are not standardized.

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References

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