Heart failure and cardiomyopathies

IMAGE CHALLENGE

Chest pain: when in doubt...

CLINICAL INTRODUCTION

A 38-year-old Caucasian man presented with central chest heaviness at rest. There was a history of mild abdominal discomfort but no infective prodrome. There was no antecedent exertional or nocturnal chest pain. The patient had a 26-pack-year history of tobacco smoking and no known comorbidities. Recent social history was unremarkable. Examination and vital signs were normal. An ECG taken with mild residual chest discomfort is shown in figure 1A. High-sensitivity troponin I was 74 ng/L, peaking at 1405 ng/L. Echocardiography demonstrated a structurally normal heart with normal biventricular function. Medical therapy for an acute coronary syndrome was commenced and invasive coronary angiography was performed (figure 1B,C).

QUESTION

What is the most likely diagnosis?
A. Myocardial infarction with non-obstructed coronary arteries.
B. Stress cardiomyopathy.
C. Myocarditis.
D. Microvascular dysfunction.
E. Coronary artery spasm.

For answer see page 706
In situations of diagnostic ambiguity, the use of adjunctive tools such as intravascular imaging or CMR can be difficult to ascertain. In the era of high-sensitivity cardiac troponin assays, the aetiology of myocardial injury can be difficult to ascertain. In this case, myocardial infarction with nonobstructed coronary arteries was likely given the lack of a trigger, regional wall motion abnormality on echocardiography or ECG changes. Mild myocarditis was less likely in the absence of an infective prodrome and a history of angina rather than a discrete episode of myocardial infarction. Similarly, coronary artery spasm usually presents with episodic chest pain of diurnal variation that responds rapidly to nitrates. If an ECG is taken during an acute episode, transient ST-segment deviation can be seen, not present in this case. In situations of diagnostic ambiguity, the use of adjunctive tools such as intravascular imaging or CMR should be considered to clarify the underlying pathology and guide therapies.

However, myocarditis was felt to be the most likely diagnosis by the treating team. Preventative therapies were stopped and the patient was discharged. He continued to smoke. Six months later, he re-presented with severe chest pain and anterior ST elevation. Emergent coronary angiography demonstrated a thrombotic occlusion of the mid-LAD artery (figure 2A,B). Primary percutaneous intervention was undertaken (figure 2C,D). The patient recovered well.

**PATIENT AND PUBLIC INVOLVEMENT**

This case was written without patient involvement. Patients were not invited to comment on the study design and were not consulted to develop patient relevant outcomes or interpret the results. Patients were not invited to contribute to the writing or editing of this document for readability or accuracy.

**Rong Bing**,1,2 Andrew J Mitchell,1 David E Newby1,2

1 Edinburgh Heart Centre, Royal Infirmary of Edinburgh, Edinburgh, UK
2 BHF Centre for Cardiovascular Science, University of Edinburgh, Edinburgh, UK

**Correspondence to** Dr Rong Bing, BHF Centre for Cardiovascular Science, University of Edinburgh, Edinburgh EH16 4TI, UK; rongbing.rb@gmail.com

**Contributors** RB prepared the first draft. RB, AJM and DEN reviewed and edited the final manuscript. All authors are responsible for the overall content.

**Funding** This work was supported by the British Heart Foundation (CH/09/002, RE/13/3/30183, RE/18/5/34216, PG/19/40/34422 and RG/16/10/32375 to DEN) and the Wellcome Trust (WT103782AL to DEN).

**Competing interests** None declared.

**Patient consent for publication** Obtained.

**Provenance and peer review** Not commissioned; internally peer reviewed.

**Open access** This is an open access article distributed in accordance with the Creative Commons Attribution 4.0 Unported (CC BY 4.0) license, which permits others to copy, redistribute, remix, transform and build upon this work for any purpose, provided the original work is properly cited, a link to the licence is given, and indication of whether changes were made. See: https://creativecommons.org/licenses/by/4.0/

© Author(s) (or their employer(s)) 2020. Re-use permitted under CC BY. Published by BMJ.


Heart 2020;106:707. doi:10.1136/heartjnl-2019-316458

**ORCID ID** Rong Bing http://orcid.org/0000-0002-8305-4906

**REFERENCES**


