A diagnostic odyssey: young woman with chest pain

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A previously healthy 45-year-old woman complained of worsening chest pain, which occurred mainly during exercise, was oppressive in nature and resolved after a few minutes of rest. The patient had no risk factors for coronary artery disease, no family history of cardiovascular disease or sudden death, and no recent pregnancy. According to the European Guidelines, this patient had low probability of obstructive coronary artery disease (5–20%) and should be referred to a non-invasive ischaemia test. Despite recommendations, the patient underwent directly an invasive coronary angiography (ICA) procedure 15 days after symptom onset, which was found normal. She was admitted to our hospital 15 days later with class III CCS angina. On admission, she had a normal resting EKG and negative troponin and was referred for a coronary computed tomography angiography (CTA) scan in order to rule out obstructive coronary artery disease, again contrary to guidelines which would refer the patient for ischaemia testing. The CTA was performed using a 64-detector scanner and revealed an intimal flap on the dominant right coronary characteristic of dissection, starting from its origin and ending in the mid-third of the artery (Panel A). The remaining coronary arteries had no sign of detectable atherosclerosis. It was also noted an altered left ventricular myocardial wall with prominent trabeculae and deep intertrabecular recesses, filling criteria for the diagnosis of left ventricular non-compaction (LVNC), with the ratio of the maximum linear length of non-compactod to compacted myocardium >2:1 both in systole and in diastole (Panel B). A second ICA confirmed the coronary dissection (Panel C), stents were implanted with good angiographic result, and the patient became asymptomatic. Missing the guidelines had undesired consequences in this patient. First, a young female patient with no signs of atherosclerosis on the CTA and a dissection starting at the ostium of the RCA, most likely had an iatrogenic complication of ICA (i.e. coronary dissection). Secondly, ionizing radiation exposure is a concern in this patient who underwent two ICAs and one coronary CTA. Thus, starting the investigation according to guidelines with an ischaemia test (preferably without radiation exposure like rest/stress cardiac magnetic resonance or echocardiogram) could have identified the LVNC (a potential source of chest pain), saving the patient from serious complications.

Panel A. Oblique CTA image showing the right coronary dissection flap (arrows) together with a short-axis view of the compacted (C) and non-compactod (NC) portions of the myocardium.

Panel B. Short-axis views of the left ventricle in diastole (left) and systole (right) with measurements of the compacted and non-compactod myocardium.

Panel C. ICA of the right coronary artery showing a proximal dissection flap (arrows).