Multi-vessel coronary artery spasm

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A 69-year-old male, a chronic smoker with history of hypertension, presented with chest pain. Electrocardiogram showed marked ST-depression over antero-lateral leads (Panel A). Echocardiogram showed wall hypokinesia. Troponin level was elevated confirming the diagnosis of non-ST-elevation myocardial infarction. He was treated with aspirin, clopidogrel, low molecular heparin, and glycoprotein 2b/3a inhibitors. Coronary angiography the following day (Panel C) showed non-obstructive diffusely diseased vessels over the left anterior descending (LAD) and left circumflex (CIRC) arteries. Right coronary artery (RCA) which was the culprit artery appeared even smaller in calibre and was occluded (Panel E). Our initial reaction was to treat his condition medically. However, we decided to repeat the coronary angiography with intracoronary nitroglycerin injection of a single bolus of intracoronary nitroglycerin, the LAD and CIRC arteries (Panel D) appeared bigger in calibre and were non-obstructive. The possibility of coronary artery spasm was considered and coronary angiography of RCA was repeated. After three boluses of intracoronary nitroglycerin, a normal looking RCA was unmasked (Panels F and G).

Coronary artery spasm usually develops at the site of coronary stenoses but may also occur in angiographically normal coronary arteries. The prevalence of coronary artery spasm is actually higher in patients with acute coronary syndrome than in patients with stable angina. As illustrated by our case, it is important to be aware of this possibility and the judicious use of intracoronary nitroglycerin during coronary angiography can lead to the correct diagnosis being made.

Panel A. Electrocardiogram at presentation.

Panel B. Electrocardiogram (post-nitroglycerin injection).

Panel C. Coronary angiography of left anterior descending and left circumflex arteries.

Panel D. Coronary angiography of left anterior descending and left circumflex arteries (post-nitroglycerin injection).

Panel E. Coronary angiography of right coronary artery.

Panel F. Coronary angiography of right coronary artery (after the first bolus intracoronary nitroglycerin injection).

Panel G. Coronary angiography of right coronary artery (after three boluses of intracoronary nitroglycerin injection).

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