IMAGES IN CARDIOLOGY

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Precordial ST segment elevation suggestive of anterior infarction caused by right coronary artery occlusion

A 50 year old male patient was admitted to our clinic with a one hour history of typically crushing chest pain. Electrocardiography taken at admission showed ST segment elevations in leads V1–V5 suggestive of anterior acute myocardial infarction, and there was a small ST segment elevation in leads III (panel A).

The patient was immediately transferred to the catheterisation laboratory and a coronary angiogram undertaken 30 minutes following admission. The angiogram showed that the left coronary artery was normal (panel B), while a non-significant narrowing was seen in the mid portion of the right coronary artery, and about 95% narrowing was viewed in the distal part of the right coronary artery (panel C). After passing the lesions with a 0.014 inch guidewire, primary stent implantation was successfully performed. The final angiography showed no residual stenosis (panel D). After stent implantation the patient's chest pain resolved and the ST segment elevation in leads V1–V5 returned to normal (panel E).

Several mechanisms for anterior and inferior ST segment elevations in patients with right coronary artery occlusion have been proposed. One of them is that minimal inferior injury current and the lack of posterior injury current permits the right ventricle injury current to predominate and manifest ST elevation in leads V1–V4; in most other patients with a large inferior acute myocardial infarction the appearance of ST elevation is counteracted by the dominant electrical forces of the posterior injury current. The smaller ST segment elevation in the inferior leads in these patients suggests minimal inferior injury current. Secondly, in the presence of co-existing acute right ventricular injury and dilatation, a larger part of the right ventricle free wall is directed anteriorly, thus ST

elevation may be seen in the anterior leads. In our case there was only a small ST elevation in lead III and a lack of ST segment elevation in leads II and aVF, suggesting that minimal injury current could not counteract the anterior ST elevation.

M K Erol
H Kocaturk
Y Gurlertop
mkerol@superonline.com