An imaging of paradox flow in coronary artery collateralization

Çelişkili bir koroner arter kollateral akım görüntüsü

A 63-year old man with stable angina pectoris who had been placed a stent in his left anterior descending artery (LAD) due to anterior myocardial infarction three years ago was admitted to our hospital. His electrocardiogram (ECG) showed QS wave and T-wave inversion on leads V1-4. On echocardiography, he had an ejection fraction of 40%, mild mitral regurgitation, and severe hypokinesia involving the mid- septum and apex. Coronary angiography revealed a stenosis of the mid-right coronary artery (RCA)- 80% and a normal circumflex artery (CX) which was well collateralized from the RCA. In addition, there was a stenosis in the rudimentary obtuse margin II -90% and in the LAD-instant 40% after the first diagonal branch having 70% lesion in its proximity (Fig. 1-3 and Video 1-3). On selective right coronary angiogram, despite a high grade lesion of the RCA, there was a good retrograde flow reaching the proximity of LAD via CX (Fig. 1 and Video 1). The distal RCA was free of disease and appeared with a TIMI 3 flow and Rentrop 3 collateral flow to the CX. On the other hand, on selective left coronary angiogram, there was no retrograde collateral flow to the RCA (Fig. 2, 3 and Video 2, 3).Two explanations first came to our mind: Firstly, the formation of lesion of the RCA was new or not old, accompanying an old good focal collateralization between the CX and the RCA due to prior myocardial infarction; Secondly, the coronary collateral channels of the patient may have valve-like structure reversing the flow.

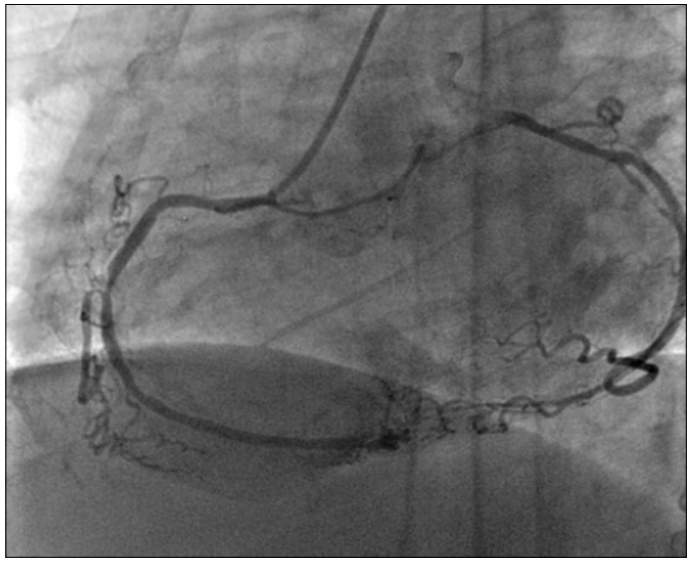

Figure 1. Right coronary angiogram demonstrating TIMI 3 flow and Rentrop 3 collateral flow to the CX from the RCA despite a high grade lesion-left anterior oblique projection

CX - circumflex coronary artery, RCA - right coronary artery

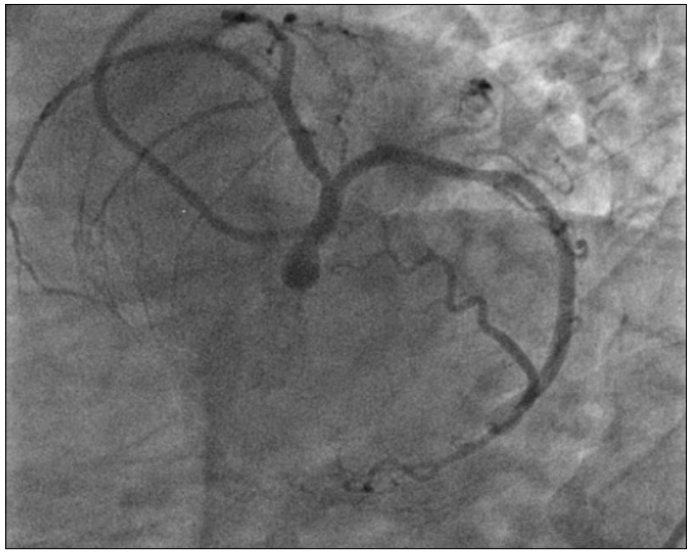

Figure 2. There was no collateral flow to the RCA - left anterior oblique view caudally.

RCA - right coronary artery

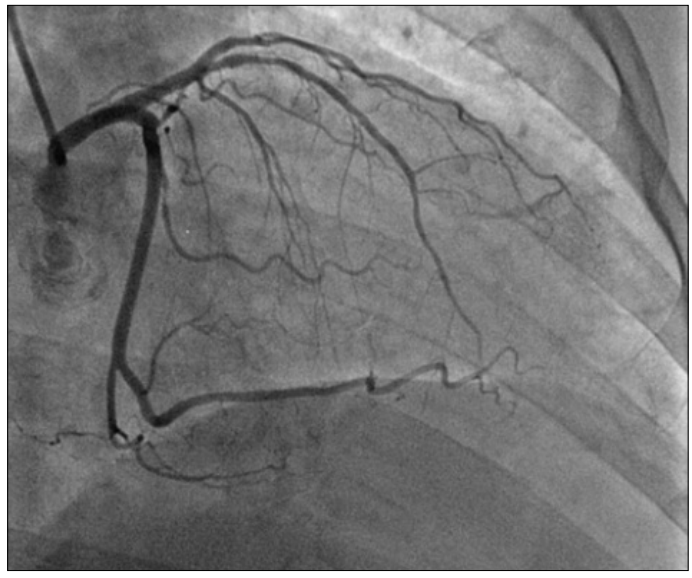

Figure 3. Left coronary arteriography shows no collateral flow to RCA, with a normal circumflex artery - right oblique projection.

RCA - right coronary artery

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Video 1. Shows a stenosis of the mid- right coronary artery (RCA)- 80% and Rentrop 3 collateral flow to the CX and then from CX to LAD.
Video 2. On selective left caudally projection of left coronary angiogram, there was no retrograde collateralization from CX or LAD to RCA.
Video 3. Reveals no collateral flow from CX or LAD to RCA on right caudally projection.

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Available Online Date/Çevrimiçi Yayın Tarihi: 23.10.2013

doi:10.5152/akd.2013.253