Woven coronary artery: differential diagnosis with diffuse intracoronary thrombosis

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Woven coronary malformation is characterized by the branching of a major epicardial coronary artery into thin channels which then merge again in a normal conduit.

The angiogram can suggest a filling defect instead of a malformation and an undue coronary angioplasty could be performed determining some damage to the arterial wall.

In this case report we describe a patient with a stenosis on the left anterior descending coronary artery and a woven coronary artery on the right coronary artery.

In 1995 a coronary angioplasty was performed on the left anterior descending coronary artery. Four years later a coronary angiogram did not show any changes in the right coronary artery. In this patient the malformation did not induce any reduction in the coronary reserve as shown at cardiac scintigraphy.

We need more information about the natural history of such a malformation.
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Woven coronary artery is an uncommon and still poorly recognized coronary malformation, characterized by the branching of epicardial coronary arteries into thin channels which then merge again in a normal conduit[1,2].

The twisting of such thin channels can be misleading suggesting a complicated plaque with thrombus formation instead of a coronary malformation.

It is well known that there is no angiographic uniform definition of intracoronary thrombus and the incidence may change widely between studies.

The strictest angiographic criteria require definite intraluminal globular filling defects in multiple angiographic views.

The flow can be reduced depending on the intraluminal extension of the thrombus[3].

In the woven coronary artery the distance of the thin channels and the twisting of the channels can simulate the presence of a thrombus.

In patients with woven coronary malformation the differential diagnosis could be based on: 1) no history of an acute coronary event related to the examined coronary artery and presence of a normal coronary reserve at stress scintigraphy; 2) the flow is surprisingly normal considering the extension of the apparent filling defects; 3) a careful radiological examination (digital zooming) can help for a correct interpretation of the angiographic image.

In the cath lab the prompt identification of the woven coronary malformation can warn against an undue coronary angioplasty and the consequent possible damage.

In 1995 the coronary angiogram of a 42-year-old man with family history of hypercholesterolemia, class III angina, and no history of myocardial infarction, showed a two-vessel disease.

The first lesion was located on the middle part of the left anterior descending coronary artery (LAD); the lesion was 80% severe, and 10 mm long; the second lesion was located on the second part of the right coronary artery; the morphology was similar to a recanalized vessel with filling defects; the TIMI flow was 3.

We planned to perform a tow vessel coronary angioplasty (LAD first and right coronary artery second).

After a successful coronary angioplasty on the LAD we performed a zooming on the right coronary artery lesion. The zooming convinced us about the presence of a woven right coronary artery instead of a long complicated plaque with filling defects.

Figure 1 shows the malformation in the right anterior oblique projection; figure 2 in the left anterior oblique projection.

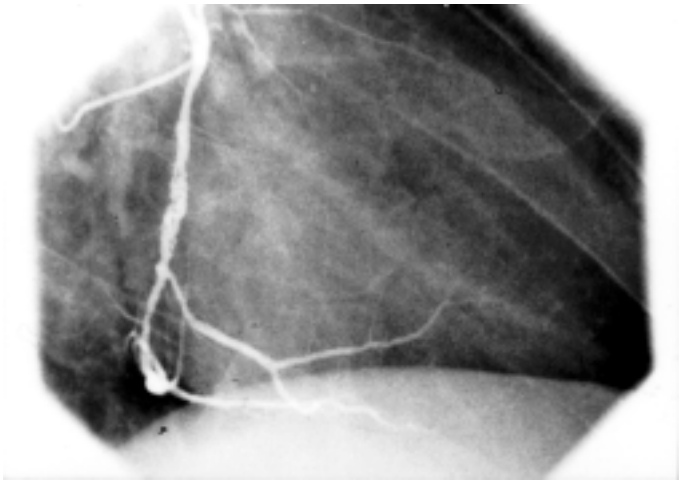

Figure 1. *Woven coronary artery malformation shown at right coronary angiogram in the right anterior oblique projection.*

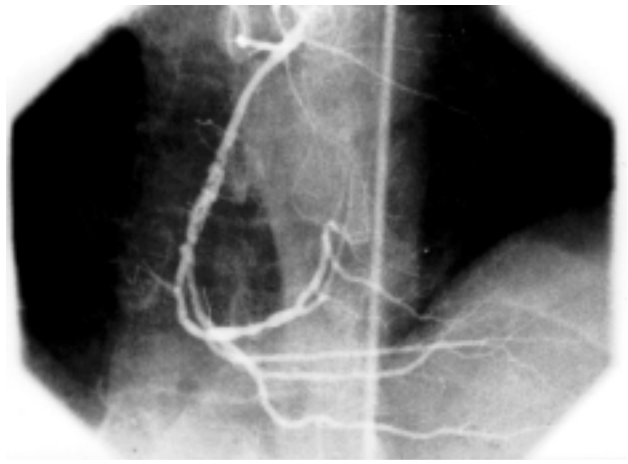

Figure 2. *Woven coronary artery malformation shown in the left anterior oblique projection.*

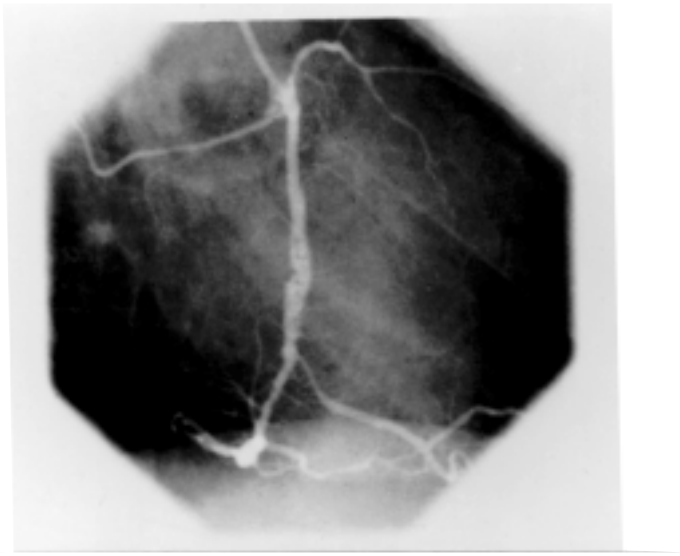

Figure 3. *Woven coronary artery malformation in the right anterior oblique projection 4 years later.*

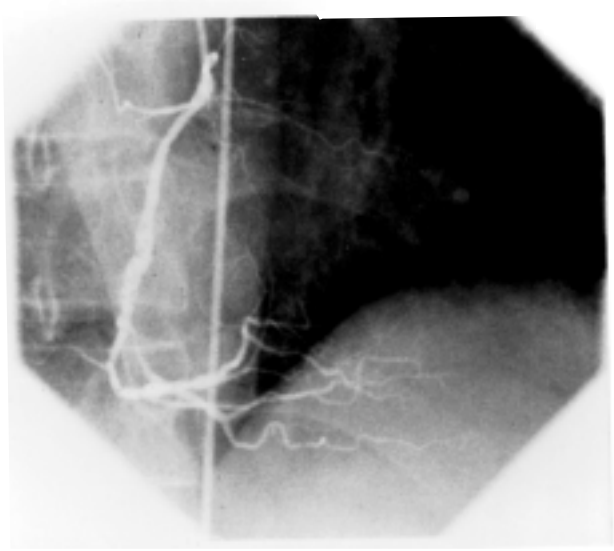

Figure 4. *Woven coronary artery malformation in the left anterior oblique projection 4 years later.*

After coronary angiography the patient was discharged. Six months later effort ECG was negative and the patient had no angina. However, 4 years later the patient returned to the hospital complaining of effort angina (class III).

A coronary angiogram showed a 90% stenosis on the first part of the first marginal branch.

A coronary angioplasty with stent implantation was performed.

The right coronary artery was unchanged showing the same malformation with TIMI 3 flow.

Figure 3 shows the right coronary artery in the right anterior oblique projection 4 years later, and figure 4 in the left anterior oblique projection.

In our patient the malformation did not present any complications over a 4-year follow-up, but the natural history is substantially unknown.

We conclude that a more widespread knowledge of the woven coronary artery could reduce the risk of an undue coronary angioplasty and could help to better understand the natural history of such a malformation.

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