Abstract. – In the presence of resistance to circumferential expansion of atherosclerotic plaques due to mechanical dilation high shear stresses between stiff plaques and normal vessel segments may occur and thus may result in coronary dissection. Limited data are available on the clinical and angiographic outcome of severe (type E, type F) coronary dissections. Herein, we report a case of type F dissection (causing total occlusion) of proximal right coronary artery during balloon angioplasty which healed spontaneously. In conclusion, although the type F dissection has worse prognosis due to complete cessation of distal vessel perfusion, the possibility of spontaneous healing should be kept in mind after unsuccessful intervention.

Key Words: Coronary dissection, Spontaneous healing, Angioplasty.

Introduction

Coronary artery dissection is a well-known complication of percutaneous coronary intervention. Balloon inflation and stent implantation cause to mechanical dilation of the coronary artery. In the presence of resistance to circumferential expansion of atherosclerotic plaques due to mechanical dilation high shear stresses between stiff plaques and normal vessel segments may occur and thus may result in coronary dissection1. After balloon angioplasty, coronary artery dissection might be seen angiographically in up to 50% of cases2,3. Moreover, when assessed with intravascular ultrasound this rate may increase to 85% of cases4. This rate decreased to 5% to 23% after stent era5. Mild to moderate angiographic dissections which do not impair distal perfusion might be followed up without requirement of invasive therapy since some studies demonstrated that major adverse cardiac events or restenosis rate is not increased in such cases6-8. However, limited data are available on the clinical and angiographic outcome of severe (type E, type F) coronary dissections. Herein, we report a case of type F dissection (causing total occlusion) of proximal right coronary artery (RCA) during balloon angioplasty which healed spontaneously.

Case Report

A 46-year-old woman was referred to our clinic with complaint of progressive angina. Her history revealed that 6 months ago she underwent unsuccessful PCI for RCA proximal 90% stenotic lesion (Figure 1). During the procedure subintimal propagation of guidewire resulted in dissection and balloon angioplasty transformed it to type F dissection which caused complete cessation of distal vessel perfusion complicated with acute inferior myocardial infarction. Despite all efforts, distal perfusion could not be accomplished (Figure 2). Six months later, we performed coronary angiography because of progressive angina. Angiography revealed complete healing of the dissection with persistence of the previous severe RCA lesion (Figure 3) and non-critical plaques in left anterior descending and circumflex arteries. Successful stent implantation was performed without complication (Figure 4).

Discussion

The present case is an interesting example of severe dissection which revealed total spontaneous healing.

Spontaneous healing of type F dissection (complete cessation of distal perfusion) is very rare9. Although there is not enough data in this topic, our case and scarce number of reports in the literature suggest that total healing of severe dissection may occur even in the presence of total cessation of distal perfusion.
Spontaneous healing of occlusive type F coronary artery dissection

Figure 1. Selective angiography of the RCA viewed in the left anterior oblique projection. RCA proximal 90% stenotic lesion.

Figure 2. Selective angiography of the RCA viewed in the left anterior oblique projection following balloon angioplasty. Type F dissection which complete cessation of distal perfusion.

Figure 3. Selective angiography of the RCA as viewed in the left anterior oblique projection performed 6 months following initial balloon angioplasty. Complete healing of the dissection with persistence of the previous severe RCA lesion and TIMI III flow into the distal vessel bed.

Figure 4. Selective angiography of the RCA as viewed in the left anterior oblique projection. After successful stent implantation with RCA.
Because spontaneous healing rate of moderate dissections is high (63%-95%) without stenting, with the same mechanism spontaneous healing might occur in type F dissections\textsuperscript{10,11}. Possibly, sealing of intimal dissection flap into vessel wall due to proximal pressure force may lead to gradual healing of dissection.

In conclusion, although the type F dissection has worse prognosis than mild coronary dissection\textsuperscript{12}, the possibility of spontaneous healing should be kept in mind after an unsuccessful intervention.

References