CASE REPORT

Successful endovascular treatment of iatrogenic coronary artery dissection extending into the entire ascending aorta

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Iatrogenic acute dissection of the ascending aorta during percutaneous coronary intervention occurs rarely. Localized aortic dissections may be treated by sealing the entry with a coronary stent. However, extensive dissections may require a surgical intervention. A case of iatrogenic coronary dissection with extensive propagation into the ascending aorta during angioplasty of the right coronary artery (RCA) is presented. The aortic dissection was successfully treated by stenting at the right coronary artery ostium. Follow-up computed tomography and coronary angiography showed complete resolution of aortic dissection.

Key Words: Aortic dissection; Complication; Percutaneous coronary intervention

Coronary artery dissection is a well-known complication of coronary angiography and angioplasty. Infrequently, iatrogenic coronary dissection may result in retrograde extension into the ascending aorta and further (1-3). Iatrogenic aortic dissections (ADs) that are localized a few centimetres beyond the aortic valve may be treated by sealing the entry point by means of coronary stenting (4). However, an extensive dissection involving the ascending aorta may be life-threatening and often requires urgent surgical intervention (3,5). We report a case of iatrogenic coronary dissection extending into the entire ascending aorta that was successfully resolved by coronary stenting at the entry point.

CASE PRESENTATION

A 68-year-old woman with hypertension, diabetes and dyslipidemia was admitted for effort angina for four months. She was taking acetylsalicylic acid, amlodipine, carvedilol, atorvastatin and glimepiride. The technetium-99m sestamibi scan showed severe reversible ischemia at the inferior and posterolateral wall. Coronary angiography via the femoral approach revealed chronic total occlusion (CTO) in the mid-portion of the right coronary artery (RCA) (Figure 1A). There were other significant stenoses without occlusion in the mid-portion of the left anterior descending artery and the distal site in the left circumflex artery. The left anterior descending artery and left circumflex artery supplied good collateral flow to the occluded RCA.

A computed tomography scan performed immediately after the PCI demonstrated complete resolution of the dissection without an increase in size. The entire ascending aorta that was successfully resolved by coronary stenting at the entry point.
intimal flap (Figure 3). A follow-up angiography was performed the next day and it revealed patent stents without residual contrast staining of the aortic wall (Figure 4). The patient was discharged four days after the PCI and remained asymptomatic for one year without any clinical event.

**DISCUSSION**

Iatrogenic AD is an uncommon and severe complication during cardiac catheterization, with an incidence of 0.02% (3). In many cases, the entry site is located in the coronary artery where a dissection occurs following trauma caused by the tip of the guiding catheter or balloon dilation. A vigorous manual injection of contrast medium into the subintimal space appears to play a major role in extending the dissection retrogradely to the aortic root. In the present case, the trigger for the AD was thought to be a coronary dissection caused by the tip of the guiding catheter, which damaged the ostium of the RCA. Extension of the coronary dissection to the Valsalva sinus and the ascending aorta was possibly the result of raised coronary flow pressure from the contrast injection (1,2).

If a dissection is limited to the aortic sinus of Valsalva, it will resolve with conservative treatment only. However, when it extends over the aortic sinus of Valsalva, the treatment of an iatrogenic AD is still controversial. Dunning et al (3) retrospectively reviewed nine coronary artery-ADs and reported that patients with limited aortic involvement were successfully managed with stenting of the entry point of the coronary dissection, whereas ADs extending more than 40 mm in length required surgical intervention (3). However, in some cases, excluding the entry point from the bloodstream by coronary stenting was sufficient to prevent extension of the AD. In addition, this conservative management, defined as the ‘watchful
waiting' strategy, showed a favourable evolution and constituted the definitive therapy (6).

In our case, an extensive iatrogenic AD extending up to the entire ascending aorta without hemodynamic compromise had been effectively treated by coronary stent implantation. Stenting of the ostium of the RCA sealed the entry point of the dissection, preventing its further progression. The present case report suggests that if the patient is hemodynamically stable, sealing the coronary entry door with a coronary stent and excluding dissection progression with computed tomography surveillance can be a reasonable strategy even in the case of an extensive dissection of the ascending aorta, reserving surgery for cases with documented progression of the dissection.

REFERENCES