Ascending aortic dissection (AAD) and acute myocardial infarction (AMI) are major illnesses that require immediate treatment and threaten life. In aortic dissection cases coronary artery occlusion is reported to be 3-15% (1-3). The morbidity and mortality rates of the late surgical operation are high because of expansion in necrotic myocardial area (4-5). This patient, who had inferior AMI secondary to AAD, was operated, and before the operation, coronary stenting was performed in his right coronary artery. Because it is a rare case, we would like to present him.

**Case**

A 44 year old male patient came to the emergency service with severe precordial pain. On physical examination, blood pressure was 80/45 mm Hg, pulse was 55 /min. A diastolic murmur was heard in the aortic area. There was an enlargement in the upper mediastinal area on chest X-ray. ECG demonstrated acute inferior myocardial infarction, and angiography revealed right coronary artery occlusion due to ascending aortic dissection. Reperfusion was performed by three stents implanted to the right coronary. After that, a Dacron graft was placed to the ascending aorta. The postoperative course was uneventful and the patient was discharged from hospital on the 9th postoperative day. Acute myocardial infarction secondary to aortic dissection can be successfully managed by intracoronary stenting until surgical treatment before irreversible complications ensue.

**Key Words:** Myocardial Infarction, Aortic Dissection, Invasive, Surgical Treatment

**ÖZET**

Assendan Aort Diseksiyonuna Sekonder Gelişen Akut Miyokard Infarktüsüne Girişimsel ve Cerrahi Tedavi


**Anahtar Kellimeler:** Miyokard Infarktüsü, Aort Diseksiyonu, Girişimsel ve Cerrahi Tedavi
chest x-ray. Bradycardia and 5 mm ST elevation in D2-3, aVF were determined in his electrocardiography. In his biochemistry, CPK was 365 IU/L (174 IU/L) and CK-MB was 75 IU/L (25 IU/L). The patient was taken to the coronary angiography laboratory for primary PTCA with a diagnosis of AMI. AAD in aortography and right coronary ostial occlusion in coronary angiography were determined (Figure 1). The other coronary arteries were normal. Reperfusion was provided with implantation of 3 stents (2 x AVE: 3.5x 29 mm and one 3.5x 12mm) into right coronary artery at the 2nd hour of AMI (Figure 2) and after that, he was operated.

**Operational Technique**

Cardiopulmonary bypass operation was begun with femoral arterial and bicaval canulation (v.cava inferior and superior). Left ventricle was vented through right superior pulmonary vein. Following total circulatory arrest, patient was cooled down to 18-19°C, and aortotomy was done. It was found that aortic valve was normal, intimal dissection was 2 cm near to coronary ostium but there was retrograde dissection to the right coronary artery ostium. Aortic segment, with intimal dissection, was excluded and a 24 mm Dacron graft was replaced into aortic segment above the coronary ostium. Aorta was supported with Teflon strips interiorly and exteriorly during distal and proximal anastomosis. After distal graft anastomosis, crossclamp was put on graft segment and pump was started and the patient was heated. During the operation, myocardial protection was provided by hot blood glutamate-aspartate and cold crystalloide cardioplegy antegradely and retrogradely. After that, multi dosage cold crystalloide cardioplegy was infused. After the completion of proximal anastomosis, hot blood cardioplegy at 37°C, was infused. When the rectal heat reached to 36°C, hemodynamic stability was obtained and cardiopulmonary bypass was completed succesfully.

During the operation, duration of crossclamping was 60 min. and total perfusion was 127 min. The patient who had no postoperative problem was discharged on the 9th day. It was found that right coronary artery was patent in his postoperative angiography 8 months later. (Figure 3)

**Discussion**

Sixtyfive percent of thoracic aortic dissections occur 1-3 cm distal from coronary ostium. AAD could expand to carotid, renal, iliac arteries antegradely and to coronary sinus retrogradely. If aortic dissection affects the coronary sinus, aortic valve prolapse and coronary artery occlusion could occur. Because of anatomic localization, occlusion occurs more in right
coronary artery (6). Coronary occlusion occurs, when the coronary ostium is interrupted intermittently by the intimal flap, or when a hematoma in the false lumen compresses coronary ostium and dissection expands to the coronary wall (7-8).

AMI with the majority of inferior at the rate 3-10 % accompanies to the cases with AAD. During AMI, occurrence of atrioventricular blocks, bradycardia and hypotension in AAD increase surgical mortality (1-3).

In myocardial infarction, secondary to AAD, intra aortic balloon pump for hemodynamic support and thrombolytic treatment are contraindicated. As AAD and AMI show similar symptoms, dissection findings could not be determined completely in some of AMI cases. If thrombolytic treatment is given, aortic rupture could occur and generally the result is death (9-11). Blankenship et al presented that the patients, who have thrombolytic treatment because of AMI, could have cardiac tamponade because of aortic dissection and those patients could die during the operation (9). Kamp et al presented that the mortality rate due to cardiac tamponade is 71% in patients who have myocardial infarction secondary to AAD, if thrombolytic therapy is given (12). For that reason, differential diagnosis between AMI and AAD should be carried out before thrombolytic treatment.

In AMI cases secondary to AAD, infarct area expands because of the delay before surgery. The experimental studies showed that transmural necrosis occurs in 38% at 40th min, 57% at 3rd hour, 71% at 6th hour and 85% at 24th hour after coronary arterial occlusion (13). It is showed that when the intervention is carried out within the first 3 hours, more myocardial area could be salvaged (13). Fernandes et al reported a surgical mortality in 5 of 11 AAD cases with right coronary arterial occlusion and the most important point was to perform immediate surgery to prevent infarct expansion (4). Infarct expansion can be prevented by immediate reperfusion. Accordingly, reperfusion was provided with percutaneous stent implantation in the second hour of infarction in our case. Inferior segmentary motion was nearly normal in postoperative echocardiographic examination and there was no Q wave in D2-3, aVF in ECG.

AMI localization is generally inferior in AAD. Conduction system ischaemia is as important as infarct expansion. In inferior AMI, conduction system disturbance could occur because of ischaemia, which generally improves with reperfusion (14). Improvement of conduction system ischaemia is vital for hemodynamic stability. Cardiogenic shock could occur due to inferior AMI and A-V complete block. In such cases, aortic dissection, right coronary occlusion and aortic valve insufficiency were determined by angiography (15). This case underlines the importance of right coronary flow. Currently, temporary coronary reperfusion could be provided by interventional techniques. Ikari et al has provided permanent reperfusion with stent implantation to right coronary artery in acute inferior myocardial infarction cases secondary to AAD (16). We performed emergency coronary angiography and aortography which showed AAD and right coronary occlusion. Simultaneously, we implanted 3 stents into the right coronary artery to provide reperfusion, and then AAD repair was performed. It is reported that stent deformation could occur because of manipulation during the surgery following intracoronary stent implantation (17). In our case, there was no need for CABG as the heart was minimally manipulated.
In myocardial infarction cases secondary to AAD, the duration of preoperative ischemic myocardial damage, long crossclamping time and good myocardial protection contribute to the success of surgical treatment. It is accepted that following are the most effective protection method; hot blood cardioplegy in induction, multi dose cold blood cardioplegy as a supplement and hot blood cardioplegy in reperfusion(17). In our case, we applied hot blood with glutamate-aspartate in induction, cold crystalloide as a supplement and hot blood with glutamate-aspartate cardioplegy before crossclamping is removed.

In patients with myocardial infarction secondary to AAD, early surgical intervention and proper myocardial protection decrease morbidity and mortality. We believe that in those cases, providing reperfusion with percutaneous coronary intervention has a very important role for surgical success.
REFERENCES


COMBINED INVASIVE AND SURGICAL TREATMENT IN ACUTE INFERIOR MYOCARDIAL INFARCTION COMPLICATED WITH ASCENDING AORTIC DISSECTION