Our knowledge about the prognosis of coronary artery disease in identical twins is limited to case reports and the actual incidence is unknown. There are similarities between the characteristics of coronary artery disease in twin patients, but some differences may also exist. Coronary artery bypass grafting was performed in identical twin brothers aged 32 years. Both patients had stenosis of the left anterior descending (LAD) coronary and circumflex arteries before surgery. Six years after surgery, one of the twins who was not a smoker and had lower lipid levels developed angina. Angiography showed a new stenotic lesion of the right coronary artery that required reintervention. Although anastomosis of the left internal mammary artery and the LAD artery was patent in both patients, the bypass to the circumflex artery performed in one patient was occluded.

**Key words:** Coronary angiography; coronary artery bypass; coronary disease/genetics/surgery; diseases in twins; twins, monozygotic.

Our knowledge about the prognosis of coronary artery disease in identical twins is limited to case reports and the actual incidence is unknown. There are similarities between the characteristics of coronary artery disease in twin patients, but some differences may also exist. In this report, we presented two identical twin brothers who underwent coronary artery bypass grafting (CABG) for coronary artery disease.

**CASE REPORT**

Two identical twin brothers, aged 32 years, presented to our clinic with anginal pain not related to exertion. Both were smokers. Anginal attacks responded to sublingual nitrate administration in both patients. Electrocardiograms showed no signs of a possible myocardial infarction, and none of the patients had a history of hypertension or diabetes. Triglyceride and cholesterol levels were above normal in both patients. Coronary angiography showed 70% to 90% long segment stenotic lesions in the proximal segment of the left anterior descending (LAD) coronary artery, a 70% stenotic lesion in the obtuse marginal 2 branch of the circumflex artery (CxOM2), and a normal right coronary artery (Fig. 1a and 2a). The left ventriculography was normal in both patients. Coronary artery bypass grafting was performed including a single vessel bypass (LIMA-LAD) in one patient, and a two-vessel bypass (LIMA-LAD and Ao-CxOM2) in the other. Both patients had an uneventful postoperative period and were discharged on the sixth postoperative day.

In the postoperative period, the latter patient continued to smoke. Their mother underwent a six-vessel CABG and a concomitant Bentall procedure and was discharged uneventfully. An elder brother of the patients experienced a sudden cardiac death.
One twin brother who had given up smoking after surgery began to experience anginal pain in the postoperative sixth year. Coronary angiography showed a 70% stenotic lesion in the distal end of the LIMA-LAD anastomosis and a 70% stenotic lesion in the proximal portion of the right coronary artery (Fig. 1b). Coronary artery stenting was performed in the right coronary artery. His ventriculogram was normal. Coronary angiography of the other twin, who was a smoker, showed a patent LIMA-LAD anastomosis, a totally occluded saphenous graft to the CxOM2, and a normal right coronary artery (Fig. 2b). His left ventriculogram was normal.

Lipid levels were above normal in both patients. Interestingly, it was found that both the development of anginal pain and progression of coronary atherosclerosis were seen in the one who was not smoking.

**DISCUSSION**

The similarities between the twin brothers with regard to risk factors, the presentation of anginal complaints, coronary anatomy, and coronary lesions are worth mentioning. Sidd et al.,[5] who were the first to point to this fact, showed similarities between anginal complaints and lesions detected during coronary angiography. In our patients, similarities and differences existed between the lesions of the LAD and Cx arteries and their localizations, and between the anatomies of the Cx arteries.

**Fig. 1.** (a) Preoperative and (b) postoperative angiographic views of one twin brother who developed anginal pain in the postoperative sixth year. A new lesion occurred after LIMA-LAD anastomosis and a %70 lesion in the proximal portion of the right coronary artery.
Holmes et al\(^6\) also found anatomical and pathological similarities and differences during angiography of twin patients. An interesting feature of the twins presented is that their mother underwent CABG with a concomitant Bentall operation and their elder brother died because of sudden cardiac death two years after the twins’ operation, both of whom had increased total cholesterol levels. A family history of sudden cardiac death is a very important feature in both male and female patients.\(^7\) This increased risk is at least partially related with genetic factors.

Both of the twin patients had high blood cholesterol levels and one patient continued smoking after CABG. Both were under statin treatment. Although the non-smoker twin had lower lipid and cholesterol levels, he was the one that started to describe anginal attacks.

When the environmental factors that affect total cholesterol and apolipoprotein B levels are considered, a positive correlation was found in the twins who shared the same environment compared to those who did not.\(^8\) The twins presented had been living in the same environment.

Differences were found in the pathology of coronary artery disease in the twins who underwent operation on the same day. These differences became most obvious in the sixth postoperative year. In spite of the fact that they were living in the same environment, the twin who

![Fig. 2. (a) Preoperative and (b) postoperative angiographic views of one twin brother who continued smoking after surgery. There is no lesion after LIMA-LAD anastomosis. Despite formation of a plaque, lesions in the right coronary artery are not critical.](image-url)
gave up smoking and had a lower cholesterol level showed a faster progression of atherosclerosis. This shows that not only the risks and environmental factors play a role in the progression of the disease but also genetic factors are important.

REFERENCES