Coronary Artery Bypass Surgery in a Patient with Situs Inversus*

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Coronary artery disease occurs in patients with dextrocardia and situs inversus totalis with an incidence and clinical presentation similar to that in the general population. Such a patient with unstable angina pectoris and subsequent coronary artery bypass surgery is described.

Dextrocardia associated with situs inversus totalis is a rare condition, its prevalence in various series ranging from 1:6,000 to 1:36,000, with an average of 1:10,000.1,2 Other congenital cardiovascular anomalies are infrequently found in this setting,3 but the incidence of coronary artery disease is probably similar to that in the general population.4,5 To our knowledge, this is the first report of coronary artery bypass surgery in a patient with dextrocardia and situs inversus totalis.

CASE REPORT

A 58-year-old woman with known situs inversus totalis and adult onset diabetes mellitus had exertional- and anxiety-related substernal and right anterior chest pain with radiation to the right arm in March 1980. Despite therapy with propranolol and nitrates, she required hospitalization on two occasions for severe and prolonged episodes of chest pain. There were no ECG changes of injury or infarction, and serial cardiac enzymes were normal. She was referred to the Medical University Hospital in July 1980. There was no history of sinusitis or bronchiectasis. Physical findings were normal except for mild obesity and evidence of situs inversus totalis. An ECG revealed the classic pattern of mirror image dextrocardia (Fig 1). A chest x-ray film was normal except for situs inversus totalis (Fig 2). A treadmill exercise test was terminated at the end of stage 2 of the Bruce protocol, with a maximum heart rate of 135 beats/min because of typical angina and ischemic ST segment changes (Fig 3).

At cardiac catheterization, hemodynamic data were normal except for an elevated systolic pressure of 148 mm Hg and left ventricular end-diastolic pressure of 15 mm Hg. Ventricular volumes were normal, with an ejection fraction of 78 percent and no segmental wall motion abnormalities. Coronary angiography was performed using the standard Judkins technique without modification other than mirror image reversal. The anterior descending artery had a 50 percent proximal lumenal diameter narrowing. There was a 90 percent obstruction in the circumflex vessel and a 40 percent proximal lesion in a dominant left coronary artery (analogous to the right coronary artery in the normal cardiac position). The patient was discharged receiving 240 mg of propranolol and 80 mg of oral isosorbide dinitrate daily. However, in September 1980 she reported that her exertional angina had progressed and that she had recently begun having nocturnal angina. Coronary artery bypass surgery was performed on Oct 6, 1980, via a median sternotomy incision with potassium cardioplegia. Saphenous vein grafts were performed to all three of the obstructed major coronary arteries. There were no surgical complications and the postsurgical recovery was uneventful. On a follow-up visit two months after hospital discharge, she reported no angina.

DISCUSSION

Dextrocardia associated with situs inversus totalis is rare and infrequently associated with other congenital

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Figure 1. Standard ECG with typical features of mirror image dextrocardia. Minor nonspecific ST-T changes present in lateral leads.
heart lesions. The incidence of acquired atherosclerotic coronary artery disease in these patients has not been established, but might be expected to be similar to that of the general population. There have been scattered case reports of myocardial infarction in this patient population. Their clinical presentation and subsequent course seem not to differ from those of similar patients with normal cardiac position, except the chest pain is usually located on the right side. If the physician is aware of the dextrocardia, right-left reversal of ECG and vectorcardiographic leads allows assessment of ischemia and infarction using the standard criteria.

Coronary angiography has previously been performed in a patient with situs inversus following a myocardial infarction. There has been a report of surgical resection of a ventricular aneurysm following myocardial infarction in one such patient with recurrent ventricular tachycardia. To our knowledge, the case reported here is the first patient on record with situs inversus totalis to undergo successful coronary artery bypass surgery. With the exception of the mirror image reversal of symptoms, physical findings, and laboratory procedures, this case represented a typical presentation and course for a patient with coronary artery disease and unstable angina refractory to medical therapy.

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