grade stenotic lesions in that area. Cohen et al\(^1\) recently presented the results of 32 patients having severe stenosis of the left main coronary artery and documented the poor prognostic implications of this entity unless treated with coronary bypass procedure. Kershbaum et al\(^2\) had one patient with complete obstruction of the left main coronary artery out of more than 1,000 cardiac catheterizations and coronary angiographic procedures, and that patient died several hours after the catheterization without surgical therapy. These authors recommend immediate emergency coronary bypass grafting. Reul and associates\(^3\) in 1971 reported the results of coronary artery bypass in totally obstructed major coronary arteries; and out of 278 patients undergoing operation, two had obstructed left main coronary arteries. Both of these patients were successfully treated with saphenous-vein bypass operations. Lavine and co-workers\(^4\) studied 30 patients with a stenosis of 70 percent or more in the left main coronary artery. Three patients died during cardiac catheterization. Eighteen of the 27 surviving patients underwent coronary bypass operation. Three of nine patients not undergoing surgery died within one month of arteriography. Reul et al\(^5\) also urge coronary bypass when significant obstruction of the left main coronary artery is found.

The patient in this case report was able to survive complete atherosclerotic occlusion of the left main coronary artery by developing adequate collateral circulation from the normal right coronary artery and, thereby, was able to avoid a myocardial infarction. However, the collateral circulation was insufficient to prevent angina pectoris during periods of exercise. In addition, the patient had significant, coexistent, congenital pulmonary valvular stenosis contributing to her symptoms. Bonchek et al\(^6\) recently advocated omitting coronary arteriography from the catheterization procedure in those patients with operable valvular heart disease without angina pectoris, but did feel coronary arteriography was necessary in patients with angina or multiple coronary-risk factors. However, that article dealt only with acquired disease of mitral and aortic valves.

The authors of this manuscript feel that coronary arteriography is safe, adds very little time to the catheterization procedure, and may identify critical coronary lesions that were previously unsuspected because of the patient's dominant valvular symptoms.

There has been no previous report of adult patients with congenital heart disease and coexistent atherosclerotic coronary artery disease. Is it reasonable to suggest coronary arteriography as part of the catheterization procedure in the diagnostic studies of adults suspected of having a congenital defect? Ultimately, this answer must be individualized for each situation and each diagnostician.

Aortocoronary saphenous-vein graft between the aorta and the left anterior descending coronary artery and pulmonary valvulotomy adequately treated the patient herein reported with the unusual combination of atherosclerotic occlusion of the left main coronary artery and congenital pulmonary valvar stenosis.

### References


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### Inferior Myocardial Infarction in a Patient with Mirror-Image Dextrocardia and Situs Inversus Totalis*

**K. L. Liem, M.D., and J. H. ten Veen, M.D.**

A case of inferior wall myocardial infarction in a patient with mirror-image dextrocardia and situs inversus totalis is presented. The clinical and electrocardiographic findings are discussed.

The occurrence of myocardial infarction in a patient with either mirror-image or isolated dextrocardia has been reported infrequently in the literature.\(^1-10\) Four patients have been reported with mirror-image dextrocardia and a myocardial infarction located on the inferior wall. The present article describes a patient with congenital dextrocardia associated with situs inversus complicated by an acute inferior myocardial infarction.

**Case Report**

A 50-year-old man with known dextrocardia and complete situs inversus was admitted to the hospital because of progressive complaints of pain in the right side of the chest, which radiated to the neck and right arm on exertion.

Physical examination revealed a well-developed man with a pulse of 60 beats per minute and a blood pressure of 130/80 mm Hg. The lungs were clear. The place of maximal cardiac impulse was in the fifth right intercostal space. The heart sounds were normal with no murmur. On the left side of the abdomen was a scar of an appendectomy. There was no hepatosplenomegaly. Peripheral pulses were normal. The electrocardiogram revealed the typical pattern of mirror-image dextrocardia. No abnormalities were seen in the ST-T segment (Fig 1). The serum enzyme levels (serum glutamic oxaloacetic transaminase [SGOT], lactic dehydrogenase, and creatine phosphokinase) sampled every six hours were nor-

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Figure 1. Twelve-lead ECG with typical features of mirror-image dextrocardia, QRS complex and ST-T segment show no abnormalities.

Figure 2. Electrocardiogram recorded three days after acute myocardial infarction. Note the pathologic Q waves and ST-T segment changes indicating recent inferior infarction. Right precordial leads are also shown.
mal. A week later, the patient developed severe pain in the right side of the chest, radiating to the neck and right arm and accompanied by nausea, vomiting, and perspiration.

The ECG showed ST-segment elevations in leads 2, 3, and aVF, and a sinus bradycardia of 40 beats per minute, compatible with an acute inferior myocardial infarction. Subsequently, the patient developed pathologic Q waves in the inferior leads (Fig 2). The maximal SGOT value was 189 international units (IU) (upper limit of normal, 20 IU). Following an uncomplicated course, the patient was discharged two weeks after the occurrence of his myocardial infarction.

COMMENT

This patient illustrates acute inferior myocardial infarction with mirror-image dextrocardia and situs inversus totalis. Only four similar cases have been reported. All published cases had a history of pain in the right side of the chest, with radiation to the right shoulder and arm. The clinical course and changes in serum enzymes levels were characteristic of acute myocardial infarction.

It is of importance that in this patient with inferior wall infarction, the electrocardiographic changes in the inferior leads were not affected by the presence or absence of mirror-image dextrocardia.

REFERENCES


Transatrial Closure of Ventricular Septal Defect in Corrected Transposition of the Great Arteries

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The repair of ventricular septal defect (VSD) in corrected transposition of the great arteries has presented many technical problems and was associated with a high mortality. Transatrial closure of the VSD in this malformation obviates many of the hazards and offers good exposure. The operative procedure in such a case is described in detail, and its merits are discussed.

Ventricular septal defect (VSD) is the most common cardiac defect associated with corrected transposition of the great arteries. Okamura and Konno have shown that there are two types of VSD, situated either anteriorly (subaortic) or posteriorly (subpulmonic). Due to the dextrorotation of the heart, the interventricular septum takes an almost anteroposterior direction, and the free anterior surface of the right (pulmonary) ventricle is very narrow. This, together with the course of the anterior papillary muscle which runs across the outflow tract covering the VSD anteriorly, creates a very difficult technical problem while closing the VSD through right ventriculotomy.

The transatrial approach offers a solution to most of the problems which the repair of VSD in corrected transposition presents.

CASE REPORT

A ten-year-old boy was known to suffer from congenital heart disease. He was extremely dyspneic on effort and suffered from recurrent pulmonary infections. On examination the patient was found to be underdeveloped for his age and slightly dyspneic, with a very prominent precordial pulsation. His blood pressure was 110/70 mm Hg, and his pulse rate was 70 beats per minute and regular. Auscultation of the heart revealed a very harsh, grade 6/6 pansystolic murmur over the whole left sternal border and a very loud and widely split second pulmonary sound. The liver was palpated 4 cm below the costal margin.

The chest x-ray film was characteristic of corrected transposition, with very large pulmonary arteries and marked pulmonary plethora. An electrocardiogram showed complete atrioventricular dissociation with rapid nodal rhythm. When the patient was eight years old, cardiac catheterization was carried out at the Meleki Mader Hospital, Tehran, Iran, and confirmed the existence of a corrected transposition, VSD, and mild pulmonary hypertension, with a gradient across the aorta.

Due to the dextrorotation of the heart, the interventricular septum takes an almost anteroposterior direction, and the free anterior surface of the right (pulmonary) ventricle is very narrow. This, together with the course of the anterior papillary muscle which runs across the outflow tract covering the VSD anteriorly, creates a very difficult technical problem while closing the VSD through right ventriculotomy.

The transatrial approach offers a solution to most of the problems which the repair of VSD in corrected transposition presents.