tillage defects have been described with any frequency. Bronchial atresia is relatively rare as a cause of CLE, but the late asymptomatic presentation with typical radiographic features of a coin lesion makes this diagnosis more likely. The additional finding of a bronchogenic cyst is an experiment of nature which, assuming both anomalies develop at the same time, allows us to time the appearance of the atretic segment more accurately than has been possible before.

References

Iatrogenic Fistula from the Aorta to the Left Marginal Coronary Vein*

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We report the first documented case of iatrogenic aortocoronary fistula to the left marginal coronary vein following coronary bypass surgery. Unique clinical data, findings from catheterization, and angiographic features are presented and compared with those in the seven previously reported cases of iatrogenic aortocoronary venous fistulae after coronary bypass operations.

A rare but recognized complication of surgery for coronary revascularization is an aortocoronary venous fistula caused by the inadvertent distal anastomosis of a saphenous vein bypass graft to a coronary vein instead of to a coronary artery. The present patient had undergone an intended bypass operation to the left circumflex or intermediate artery.

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Figure 1. Frame from 35-mm cineangiogram on 70° left anterior oblique projection showing "numeral-3" appearance of opacification of aortocoronary saphenous vein graft (SVG) anastomosed to proximal left marginal coronary vein (LMV) near its junction with great cardiac vein (GCV) and so communicating via coronary sinus (CS) to right atrium (RA). A, distal anastomosis of saphenous vein graft. and is the first described with an iatrogenic aortocoronary venous fistula to the left marginal coronary vein. Observed features of this case are the absence of a continuous murmur and the presence of a small shunt by oximetric studies.

Case Report

A 44-year-old man with recurrent pain in the chest had a history of myocardial infarction, a previous bypass surgery at another hospital in May 1982. On physical examination, there was a soft systolic murmur at the upper left sternal border, but no continuous murmurs were detected.

The electrocardiogram showed an "old" inferior myocardial infarction. A chest roentgenogram showed persistent postoperative elevation of the left hemidiaphragm. The left ventricularogram was normal. The ejection fraction was 50 percent, and the left cardiac pressures were normal.

The coronary arteriogram demonstrated a proximal occlusion of the dominant right coronary artery, of which the posterior descending and posterolateral branches were supplied by a patent jump vein graft. There was a severe proximal stenosis of the anterior descending coronary artery, with good distal flow via a second patent bypass graft. A moderately large unobstructed intermediate coronary artery had a significant proximal stenosis. The small left circumflex coronary artery had a severe stenosis at its origin. Contrast medium injected down a third bypass graft entered the left marginal vein close to its junction with the great cardiac vein and drained directly into the right atrium (Fig 1).

Right cardiac catheterization and oximetric studies (two runs) showed normal pressures and a small but definite left-to-right shunt at low right atrial level. The QP:QS shunt ratio was 1.4:1.0.

Discussion

Five published cases of aortocoronary venous fistulae were reviewed in 1982 by Przybojewski, who added another. Subsequently, one more case has appeared, making a total of seven. All were men aged 43 to 66 years, with angina (except one who had intractable ventricular tachycardia). Angina was relieved after surgery in four of six patients. The sites of graft insertion numbered one (one patient), two (two patients), three (three patients), and four (one patient). A continuous

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murmur in the second or third left intercostal space was heard in six of the seven patients. In five cases with murmurs, oximetric data were normal, but in one of these, a left-to-right shunt was confirmed by a hydrogen detection electrode.

The aortocoronary venous fistula involved the left anterior descending coronary vein in all six patients undergoing surgery for angina and involved the posterior interventricular coronary vein in the patient with intractable ventricular arrhythmia. Vieweg makes brief anecdotal mention of three further incidents, all involving the left anterior descending coronary vein.

Our report is the first to describe an iatrogenic aortocoronary venous fistula to the left marginal coronary vein. It is likely that the intermediate or circumflex coronary artery was the intended target vessel. The angiogram of the fistula in the 70° left anterior oblique projection (Fig 1) resembles the arabic numeral,"3." This appearance (like that illustrated in the case reported by Vieweg), together with rapid transit of contrast material through the coronary sinus to the right atrium, would appear to be characteristic of an aortocoronary venous graft fistula.

The absence of a continuous murmur in our patient might be explained by obesity and the deeper posterior anatomic site of the fistula. The soft systolic murmur in the present case probably originates from the patent aortocoronary bypass graft to the anterior descending coronary artery.

Our patient is unique in that a left-to-right shunt was detectable by oximetric studies. Though unexpected and of small magnitude, this shunt was apparent on two sample runs. Nevertheless, sampling error cannot be absolutely excluded; however, the majority of congenital coronary arteriovenous fistulae which drain into the right ventricle, right atrium, or coronary sinus do exhibit small shunts. Furthermore, the magnitude of the shunt detected in the present case may be augmented not only by the relatively large caliber of the venous bypass graft, but also by the fact that the site of oximetric sampling could have been very close to the coronary sinus. The lack of murmur may also be explained by the relatively large aortocoronary venous shunt.

In conclusion, we present the clinical features, data from catheterization, and angiographic findings in the first reported case of iatrogenic aortocoronary venous fistula to the left marginal coronary vein. The absence of a continuous murmur, the presence of a detectable shunt by oximetric studies, and the arabic-numeral-"3" angiographic shape of the aortocoronary venous fistula are observed features of the case.

REFERENCES

Two-Dimensional Echocardiographic Abnormalities of Right Atrial Metastatic Tumors in Hepatoma


We describe two patients suffering from hepatoma who presented with right atrial metastatic tumors as a result of invasion of the inferior vena cava and extension into the right atrium. Two-dimensional echocardiographic studies detected the right atrial tumor during life in both patients and the invasion of the inferior vena cava in one patient.

Metastatic tumors in the right atrium as a result of direct invasion and extension up the inferior vena cava in patients suffering from hepatoma are extremely uncommon.1

CASE REPORTS

Case 1
A 42-year-old Oriental man presented with dyspnea and abdominal swelling of two months' duration. Clinical examination revealed elevation of the jugular venous pulse up to the angle of the jaw. Auscultation of the heart revealed no abnormalities, and the blood pressure was 130/85 mm Hg. Moderate ascites and mild jaundice were observed. The liver was enlarged 4 cm below the right costal margin and was hard in consistency. A chest x-ray film showed a slightly enlarged heart, and the electrocardiogram was normal. The findings from serum biochemical tests were all normal, except for a total serum bilirubin level of 3.5 mg/100 ml. During right heart catheterization the catheter could not be manipulated beyond the lower part of the inferior vena cava. Angiographic studies in this position showed total obstruction of the inferior vena cava, resulting in multiple collateral channels. Angiography with contrast dye injected at the superior vena cava-right atrial junction showed a large mobile filling defect in the right atrium (labelled T) consistent with a tumor moving forward and backward across the tricuspid valve during diastole and systole (Fig 1A). Selective celiac arterial angiography showed multiple vascular lesions throughout the whole liver which were typical of a hepatoma.

The patient was treated medically and died two months later. Percutaneous liver biopsy, which was obtained just after death, showed hepatoma on microscopic examination. Consent for necropsy was not obtained.

Case 2
A 58-year-old Oriental man presented with abdominal swelling. Clinical examination revealed a markedly elevated jugular venous pulse. Auscultation of the heart was normal, and the blood pressure was 140/85 mm Hg. The liver, which was enlarged 5 cm below the right costal margin, was nodular and hard.

An ECG and chest x-ray film were both normal. Results of serum biochemical and hepatic function tests were all normal. The serum α-feto-protein level was grossly elevated at 650 μg/ml. Percutaneous liver biopsy revealed hepatoma on microscopic examination. Inferior metastatic tumors in the right atrium as a result of direct invasion and extension up the inferior vena cava in patients suffering from hepatoma are extremely uncommon.1

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