Surgical treatment of hypertrophic obstructive cardiomyopathy in the elderly

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Summary

Three elderly patients with hypertrophic obstructive cardiomyopathy which was successfully treated by surgery are described. The role of surgery in the management of older patients with this condition is discussed.

Introduction

Successful cardiac surgery in the elderly is a practical proposition nowadays. The commonest indication for this is fixed obstruction to left ventricular ejection due to aortic valve disease (de Bono, English and Milstein, 1978; Hochberg *et al.*, 1977). Left ventricular outflow obstruction can also occur owing to hypertrophic obstructive cardiomyopathy. Surgery can relieve this obstruction and operation may be indicated if the subvalvar gradient within the left ventricle is greater than 50 mmHg at rest (Goodwin, 1979; Wynne and Braunwald, 1980). However, the role of surgery in the management of this condition is controversial. Mason *et al.* (1978) in the United States have advocated it enthusiastically while McKenna *et al.* (1979) in the United Kingdom have suggested that surgery is one of the factors associated with a poor prognosis. Hypertrophic cardiomyopathy is being more commonly recognized in the elderly both in life (Krasnow and Stein, 1978; Berger, Rethy and Goldberg, 1979) and at post-mortem (Pomerance and Davies, 1975). Koch *et al.* (1980) in the United States have recently reviewed their experience with surgical treatment of this condition in the elderly. They concluded that surgery is as valuable in the management of older patients with this condition as it is in younger patients (Mason *et al.*, 1978). The successful surgical treatment of this condition in 3 elderly patients in the United Kingdom is now reported and the role of surgery in the management of older patients as compared to younger patients is discussed.

Case reports

Case 1

A 74-year-old woman presented with 6 months of breathlessness which severely limited her exercise

tolerance, 3 weeks of angina on slight exertion and one unpleasant attack of rapid palpitations at rest. She had no other symptoms. She had known that she had a heart murmur for a number of years and there was no family history of cardiovascular disease. On examination she had a pulse of normal quality and a BP of 190/90 mmHg. She was not in cardiac failure. There was clinical evidence of marked left ventricular hypertrophy and an ejection systolic murmur was heard all over the praecordium. Chest X-ray showed an enlarged heart, clear lungs and mitral valve calcification. Electrocardiogram (ECG) showed gross left ventricular hypertrophy and an echocardiogram showed all the typical features of hypertrophic obstructive cardiomyopathy (Goodwin, 1980). Cardiac catheterization was performed with a view to surgery because of her limiting symptoms. Pressure studies showed a subvalvar gradient within the left ventricle at rest of 125-145 mmHg and the left ventricular angiogram showed all the typical features of this condition (Goodwin, 1980). Surgery was advised because it was felt that the obstruction was so severe that medical treatment would not improve her and indeed propranolol before surgery had no clinical effect. Resection of her left ventricular outflow tract was performed and the only immediate postoperative complication was an episode of supraventricular tachycardia which settled. Two years after operation she had an episode of culture-negative infective endocarditis from which she made a good recovery despite some slight damage to her eighth cranial nerve probably due to gentamicin. Three years after operation she remained very well with slight breathlessness only, taking frusemide, potassium and prochlorperazine.

Case 2

A 65-year-old woman presented with a 4-month history of increasing angina and breathlessness and occasional giddy feelings on bending. By the time of presentation her exercise tolerance was 30 yards. At the age of 25 years she had been refused admission to the Women's Royal Naval Service because of a

heart murmur. She had no other symptoms and there was no family history of cardiovascular disease. On examination she had a depressed lower sternum and no evidence of heart failure. The arterial pulse had a sharp upstroke, BP was 110/80 mmHg, there was clinical left ventricular hypertrophy and an ejection systolic murmur was heard all over the praecordium. Chest X-ray showed a large heart with clear lungs. Electrocardiogram showed gross left ventricular hypertrophy and an echocardiogram was not technically possible. The diagnosis was unclear. In view of the possibility of hypertrophic cardiomyopathy and the implications of this diagnosis on management, cardiac catheterization was performed. Pressure studies showed a subvalvar gradient within the left ventricle at rest of 110 mmHg and a left ventricular angiogram showed all the features of hypertrophic obstructive cardiomyopathy. Despite treatment with propranolol, frusemide and potassium, her condition deteriorated over 3 months and so surgical resection of a block of muscle from her interventricular septum was performed. Immediately postoperatively she developed a chest infection which cleared and also became deaf in the left ear, probably owing to an embolus. She was very well 18 months later on no drug therapy.

Case 3

A 69-year-old woman presented with dizzy spells. These had started 12 years previously. Initially they had lasted for a few seconds and occurred every few weeks. By the time of presentation they were occurring every day and lasted up to 2 hr. She had occasional palpitations, became short of breath walking 400 yards on the flat and had 4-pillow orthopnoea and minimal oedema. She had experienced fainting episodes in childhood thought to be due to petit mal, had undergone a hysterectomy and a cholecystectomy and was a chronic bronchitic owing to smoking. After investigations were completed it was discovered that one daughter was already a patient of the same department with a diagnosis of probable hypertrophic cardiomyopathy. On examination, she looked older than her years and was obese. She had a normal quality pulse, BP was 130/70 mmHg, there was no heart failure and there was clinical evidence of left ventricular hypertrophy. An ejection systolic murmur was heard all over the praecordium. Chest X-ray showed a large heart with clear lungs and there was no calcium in the aortic valve on screening. Electrocardiogram showed gross left ventricular hypertrophy. An echocardiogram was not technically possible because of her obesity. Lung function tests showed a moderate restrictive defect. It was clinically impossible to be sure whether the diagnosis was valvar or

subvalvar obstruction so cardiac catheterization was performed. At catheterization there was a subvalvar gradient within the left ventricle of 60 mmHg at rest. The left ventricular angiogram was highly suggestive of a fixed subaortic stenosis of the 'polo mint' type and so surgery was recommended. Immediately before surgery she had one of her 'dizzy spells' and atrial fibrillation was noted. At surgery no fixed obstruction was found. The appearances on the left ventricular angiogram were thought to be due to the mitral valve impinging on hypertrophied interventricular septal muscle. A block of this hypertrophied muscle was resected. Immediately after the operation she developed a chest infection and atrial fibrillation which responded to treatment. After discharge she remained slightly breathless and had occasional palpitations, but these symptoms responded to disopyramide and a thiazide/amiloride combination. Eight months after operation she was entirely free of symptoms.

Discussion

These cases are consistent with the American experience that age alone does not contra-indicate operation in this condition (Koch *et al.*, 1980). It was clearly successful, not only in the first 2 cases but also in the third, despite the relative contra-indications of atrial fibrillation (Mason *et al.*, 1978), obesity and poor lung function.

Clinical diagnosis was difficult in all patients, not least because of the technical problems with echocardiography. In the third case the distinction between fixed and muscular subvalvar obstruction was only made at surgery and this problem has been reported before (Mason *et al.*, 1978). However, all the patients had clinical and electrocardiographic evidence of gross left ventricular hypertrophy, an ejection systolic murmur and no clinical evidence of previous hypertension or radiological evidence of aortic valve calcification. These findings in symptomatic elderly patients suggest that further investigation and possibly surgery are necessary.

The value of surgery in younger patients with this condition is controversial. Although it can relieve symptoms in the short term, it does not prevent progression of the disease leading to life-threatening arrhythmias and sudden death (Oakley, 1978). This explains why surgery is associated with a poor prognosis (McKenna *et al.*, 1979). However, it is possible that surgery may be more valuable in the management of older than of younger patients. The younger patients who die presumably have more rapidly progressive disease and often die suddenly, presumably owing to life-threatening arrhythmias. Sudden death, however, is less common in older patients (Pomerance and Davies, 1975; McKenna *et al.*, 1979). This condition is congenital, and older

patients must have disease that progresses more slowly which is why they have survived for so long. They present with disease that is severe enough to cause obstruction, but obstruction, the abnormality that surgery can relieve, is not by itself correlated with life-threatening arrhythmias (Doi *et al.*, 1980). In slowly progressive disease in older patients the interval between obstruction meriting surgery and gross total muscle abnormality causing life-threatening arrhythmias may well be longer than in younger patients.

By contrast, medical management in the elderly is more difficult than in younger patients. Frank *et al.* (1978) have proposed aggressive medical management using doses of propranolol averaging 462 mg daily, and have suggested that the lack of effect of medical management reported previously (Hadarson *et al.*, 1973) was due to inadequate dosage. The reduced β -adrenoceptor sensitivity in the elderly (Vestal, Wood and Shand, 1979) and the increased number of adverse reactions to propranolol in the elderly (Greenblatt and Koch-Weser, 1973) would make such aggressive management particularly difficult. So, while medical management at all ages is unsatisfactory (Shah, 1975), it is more unsatisfactory in older than in younger patients.

Thus, surgical treatment of hypertrophic cardiomyopathy in the elderly is perfectly practical and can be very successful. Medical treatment when the disease is severe can be particularly difficult. As sudden death is unusual in the elderly, perhaps because of slowly progressive disease, the major objection to surgery, that it fails to prevent this complication, does not apply.

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