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Case report

A mycotic aneurysm of the abdominal aorta in a child

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Abstract. A 6-year-old boy with a previous history of intracardiac correction of a partial atrioventricular canal defect presented with infective endocarditis. Despite antibiotic therapy and reoperation, he developed a mycotic abdominal aneurysm. In situ aortoiliac reconstruction with a prosthesis and an omental flap was performed. At follow-up after $2^1/_2$ years there were no signs of prosthetic infection or problems with the anastomoses.

Key words: Mycotic aneurysm – Omentum – Endocarditis – Child

Introduction

Abdominal aortic aneurysms in children are extremely rare. In isolated reports they have been related to degenerative changes in the arterial wall, as in Marfan's syndrome or tuberous sclerosis, or associated with congenital cardiac anomalies [4, 6–9]. Infection of the aortic wall due to septic embolization or bacteremia and contiguous spread have also been implicated [1, 2]. Since the condition is rare in children it tends to go unnoticed. This case report attempts to address the problems of treatment of pediatric abdominal aortic aneurysms.

Case report

In 1986, a 6-year-old boy with a previous history of intracardiac repair of a partial atrioventricular canal defect shortly after birth presented with a 2-week history of intermittent severe pain in the right calf in addition to pyrexia, petechiae of both feet, arthralgia, and microscopic hematuria. Two-dimensional echocardiography revealed vegetations on the mitral valve. Blood cultures were positive for *Streptococcus viridans*.

After the diagnosis of infective endocarditis antibiotic therapy was started: penicillin/gentamicin at first, followed by cefamandol/gentamicin and later cefotaxim/gentamicin because of lack of response. After a month's antibiotic treatment an apical abscess necessitated a dental ex-

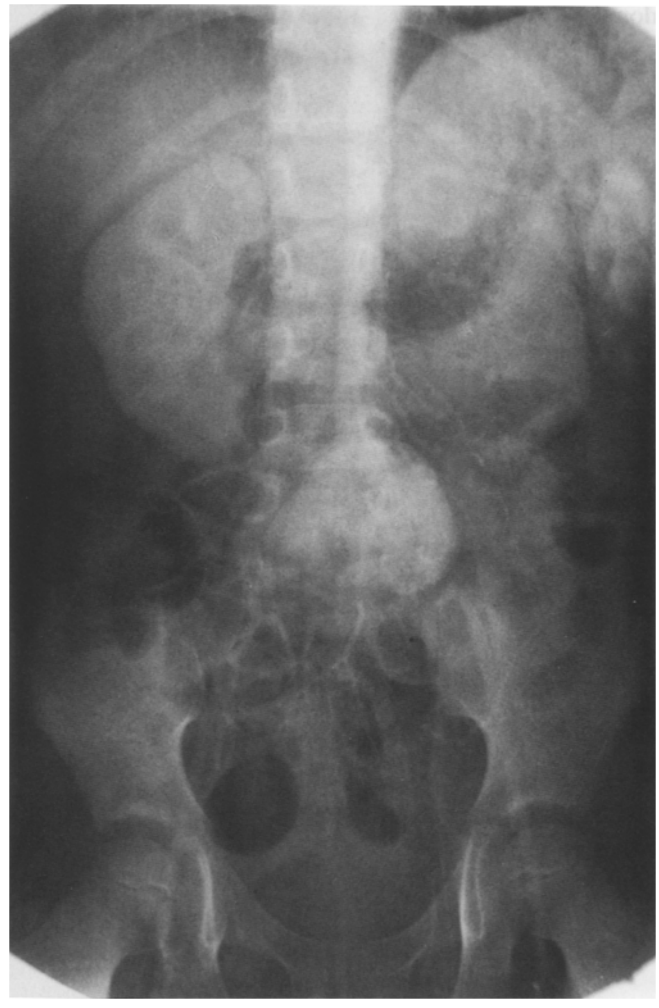

Fig. 1. Large aneurysm in the region of the bifurcation; note obstruction of the right kidney

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traction. Several episodes of abdominal pain were noted that resolved spontaneously. On each occasion examination of the abdomen was normal and peripheral pulses were palpable. Hypertension developed.

Because of persistent pyrexia it was decided to operate upon the patient. The prosthetic patch showed evidence of vegetations and after removal direct closure of the defect was possible. Mitral valve annuloplasty was also performed. The pyrexia persisted despite continuation of antibiotics. Cultures of the operative specimen were negative. Two weeks postoperatively a painful, cold right leg with absent arterial pulses developed that resolved spontaneously. A soft systolic murmur was audible over the abdominal aorta. A radioactive-labelled leucocyte scan showed no definite intra-abdominal "hot" spot.

At this stage a palpable pulsatile mass developed in the supraumbilical region; the boy indicated that this heart was pulsating in his abdomen. Abdominal echography revealed a large abdominal aortic aneurysm that was confirmed on angiography (Fig. 1). At laparotomy a large, thrombosed false aneurysm was found in the infrarenal aorta extending to the bifurcation. Hydronephrosis of the right kidney due to ureteric compression was also noted.

After excision of the aneurysm a 12-mm bifurcation Dacron graft was sutured proximally to the abdominal aorta, distally end-to-end to the right common iliac artery, and end-to-side to the left external iliac artery. An omental flap was wrapped around the prosthesis.

Postoperative recovery was uneventful. The fever resolved spontaeously. The antibiotic therapy was continued for 6 weeks. Culture of the oprative specimen was negative, despite the presence of Gram-positive cocci in the thrombus mass. The patient was discharged on the 10th postoperative day, but 2 months later he was readmitted with signs of intestinal obstruction and underwent operative lysis of adhesions. The operative site showed no evidence of infection or false-aneurysm formation.

At follow-up during $2^1/_2$ years the boy was asymptomatic; normal growth had continued. Echography of the abdomen showed no signs of false-aneurysm formation. Angiography was normal, and Doppler studies showed no evidence of a prosthetic gradient and a normal dorsalis pedis index.

Discussion

Septic embolization is an acknowledged but uncommon complication of endocarditis. Persistent pyrexia despite antibiotic therapy should arouse suspicion of possible abscess formation in the kidney, liver or brain. Mycotic aortic aneurysms have been described in adults, especially in relation to atherosclerotic degeneration of the aorta. Because of the high velocity of blood flow and smoothness of the endothelium, the development of a mycotic aneurysm in a normal abdominal aorta is theoretically unlikely. There are three possible methods of treatment of a mycotic abdominal aneurysm: firstly ligation of proximal and distal vessels, with the potential risk of ischemia if the collateral circulation is inadequate. This method appeared to be impossible in our patient. Secondly, resection of the defect and extra-anatomic reconstruction, reducing the risk of prosthetic infection. In a child, however, this would almost certainly require subsequent operations because of growth. Thirdly, an omental flap wrapped around an in situ prosthesis implanted in a potentially infected area has been suggested as a means to reduce the risk of infection [3, 5].

Since both the first and second methods seemed unfeasible in our patient, we opted for the third. Up to now the result has been highly satisfactory. The long-term follow-up of such prosthetic implants remains uncertain, especially in view of growth of the patients. Our patient gained 10 cm in height without problems, but continuous follow-up – notably when his growth spurt begins – remains essential.

We offer this method of treatment as a potential solution for an uncommon problem, but emphasize the need for continuous, close follow-up.

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