CASE REPORT

Fusiform aneurysms of the brachial artery in a child treated by proximal ligation

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THE brachial artery is a rare site for aneurysm formation and an aneurysm of any peripheral artery is rare in childhood. We here report the occurrence of two fusiform aneurysms of the brachial artery in a child aged 18 months; no similar case appears to have been reported previously.

Case report

The patient was a baby boy born in March 1968. He was referred to Westminster Hospital in September 1969 by Dr Philip Clay of Redhill General Hospital. Six weeks previously, the mother had noticed two lumps on the inner aspect of the left upper arm which had progressively enlarged. The patient was a non-identical twin and there was a younger sib aged 5 months; both of these children were perfectly well. The pregnancy had been uneventful and there was no history of any previous illnesses or operations.

Examination revealed a perfectly healthy, lusty baby boy weighing 24½ lb. There were two obvious aneurysms along the course of the left brachial artery. The upper, larger one, just distal to the anterior axillary fold, measured 4 cm in length and 2.5 cm in width. The second aneurysm was situated immediately proximal to the elbow joint and measured 2.5 cm in diameter. Both upper limbs were the same length and the radial arterial pulse was equal at both wrists. No bruits were audible.

The baby was admitted to Westminster Children's Hospital.

Investigations: Hb 12.2 g%. Chest X-ray normal.

A left subclavian arteriogram was carried out by Dr Fritz Starer (Fig. 1), who reported, 'There is a large multi-locular aneurysm in the upper part of the left brachial artery and a second aneurysm at the elbow which extends to the brachial bifurcation. The arterial system in the right upper limb is normal, as is the aorta. The film of the kidneys after the arteriogram shows normal excretory appearances'.

FIG. 1(a). Left subclavian arteriogram showing two fusiform aneurysms of the left brachial artery; (b) tracing of the radiograph.

It was noted that there appeared to be an adequate collateral circulation around both aneurysms and that the arterial tree seemed otherwise normal.

Operation was carried out on 29 September 1969 (H.E.). The junction of the axillary and brachial artery was exposed through a 3 in. longitudinal incision. At this site the artery appeared perfectly normal. A bull-dog clamp was applied to the artery and both aneurysms were noted to collapse. Although the radial pulse disappeared, the hand remained pink and warm after 5 min of clamping. The vessel was then tied with two thread ligatures proximal to the upper aneurysm. Recovery from operation was uneventful. Postoperatively, non-pulsatile swellings could be felt at the site of each aneurysm; 5 months later the upper aneurysmal swelling had disappeared

completely, although the lower one was still present as a non-pulsatile swelling about 1.5 cm in diameter. Nine months after operation no lumps were palpable in the arm. Brachial and radial pulses were absent, but the hand was warm and pink.

Discussion

The brachial artery is only rarely affected by aneurysm and cases that have been reported previously have been either traumatic or mycotic in origin. Milnes Walker (1957), reviewing his experience of 100 cases of aneurysm, had no example of this condition although there were two traumatic aneurysms of the radial artery. Louw (1965) recorded a solitary case of traumatic aneurysm of the brachial artery in his series of 165 peripheral aneurysms. Matas (1920) reported a series of 324 aneurysms, none of which involved the brachial artery. Crisp (1851) records one brachial artery aneurysm in 637 cases. Sharp & Hansel (1967) have reported an interesting case of a saccular aneurysm of the proximal brachial artery in a 22-year-old man who 18 months previously had undergone a closed traction injury of the arm; the aneurysm was excised and replaced successfully by a vein graft. Reid (1926) described one brachial artery aneurysm due to a pistol shot, which was treated by excision and end-to-end anastomosis of the brachial artery. Unfortunately extension of the elbow further than 30° past a right angle made the radial pulse weaker and then disappear.

Mycotic aneurysms are becoming rarer in this antibiotic era, but Robb (1962) reported a child aged 5 who developed an aneurysm of the proximal part of the brachial artery 1 month after the onset of sub-acute bacterial endocarditis. This was successfully treated by proximal and distal ligation and, interestingly enough, she then developed an aneurysm of the abdominal aorta at the age of 14, which was resected, reconstruction being carried out with a Dacron graft.

Kinmonth & Rob (1962) state that congenital aneurysms are rare except in the circle of Willis. In their 500 cases only ten were congenital in origin, and only six of the total were distal to the sub-clavian artery. Congenital aneurysms of the carotid tree are caused by herniation of the inner layers of the arterial wall at sites of bifurcation, at which points tunica media support is deficient (Carmichael, 1950). Nevin & Williams (1937) described two cases of congenital circle of Willis aneurysms associated with spontaneous haemo-peritoneum. The first was due

to a splenic artery aneurysm; in his second case, although no aneurysm was found, defects in the tunica media of the superior mesenteric artery were demonstrated at post-mortem.

In our own case we can only suggest that the aneurysms were congenital in origin due to some inherent local weakness in the arterial wall; there was no history of trauma either at birth or subsequently, and certainly no evidence of systemic infection to indicate mycotic origin.

Treatment of aneurysms by proximal ligation is an ancient procedure, described by Aetius 1500 years ago, and is still of value in dealing with aneurysms in the upper limb in and beyond the brachial artery and in the distal parts of the lower limb. Following ligation the contents of the sac clot and fibrous replacement eventually occurs. Careful study of preoperative angiograms helps to determine the adequacy of the collateral circulation. We consider that this method was especially advisable in the present case since any attempt at excision of the aneurysms with graft replacement would not only have required an extensive operation, but would inevitably bring with it the anxieties of the behaviour of such a graft during the child's subsequent growth.

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