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SHORT REPORT

Mycotic Aneurysm of Brachial Artery Secondary to Infective Endocarditis

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Introduction: This case describes a brachial artery mycotic aneurysm (BAMA) secondary to infective endocarditis caused by *Enterococcus faecalis*. BAMAs are rare and potentially limb or life threatening. A literature review revealed 61 cases since 1950, primarily caused by intravenous drug use, with *Staphylococcus aureus* being the most common causative bacteria.

Report: A 71 year old man with known infective endocarditis presented with pulsatile swelling in his right antecubital fossa. A BAMA was confirmed on duplex scan. The patient underwent prompt extra-anatomic bypass with an ipsilateral cephalic vein graft.

Discussion: Bacterial endocarditis should be acknowledged as a cause of BAMA. Prompt diagnosis and intervention are essential.

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INTRODUCTION

Brachial artery mycotic aneurysm (BAMA) is a rare condition. It can be a complication of haematogenous spread of bacterial infection.[1] Mycotic aneurysms result from invasion and structural disruption of the arterial wall by infectious agents.[2] Most cases described in the literature are due to intravenous drug use (IVDU) followed by bacterial endocarditis (BE).[2]

A case of mycotic aneurysm involving the bifurcation of the brachial artery in a patient diagnosed with BE is reported.

Report

A 71 year old man with known hypertension was admitted with a two month history of fever, night sweats, and weight loss over three months. On examination, a pansystolic murmur was heard best at the apex radiating to the axilla. The patient had a low haemoglobin (10.7 g/dl) and white blood cell count of and 2.3 $\times 10^9$L, with a high C reactive protein (CRP) (187 mg/L). The patient had had a colonoscopy for rectal bleeding three months previously where three small (<0.5 cm), benign polyps were removed. Following colonoscopy, the patient was then treated for enterococcus bacteraemia with antibiotics for one week.

Infective endocarditis (IE) was suspected and echocardiogram showed significant mitral regurgitation with vegetations. Blood cultures isolated a growth of *Enterococcus faecalis*. A peripheral line was inserted through the brachial vein medially in the middle of the right arm 10 cm proximal to the site of the subsequent aneurysm (thus highly unlikely to be an attributing factor). Thirty-five days into antibiotics treatment, the patient reported a pulsatile, non-painful swelling in the ipsilateral antecubital fossa. An arterial duplex scan showed an aneurysm arising from and involving the bifurcation of brachial artery. It showed a patent radial artery to the wrist but an occluded ulnar artery at its origin with flow returning distally. This was confirmed on computed tomography angiogram (Fig. 1).

Surgery to remove the aneurysm was performed under a regional anaesthetic as the patient was unfit for a general anaesthetic. Extra-anatomic bypass from the mid arm brachial artery to the mid forearm radial artery was performed using an ipsilateral reversed cephalic vein. After closure and isolation of the wounds, the aneurysm was removed by making a separate lazy S incision in the antecubital fossa. The aneurysm measured 4.0 $\times$ 3.0cm in size (Fig. 2) and the median nerve was incorporated into the wall medially. All three arteries were ligated in the antecubital fossa (see Fig. 3).

The patient subsequently underwent mitral valve replacement surgery. Three months later, the arm bypass graft was functioning well with no neurovascular deficit distally.

Microbiology tests on the aneurysm sac were negative for Gram stain with no growth on culture. On histopathology, the intima and media were disrupted and replaced by fibrin and thrombus. The adventitial layer showed

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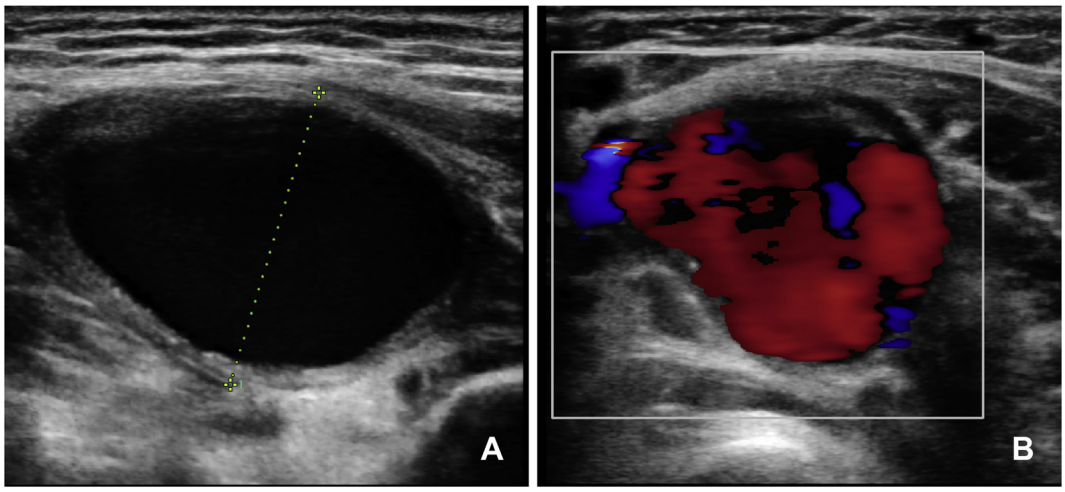

Figure 1. Duplex ultrasound image of right brachial artery aneurysm (A) with and (B) without Doppler signalling.

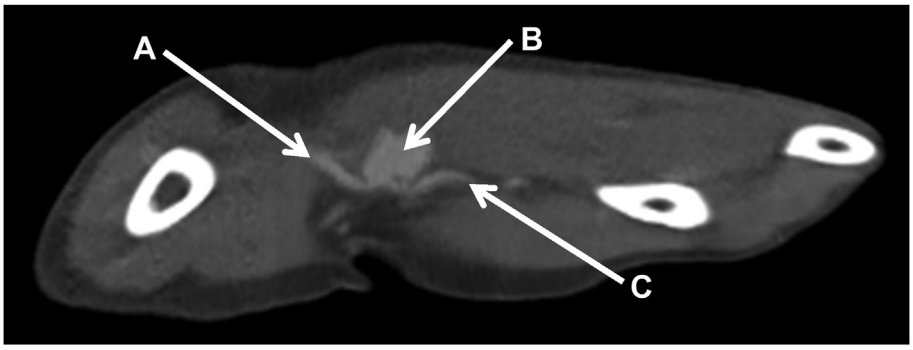

Figure 2. Computed tomography angiogram of the right upper limb. (A) Brachial artery; (B) brachial artery mycotic aneurysm. (C) Radial artery.

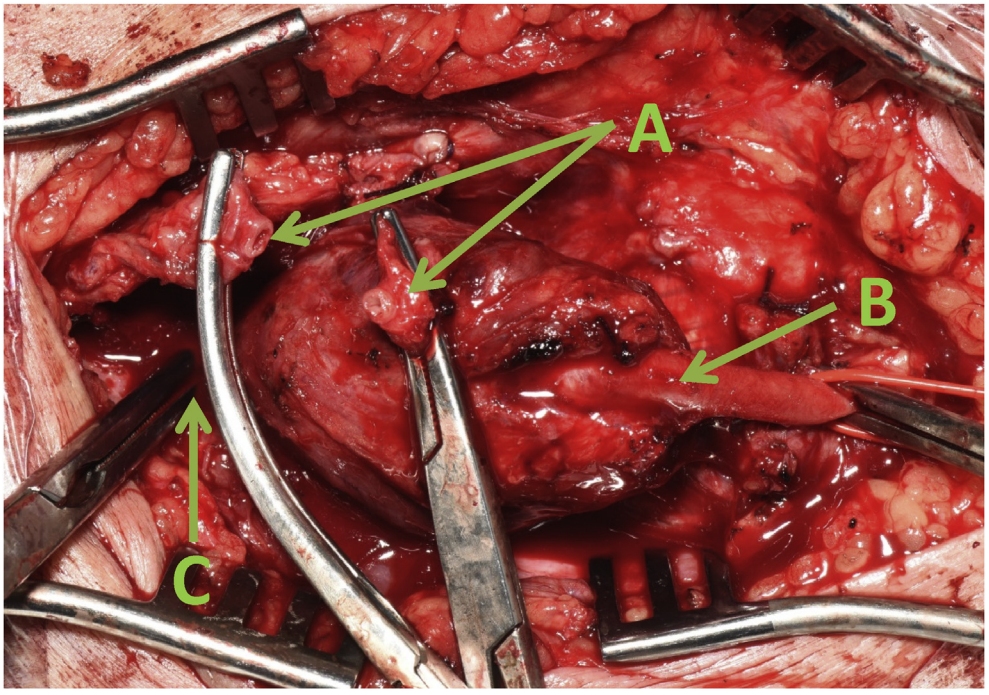

Figure 3. Brachial artery mycotic aneurysm *in situ*, demonstrating (A) radial artery; (B) brachial artery; and (C) ulnar artery.

macrophage accumulation, including haemosiderin and scattered chronic inflammatory cells.

DISCUSSION

This case has demonstrated evidence highly suggestive of a mycotic aneurysm affecting the brachial artery secondary to IE caused by *E. faecalis*. Since 1950, 61 cases of BAMA have been reported in the literature in 32 articles. The majority of patients were male, with an age of 23—67 years. Twenty-two cases were associated with IVDU and only 14 cases were caused by IE. In all of the documented BAMAs, the most prevalent causative bacteria was *Staphylococcus aureus* ($n = 7$). This case report is the only recorded case in the literature with *E. faecalis* as the causative bacteria.

While the Gram stain was negative with no growth on culture (most likely due to sterilisation of the tissue after an extensive course of antibiotics), vessel wall histology showed evidence of inflammatory change, consistent with an infective pathology. Neutropenia was noted on admission blood tests, consistent with concurrent infection.

In earlier documentation of BAMAs, the mainstay treatment was "bed rest, hot soaks and antibiotics".[3] However surgical intervention is the treatment of choice following a long course of antibiotics. Primary vascular reconstructions for BAMAs include extra-anatomic bypass reconstruction; surgical *in situ* revascularisation; and endovascular revascularisation. Extra-anatomic reconstruction has been shown to reduce the occurrence of graft infections.[4] In this case, extra-anatomic bypass was performed for that reason.

Fast growing peripheral mycotic aneurysms can result in suppurative tenosynovitis, compression neuropathy, and rupture,[5] emphasising the importance of timely intervention. This patient was operated on in a timely fashion and experienced no further sequelae of IE or BAMA.

CONCLUSION

BAMAs can be potentially limb or life threatening. It is important to acknowledge BE as a cause. The best therapeutic management is surgical repair after a prompt diagnosis. In this case, it was possible to perform early surgical intervention, reducing the risk of complications that could ensue from peripheral mycotic aneurysms.

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CONFLICTS OF INTEREST

None.

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