Mycotic Po-pliteal Artery Aneurysm

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Abstract
The name mycotic aneurysm was coined by Osler to describe aneurysms associated with bacterial endocarditis1 with an appearance of fresh fungal vegetations; however majority of them are caused by bacteria. Mycotic aneurysm(MA) is a rare complication of infective endocarditis(IE), seen in 3-15% of IE patients.

Introduction

The commonest site for a mycotic aneurysm is intracranial vessels (65%) followed by abdominal and least common being the peripheral vessels. Aneurysms are classified into true and false or pseudoaneurysms. The pathogenesis, microbiology, clinical manifestations, diagnosis and treatment mycotic po-pliteal artery aneurysm(MPAA) is discussed in this review.

Anatomical Considerations

The popliteal artery is in continuity with superficial femoral artery (SFA) and bifurcates into the anterior tibial artery(ATA) and tibioperoneal trunk at the level of tibial tuberosity inferiorly. True aneurysms involve all the three layers of the artery (intima, media and adventitia) and rupture to form false or pseudoaneurysms. These aneurysms can either be fusiform or saccular.

Pathogenesis

Causes of such mycotic popliteal artery aneurysms include infective endocarditis, commonly caused by gram positive pathogens in intravenous drug abusers;2 however rare case of brucella canis causing such aneurysm has been documented in literature.3 These aneurysms can get complicated by thrombosis, distal embolisation of thrombotic material causing limb ischaemia and can rarely rupture.

Microbiology

The normal intima is very resistant to infection, healthy arteries are affected when the patient is immunocompromised or the organism is very virulent (Table 1).

MPAA are formed due to septic emboli from usually from IE, these emboli get lodged into vasa vasorum of normal or abnormal peripheral arteries leading to infection or ischaemia leading to medial destruction and aneurysm formation.4

Clinical Presentation

MPAA presents as a painful, pulsatile and tender leg swelling with identified or unidentified source of septic peripheral emboli. Presentation may mimic a deep vein thrombosis(DVT) or patient may have neurological symptoms or signs due to direct compression on vasa-nervosum arising from po-pliteal artery (Table 2). Blood cultures are positive in around 50% cases, negative cultures do not rule out a mycotic aneurysm.

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Diagnosis

Colour duplex ultrasonography together with computed tomography (CT) scan or magnetic resonance (MR) angiogram can give a correct assessment of the size, shape, diameter, morphology, relation with underlying structures and inflow and outflow status of the vessels (Figure 1).

Management

Broad spectrum antibiotics should be started pre-operatively and should be continued for a long duration postoperatively and more antibiotics may be required to be used together specially in culture negative cases. MPAA warrants resection and revascularisation. The medial and posterior approaches are being equally used for surgery. The surgical and anatomical approach for mycotic and non-mycotic PAA is different. Prosthetic conduits are not used because of infective aetiology of MPAA. Long saphenous or deep venous grafts have been used for reconstruction. There are very few case reports in literature of patients requiring amputation and failure of reconstructive procedures.

Conclusion

Mycotic popliteal artery aneurysm is rare but a dangerous condition. Clinical suspicion along with ultrasound duplex scan, CT or MR angiogram can clearly define the extent, shape and distal flow parameters. Prolonged antibiotic therapy along with surgical intervention using excision, reconstruction with autologous venous graft is the modality of choice in such patients. According to Wilson’s, which is the most widely accepted classification mycotic aneurysms are strictly defined as “infected aneurysms developing in a previously normal artery secondary to septic embolisation due to bacterial endocarditis”.

References