SHORT REPORT

Angioplasty via Retrograde Popliteal Approach in a Stenosed Persistent Sciatic Artery

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Persistant sciatic arteries are a rare developmental anomaly prone to aneurysm formation and atherosclerotic disease. We present a case of a patient with bilateral persistant sciatic arteries presenting with unilateral claudication due to a symptomatic stenosis. The stenosis (just above knee) was treated with angioplasty via popliteal puncture. The puncture was complicated by pseudoaneurysm formation.

Persistant sciatic arteries can cause diagnostic difficulties as Duplex ultrasound can give the impression of an occluded superficial femoral artery. Angiographic techniques are the mainstay of diagnosis and we demonstrate both conventional and CT angiographic appearances.

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Introduction

The sciatic artery is a continuation of the internal iliac artery into the popliteal vessels. It represents the major blood supply to the lower limb in early development and remains so in amphibians, reptiles and birds. In early foetal development when the embryo reaches approximately 2 cm in size the superficial femoral artery (SFA) takes over supply of the lower limb and the sciatic artery becomes discontinuous. In approximately 0.025—0.04% of people the sciatic artery persists as the main artery supplying the lower limb.1 In 1831, Green was the first to describe persistent sciatic arteries (PSA) found during anatomical dissection.

As with other arteries, the sciatic artery is prone to vasculopathy, aneurysmal dilatation and atherosclerosis.

Case

We present a case of a 74 year old non-smoking lady with a 3 month history of left calf claudication after 50 yards. Her past medical history included hypothyroidism and hyperlipidaemia for which she was prescribed thyroxine, atorvastatin and aspirin.

General systemic examination was unremarkable. Examination of her lower limbs revealed poor femoral pulses, and absent popliteal and foot pulses on the left.

A lower limb Duplex scan suggested a severely stenosed left SFA. A femoral digital subtraction angiogram (DSA) and CT angiogram (CTA) were undertaken with unexpected results (Figs. 1 and 2).

Bilateral sciatic arteries were identified on DSA and CTA. A severe stenosis was noted in the distal left sciatic artery due to marked eccentric calcified plaque (Fig. 2).

Angioplasty was carried out via a left popliteal approach due to the technical difficulty of accessing the distal sciatic artery using ultrasound guidance but changed for a 6 F sheath due to persistent oozing. 5000 units of heparin were given via the sheath and the stenosis...
angioplastied initially to 5 mm and then 6 mm. There was marked elastic recoil post angioplasty due in part to the eccentric nature of the plaque but the lumenal diameter was improved (Fig. 3). Post angioplasty the patient was monitored overnight, given a prophylactic subcutaneous dose of low molecular weight heparin, advised to continue aspirin and discharged home.
The patient presented to her general practitioner seven days post procedure with left calf tenderness and elevated D-dimer. A Duplex scan showed no evidence of DVT but revealed a 3 cm pseudoaneurysm with a 5 mm neck in the popliteal fossa (Fig. 4). This was treated conservatively and the patient reviewed at three weeks with a view to thrombin injection. On review, it had thrombosed spontaneously. At one months follow up, the patient had a much improved exercise tolerance and reduced claudication. Further endovascular intervention is not planned at present.

Fig. 2. Axial CTA demonstrating calcified plaque causing the distal left sciatic artery stenosis. This region is also demonstrated on the sagittal oblique volume rendered image.

Fig. 3. Angioplasty of the left PSA stenosis (left image: pre angioplasty, middle: during angioplasty and right: post angioplasty).
Discussion

The persistent sciatic artery is commonly affected by atherosclerosis with aneurysmal change in up to 44% of cases. Patients present with claudication, sciatica or a pulsatile mass in the posterior aspect of the thigh. Diagnosis can be made by Duplex, DSA, CTA or magnetic resonance angiography (MRA). Angiographic findings include a large internal iliac vessel, a sciatic artery and hypoplastic SFA.

Duplex can miss the diagnosis of PSA and give the false impression of an occluded SFA with reconstitution at the knee, as in the first examination of our patient. In retrospect, the lack of a normal accompanying superficial femoral vein could have alerted the operator to a vascular anomaly.

Angioplasty can be performed successfully in stenosed or occluded sciatic arteries as in other vessels. Approach is via the contralateral femoral or retrograde popliteal approach. A popliteal approach is associated with a theoretically increased risk of pseudoaneurysm formation. The use of smaller sheaths reduces the likelihood of pseudoaneurysms occurring.

References


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