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SHORT REPORT

Acute Onset of Intermittent Claudication Caused by Complete Occlusion of a Persistent Sciatic Artery

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Introduction

Persistent sciatic artery (PSA) is a rare congenital arterial anomaly which may be associated with various clinical signs. All of these signs can be explained by the special anatomy of PSA. In this report we present a patient complaining about reversible gluteal pain and intermittent claudication as first manifestations of an entirely thrombosed PSA.

Report

A 53-year-old patient without any vascular risk factors suffered from intermittent claudication of the left leg when walking 10 m over a period of 10 days. He reported that the initially accompanying sciatic pain had subsided. Clinical examination revealed normal peripheral pulses in the right leg with an ankle-brachial-index (ABI) of 1.07 at rest. In the left leg a normal femoral pulse was found but popliteal and foot pulses were absent. The ABI at rest was 0.44.

Duplex sonography of the left leg revealed normal iliac, common and deep femoral arteries. The superficial femoral artery was hypoplastic ending in the distal thigh. Patency of the popliteal artery was only found in its distal third. Tracing the popliteal artery upwards, a large occluded vessel blocked at the gluteal level was detected. This artery was consistent with a PSA.

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Contrast-enhanced MR-angiography (CE-MRA) was performed. Coronal slices were obtained using a three-step three-dimensional MR-technique. Normal anatomy was found on the right side. On the left the iliac vessels were normal apart from a prominent internal iliac artery with an embolic-like distal occlusion (Fig. 1, left column). The deep femoral artery was normal whereas the superficial femoral artery was hypoplastic without communication to the popliteal artery. Below the patent distal third of the popliteal artery, the proximal infracrural vessels were occluded (Fig. 1, left column). In this coronal slice no PSA was visible. Thus, transversal slices were acquired revealing a dilated and thrombosed vessel that was adjacent to the sciatic nerve. The course of the thrombosed PSA observed in the cross sections is depicted in Fig. 1 (right column).

Since the patient had no critical limb ischemia conservative treatment with oral anticoagulation and physical training was preferred. Three months later the pain-free walking distance was about 1000 m.

Discussion

The sciatic artery is the primary axial artery of the lower limb bud during early embryogenesis. It normally regresses in the third embryonic month, when the femoral arteries form.[1] Failure of this results in a PSA which is the case in approximately 0.05% of the population.[2]

Anatomically, PSA is a continuation of the inferior gluteal artery following the sciatic nerve. In about 20% of cases a PSA is found bilaterally. A complete PSA

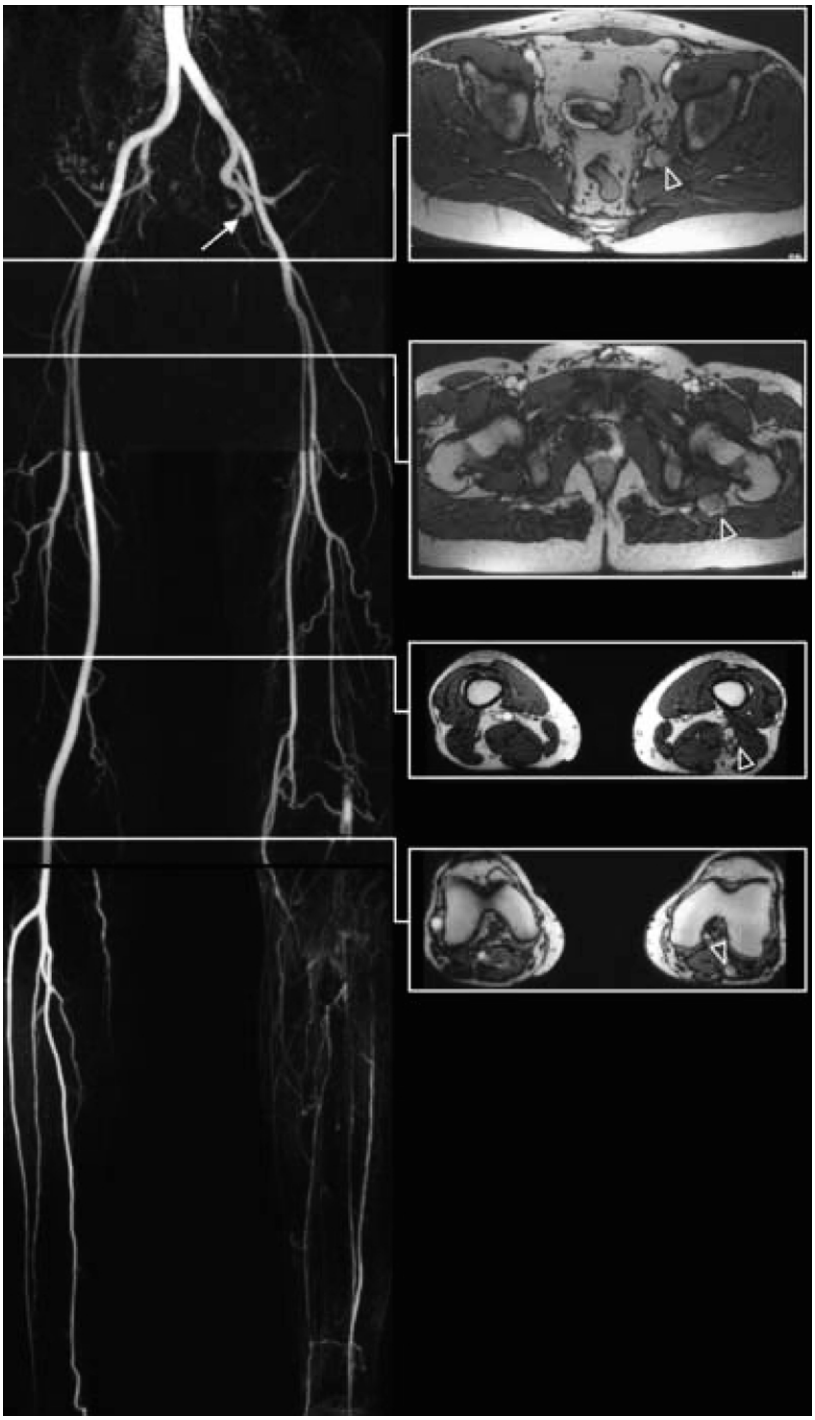

Fig. 1. (Left column) Contrast-enhanced three-dimensional MR-angiography of the pelvis, thigh and calf revealing normal arterial anatomy on the right side. On the left side distal parts of the ectatic internal iliac artery are occluded (arrow). The external iliac and common femoral artery appears to be normal. The superficial artery ends at a bifurcation into two tributaries at the medial and lateral side of the thigh. Besides some collaterals, a direct continuation to the popliteal artery is missing. The infrapopliteal arteries are partially occluded in their proximal parts, however, the distal run-off appears to be normal. (Right column) Anatomic MR cross-sections at four representative levels reveal an aneurysmatic and partially thrombosed PSA on the left side (open arrow). The PSA arises from the internal iliac artery and follows the course of the sciatic nerve below the piriformis muscle through the infrapiriform foramen. The PSA is situated under the gluteus maximus muscle. At thigh level, the PSA is observed dorsally between the short and long head of the biceps femoris muscle. At its distal end a continuation towards the popliteal artery is observed.

continues as the popliteal artery, whereas an incomplete PSA fades out at the distal thigh level. A PSA is prone to early arteriosclerotic changes and aneurysmatic degeneration[1,3] with complications caused by thrombotic occlusion or by peripheral embolism.[3] Further symptoms of PSA are the presence of pulsatile gluteal masses or sciatic pain.

In rare cases a clinical diagnosis of PSA based on absent femoral but palpable popliteal pulses is possible.[3] Generally angiography is performed for further evaluation but may fail in cases of completely occluded PSA as in our patient. Cross- section imaging techniques such as ultrasound, computed tomography (CT) or MR imaging (MRI) enable a diagnosis to be made even if the vessels are occluded. CT and MRI imaging have the advantage that cross-sections can be combined with the angiographic examination.

Treatment of PSA depends on the particular symptoms and anatomical findings. Applied therapies include aneurysmal exclusion and an (ilio-) femoro-distal bypass.[3] If no distal revascularisation is required, coil embolisation or covered stent insertion may be the method of choice to treat stenosis and prevent arterial embolism.[2,4] In selected cases conservative treatment can be an alternative.

If PSA is suspected modern imaging methods such as MR or CT combining angiography with cross-sections of the pathology significantly facilitate and improve the diagnosis of a completely occluded PSA.

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