Bilateral Persistent Sciatric Arteries with Unilateral Leg Ischemia: 
A Rare Case Report

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INTRODUCTION

The persistent sciotic artery (PSA), first described by Green in the Lancet in 1832, is a rare, but clinically significant, congenital vascular anatomical variant with a reported incidence of 1 in 1700 to 3300.1 It refers to, as the name implies, persistence of the embryonic sciatric artery. PSA’s may be complicated by aneurysms (40-61%), stenosis (7%) and/or occlusions (4%).2,3 Familiarity with this entity is important in avoiding the ischemic morbidity (14% limb loss) and mortality associated with PSA complications as well as avoiding inadvertent intervention as in the cases where a superficial femoral artery occlusion is incorrectly diagnosed.4

BACKGROUND

A 46-year-old Caucasian female with a non-contrabulary medical, surgical and family history presents with a recent history of acute onset, severe left lower extremity pain at rest following a long distance flight. Initial workup included, a conventional angiogram of the lower extremities that demonstrated variant anatomy where the SFA’s were discontinuous with the popliteal arteries and terminated into collateral vessels at the distal thigh (Figure 1).

Upon return to our city center the patient underwent a secondary diagnostic workup for persistent symptoms. This included a repeat PVR Doppler that demonstrated abnormal bilateral arteries arising from the internal iliac arteries (IIA) just distal to the superior gluteal arteries. They exit the pelvis via the greater sciatic foramen and extend distally, adjacent to the expected region of the sciatic nerve, where they eventually connect to the popliteal arteries at the level of the knee. They are mildly eccentric and measure 3mm in diameter (Figure 2). The left artery demonstrates a complete 3.4 cm occlusion starting at the level of the left sciatic bone extending distally. The PSA’s are hyperechoic bilaterally and terminate in the medial thigh into fusiform-like collateral vessels. The common femoral, profunda, iliac system and distal calf vessels are all otherwise unremarkable (Figure 2 and 3). These findings are consistent with the rare anatomical variant of persistent sciatric arteries. The findings were bilateral and the sciatric arteries were the dominant blood supply to the lower extremities.

In discussing the results of the CTA with the vascular surgeons a decision was made to pursue conservative medical management with close clinical monitoring, and the patient was started on Persantine.

CONCLUSION

We reported a case of bilateral persistent sciatric arteries with unilateral sciatric artery occlusion in a patient presenting with acute onset, severe left lower extremity pain that was subsequently treated medically. The Persistent Sciatric Artery (PSA) is a rare but clinically significant congenital vascular anatomical variant, which refers to the persistence of the embryonic sciatric artery. It is the result of incomplete or in some cases, absolute non-oblation of the sciatic artery during development. The sciatric arteries (SA) originate from the umbilical arteries (UA) at approximately the 6-mm embryonic stage and serve as the primitive blood supply to the developing lower limb bud.5 As development resumes the SA extends in the caudal direction along the dorsal aspect of the skeletal mesenchyme where it terminates at the foot.6 The external iliac (II), which replaces the SA, originates from the UA just proximal to the SA7. At the 12 mm stage the II further progresses into the common femoral (CF) and superficial sciatric arteries (SFA). The SFA extends in the caudal direction to the level of the knee where it bifurcates into the medial descending peroneal and superior communicating artery.8 At the 18 mm stage the femoral-popliteal connection becomes the dominant blood supply to the lower extremities and continuity of sciatic artery is stopped9.

In 1977, Bower et al proposed a PSA classification system based on complete vs. incomplete blood supply to the lower extremities.10 PSA variants were classified complete when they provided the dominant blood supply to the popliteal artery and the SFA was hypoplastic. They were classified incomplete if the popliteal artery was supplied by the SFA and the SA was hypoplastic.11 PM et al (1980) further stratified the Bower classification, subdividing PSA’s into 4 types. Types 1 and 2 are complete but differ in the degree of femoral artery development.12 Types 3 and 4 are incomplete, in both cases the SA is a patent and fused with the popliteal artery, however in type 3 the proximal popliteal artery and the PSA remain while the distal portion of the PSA remains in type 4.

PSA has a reported incidence of 1 in 1700 to 3300. It refers to, as the name implies, persistence of the embryonic sciatric arteries’. PSA’s may be complicated by aneurysms (40-61%), stenosis (7%) and/or occlusions (9%).2,3 Aneurysm complicated PSA’s are symptomatic in roughly 10% of the cases. The average age of presentation is 57 years and it has no gender predilection13.

The most common presentations include symptoms of distal limb ischemia, claudical pain and symptoms of sciatic nerve compression.14,15 Case’s sign is a hemothoracic physical exam sign for PSA, which consists of faint/absent femoral pulses in combination with a strong/palpable popliteal pulse.16,17

In the past identified PSA do not require treatment but require serial monitoring due to their high rate of aneurysm formation. Symptomatic PSA’s require treatment as symptomology is thought to indicate ischemia. Yang et al. (2014) proposed a treatment algorithm for symptomatic patients which offered treatment options based on whether the PSA was complete vs incomplete and whether it was complicated by aneurysm.18 Regardless of intervention, vigilant clinical monitoring and timely, appropriate intervention is required for patients with PSA as it is associated with a high incidence of limb amputation (14%) in left untreated.19

REFERENCES