

PERSISTENT ANEURYSMAL SCIATIC ARTERY

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ABSTRACT

During the last decades of medical practice, advancements in surgical technology and imaging studies gave us the blessing of detecting many vascular diseases way before they become unforgivingly advanced and intervening properly. A persistent sciatic artery is a rare kind of vascular anomaly that is a perfect example of how advanced vascular surgical and imaging technologies helped both the physician make the most appropriate decision and the patient have the best chances, as this anomaly usually presents with complications later in life. In this case report, I will discuss a 59 years old female patient, which presented as a case of acute in top of chronic right lower limb ischemia. Radiological imaging showed persistent sciatic artery aneurysm, it was managed surgically at our vascular surgery unit in King Hussain Medical Centre, the surgery was uneventful and the patient was smoothly recovered.

INTRODUCTION

The persistent sciatic artery is a rare developmental anomaly occurring in 0.02-0.04% of the population, affecting both sexes equally. It's a mere developmental stage of the vascular system of normal human life that disappears once the superficial femoral artery develops. Patients are usually asymptomatic until they are in their mid-fifties when they complain of symptoms of vascular insufficiency, most commonly intermittent claudication. Here we present such a case, our approach, and how we managed the patient.

CASE REPORT

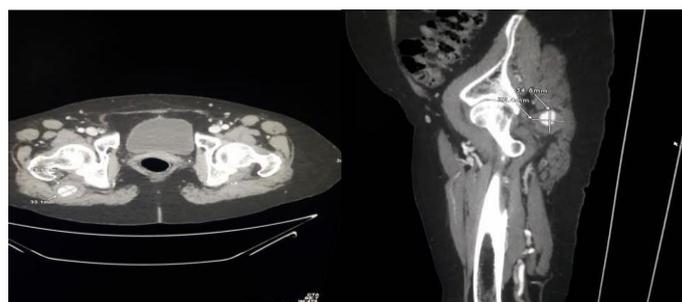
This is a 59-year-old female known to have hypertension and is a 30-pack-year smoker. She visited the ER complaining of right lower limb pain, which occurred at rest 2 hours prior to presentation. She used to suffer from intermittent claudication, where symptoms had occurred

over a walking distance of about 20 meters for the past three months. The rest of her review of systems was unremarkable.

On examination, She had a blood pressure of 115/70, pulse rate of 64, and a temperature of 37 C. Lower limbs exam did not reveal any signs of tissue loss nor changes of skin color; however, the right lower limb pulses were impalpable on the right lower limb distal to femoral pulse which was in contrary to the left lower limb where pulses were palpable. Hand-held Doppler revealed a monophasic signal only over the right popliteal artery.

Laboratory evaluation revealed a white count of 8000, a hemoglobin level of 12.6, and a platelet count of 400000. Her chemistry and coagulation profile were unremarkable

CT angiogram for the right lower limb was Done and Showed:



CTA showing the PSA with diameter labeled



3d Reconstruction images for the patient

The patient was operated on. During surgery, she was found to have attenuated external iliac artery feeding directly to the profunda femoris artery with multiage thrombi in the popliteal artery. Firstly, a popliteal embolectomy was done. Then, an obturator bypass was done where aPTFE graft was tunneled to anastomose the internal iliac artery to the supragenicular popliteal artery.

Postoperatively, the patient's pain has markedly improved, with a good biphasic signal over the right dorsalis pedis and posterior tibial arteries. The hospital course was otherwise uneventful, and she was discharged home. Upon follow-up, the patient did well and had no complaints.

DISCUSSION

During the early embryonic period, the sciatic artery; a branch of the umbilical artery (which will, in turn, become the internal iliac artery), is the major blood supply for the developing limb bud, which regresses as the femoral artery and its branches develop, being completely absent at about the 12th week of embryonic development. Part of the sciatic artery involutes, while the other develops into superior and inferior gluteal arteries on its superior end and the peroneal and popliteal artery on its inferior end. The persistence of this artery is a vascular anomaly. The exact cause of its persistence is unknown but is hypothesized due to an inappropriately developing femoral artery.

Green first addressed this anomaly in the year 1832 when he was conducting his studies on post-mortem cases. Since then, some cases have been reported where the patients presented with symptomatic lower limb vascular disease.

The persistent sciatic artery has been classified into five types:

1. Type 1: persistent complete sciatic artery with normal femoral arteries.
2. Type 2: complete persistent sciatic artery with abnormal femoral arteries; it has two subtypes which are: 2a (SFA does not reach popliteal artery) and 2b (absent SFA).
3. Type 3: an incompletely developed sciatic artery, whose only cranial part is present with normally developed femoral arteries.
4. Type 4: incompletely developed sciatic artery, where

only the caudal part is present with a normally developed femoral artery.

5. Type 5: persistent sciatic artery originating from the median sacral artery with two subtypes: 5a (developed SFA) and type b (underdeveloped SFA).

The patients usually present with symptoms of arterial insufficiency, namely, complaining of claudication symptoms. Aneurysms of the artery itself are not uncommon; in fact, it's the most frequent complication, reported in 47% of the cases, and is considered the source of distal emboli. Other symptoms the patients may complain of include recent-onset varicose veins, vascular masses, radicular pain, and even foot drop.

The pathognomonic physical sign, the Cowie sign, occurred in 20% of the patients. It implies having a nonpalpable femoral pulse with a persistent popliteal pulse. Aside from this sign, the physical presentation is no different than that of vascular arterial insufficiency.

Multiple diagnostic modalities were described, but none tops the CT angiography due to its availability, accurate demonstration of vascular anatomy, and three-dimensional reconstruction. It's important to be done prior to any surgical intervention as many patients have attenuated femoral arterial systems and will ultimately need bypass surgery. According to the literature, bilateral presentation occurs in up to 13% of the cases.

Management is dictated by presentation and imaging findings; claudicants may only require anticoagulation with prostaglandin E1 analogues. Patients with complete PSA need revascularization followed by exclusion of the PSA (especially when an aneurysm is present). The bypass should preferably be a femoropopliteal bypass or, as in our case, an obturator bypass. Using long grafts involving the sciatic artery itself is prohibited as the graft will have to course between multiple active muscular tissues subjecting it to thrombosis. An incomplete PSA, however, may only need the exclusion of the sciatic artery.

CONCLUSION

The persistent sciatic artery is a rare vascular anomaly that is usually symptomatic. 8% of the patients end with a major amputation. It needs to be addressed, and the anatomy needs to be perfectly analyzed before any

surgical intervention can be done.

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