

Persistent sciatic artery aneurysm: case report

José Lacerda Brasileiro^I, Juliana Chen^{II}, Maldonat Azambuja Santos^{III}

^IMember, SBACV. MSc., Universidade Federal de São Paulo - Escola Paulista de Medicina (UNIFESP-EPM), São Paulo, SP, Brazil. Preceptor, Medical Residence in Vascular Surgery, Hospital Universitário - Universidade Federal de Mato Grosso do Sul (HU/UFMS), Campo Grande, MS, Brazil.

^{II}Resident, Vascular Surgery, HU/UFMS, Campo Grande, MS, Brazil.

^{III}Coordinator, Commission for Medical Residence (COREME), Campo Grande, MS, Brazil. Supervisor, Medical Residence in Vascular Surgery, HU/UFMS, Campo Grande, MS, Brazil.

Correspondence

J Vasc Bras. 2008; 7(1):62-5.

ABSTRACT

The authors report a case of persistent sciatic artery aneurysm, which is a rare vascular congenital disease that occurs when the femoral system fails to develop or when the primitive vascular system fails to involute during embryologic development. A 60-year-old male patient presented a painless and pulsatile buttock mass for 4 months. He had no history of external trauma. Complementary tests demonstrated an incomplete and unilateral persistent sciatic artery aneurysm. The patient was submitted to proximal and distal ligation of sciatic artery, and vascular reconstruction was not performed.

Keywords: Persistent sciatic artery, aneurysm, sciatic artery.

RESUMO

Os autores relatam um caso de aneurisma de artéria isquiática persistente, uma rara doença vascular congênita ocasionada por falha ou no desenvolvimento do sistema femoral ou na involução do tronco vascular primitivo durante o desenvolvimento embriológico. Um paciente de 60 anos, sexo masculino, apresentando massa pulsátil e indolor em região glútea há cerca de quatro meses, sem história prévia de trauma. Através da realização de exames complementares, concluiu-se ser um aneurisma de artéria isquiática persistente incompleta e unilateral, sendo submetido à ligadura proximal e distal da artéria isquiática, sem realização de revascularização arterial.

Palavras-chave: Artéria isquiática persistente, aneurisma, artéria isquiática.

Introduction

Persistent sciatic artery is a rare congenital malformation, in which the primitive vascular trunk persists as the main blood supply to the lower limbs. It can progress to aneurysmal dilatation, as well as to limb ischemia due to thrombosis or distal embolism, to local neuromuscular compression or even to its rupture.¹

Based on the study of sciatic artery embryogenesis, its persistence can be complete, the most common type, in which this artery continues directly with the popliteal artery and is usually associated with hypoplasia or absence of femoral artery, where in incomplete persistence the sciatic artery is hypoplastic, so the femoral system is prevalent.¹

Arteriography is required both for diagnosis and study of lower limb arterial circulation, for surgical planning.

The authors report a rare case of left sciatic artery persistence associated with aneurysm.

Case report

A 60-year-old male patient sought for medical care at Hospital Universitário (HU/UFMS), with history of pulsatile and painless buttock mass, with a 4-month course, being painful on pressure (such as when sitting) after 1 month, but with no apparent increase in volume. She denied history of local trauma, intermittent claudication, paresthesia and other changes in her lower limbs. During that period, she reported her blood pressure, which was high over the past 4 years and controlled before that, significantly increased in the past months, despite using regular medication. On physical examination, we verified pulsatile and expandable mass measuring about 10 x 6 cm in supero- and inferolateral quadrant of the left buttock ([Figure 1](#)), painless, with slight thrill and systolic murmur ++++/4+. Lower limb pulses were present and normal.



Figure 1 - Pulsatile and expandable mass measuring about 10 x 6 cm in supero- and inferolateral quadrant of the left buttock

Doppler ultrasound showed arterial aneurysm in the left buttock, possibly in the sciatic artery, measuring 6.4 cm in its largest diameter and 7.0 cm long, with parietal thrombus occupying a large part of its lumen; that artery continued, after the aneurysm, in a descending route in the posterior thigh until reaching the popliteal artery at the knee level.

Computed tomography revealed a tumor measuring 7.7 cm in length, 4.2 cm in the anteroposterior axis and 5.0 cm in width at the ischiorectal fossa, between the large femoral tuberosity and the sciatic branch, posterior to the superior gemellus muscle and piriform and anterior to the gluteus maximus muscle, determining extrinsic muscle compression and especially nerves in this region, such as the sciatic, inferior gluteus or posterior cutaneous of the thigh. It also showed interrupted peripheral laminar calcifications in the posterior and lateral margin of the mass and absence of significant lesion impregnation after use of endovenous contrast.

However, arteriography confirmed diagnostic suspicion, showing the sciatic artery with an aneurysm close to the left femoral head ([Figure 2](#)). Femoral vessels were normal. Thus, we concluded that it was an incomplete and unilateral persistent sciatic artery.



Figure 2 - Aneurysmal sciatic artery close to the left femoral head with normal femoral arteries

After being submitted to preoperative examinations and cardiologic assessment, the patient was submitted to open surgical treatment, in which proximal and distal ligation of the sciatic artery was performed, associated with opening and leakage of the aneurysmal thrombus ([Figure 3](#)). Arterial reconstruction was not necessary, because persistent sciatic artery was incomplete.

In the postoperative period, the patient progressed uneventfully, being discharged after 3 days.



Figure 3 - Opening of the aneurysm with removal of thrombi and proximal and distal ligation of the sciatic artery

The patient is in outpatient follow-up, with reassessments every 6 months, and is currently asymptomatic.

Discussion

Persistent sciatic artery is a rare congenital vascular pathology, whose incidence is approximately 0.03-0.06%. There is no prevalence as to gender, but mean age is around 51 years, although the patient in this case was already 60 years when diagnosis was performed. In 1/3 of cases, its location is bilateral.^{2,3}

During embryogenesis, the artery following the sciatic nerve represents the main blood supply of the lower limbs. As the femoral artery, a continuation of the external iliac artery, is developed to become the main blood supply of the lower limb, there is an involution of that artery, whose remainders form the popliteal and fibular arteries. The other arterial vessels are formed from the external iliac artery. Failure in development of the femoral system or in involution of the axial system generates persistent sciatic artery.^{1,4,5}

Such lesion can be manifested in two forms: complete, the most common type, in which the persistent sciatic artery represents the main blood supply to the lower limbs, usually with hypoplastic femoral artery, whereas the external and common femoral iliac arteries are normal; and incomplete, observed in the present case, in which there is hypoplasia of the sciatic artery of the thigh and predominance of the femoral system.⁶

Diagnosis is usually performed in the presence of complications, such as pulsatile buttock mass (aneurysm) and/or associated with compressive symptoms of muscles and nerves in that region (inferior gluteus, posterior cutaneous of the thigh and sciatic), lower limb ischemia (thrombosis and embolic events) and rupture. It should be suspected in case of absence of femoral pulse, but with present popliteal and/or pedal pulses (Cowie's sign).² In our study, the patient sought medical care presenting pulsatile buttock mass (aneurysm), which caused him local pain, especially when sitting.

About 25% of cases progress to aneurysm, probably due to their anatomic position being susceptible to the trauma. Change in elastic components of the arterial wall predisposes both for aneurysmal formation and for atheromatous degeneration, besides being suggested that hypertension can also contribute in the long term.^{7,8} In our case, the patient reported increased blood pressure since the mass was formed, despite regular use of drugs for hypertension.

Recent trauma history should be investigated to exclude pseudoaneurysm, as well as femoral artery lesion, gluteal artery aneurysm and arteriovenous fistulas.

Arteriography is essential both for diagnosis and for assessment of arterial anatomy, classically identifying the internal iliac artery, which follows the femoral head laterally with a diameter smaller than that of the external iliac artery, being located posteriorly in the oblique incidences. The external iliac and common femoral arteries are usually normal or hypoplastic. The femoral artery is gradually narrowed as it moves toward the thigh and is bifurcated close to the adductor canal level. Near the narrowing, the sciatic artery is tortuous, usually ectatic and with irregular walls. Distal vessels can be normal or have signs of atherosclerosis.^{9,10}

Computed tomography and magnetic resonance allow determining actual size and adjacent structures.⁷ Doppler ultrasound is considered a useful instrument, since it allows tracking the course of vessels and locate regions of significant turbulence, which may represent presence of aneurysm.² Angiographic computed tomography provides good assessment of the pelvic vascular system, and is considered better than ultrasound to assess abdominal aortic aneurysms, but equivalent to angiography to the vascular study of medium- and large-sized arteries.¹¹

Surgical treatment generates risk due to the difficulty of exposure and proximity with the sciatic nerve and is based on aneurysm exclusion. Aneurysms can be excluded or excised. In case of incomplete persistent sciatic artery, exclusion by distal and proximal ligation to the aneurysm is

recommended. That was the conduct used in this case, besides opening and aneurysmal sac exploration in search of additional feeding vessels. However, in its complete form, lower limb revascularization is recommended, associated with exclusion.^{8,12} Bez et al.¹³ reported a case in which the sciatic artery was completely aneurysmal until the popliteal artery, which required surgical treatment with femorofibular revascularization using the saphenous vein associated with sciatic artery ligation.

Revascularization can be performed by femoropopliteal or transobturator iliac-popliteal bypass. The femoropopliteal technique is not indicated in cases in which the hypoplastic femoral system does not provide proper blood flow. However, Eglinton et al.⁵ consider transobturator bypass a good option in these cases, since it allows a shorter route for the bypass.

With the development of endovascular techniques, there are new methods for the treatment of persistent sciatic artery aneurysms offering lower risk of lesion in the nerves of that area.¹² Gabelmann et al.¹⁴ and Fearing et al.⁶ reported good outcomes with the use of endovascular *stent* after following their cases for 22 and 39 months, respectively. However, outcome durability requires further studies with longer observation time.

References

1. Cotta-Pereira G. Embriologia e história do sistema vascular. In: Brito CJ, Duque A, Merlo R, Lauria Filho V, editors. Cirurgia vascular. Rio de Janeiro: Revinter; 2002. p. 11-23.
2. Mayschak DT, Flye MW. [Treatment of the persistent sciatic artery](#). Ann Surg. 1984;199:69-74.
3. Hassan A. [Symptomatic persistent sciatic artery](#). J Am Coll Surg. 2004;199:171-3.
4. Parry DJ, Aldoori MI, Hammond RJ, Kessel DO, Weston M, Scott DJ. [Persistent sciatic vessels, varicose veins, and lower limb hypertrophy: an unusual case or discrete clinical syndrome?](#) J Vasc Surg. 2002;36:396-400.
5. Eglinton TW, Gordon MK. [Persistent sciatic artery aneurysm treated by exclusion and obturator bypass](#). EJVES Extra. 2005;29:29-31.
6. Fearing NM, Ammar AD, Hutchinson SA, Lucas ED. [Endovascular stent graft repair of a persistent sciatic artery aneurysm](#). Ann Vasc Surg. 2005;19:438-41.
7. de Boer MT, Evans JD, Mayor P, Guy AJ. [An aneurysm at the back of a thigh: a rare presentation of a congenitally persistent sciatic artery](#). Eur J Vasc Endovasc Surg. 2000;19:99-100.
8. Batchelor TJ, Vowden P. [A persistent sciatic artery aneurysm with an associated internal iliac artery aneurysm](#). Eur J Vasc Endovasc Surg. 2000;20:400-2.
9. Samson RH, Showalter DP. [Persistent sciatic artery as collateral for an occluded iliofemoral system](#). J Vasc Surg. 2004;40:183.
10. Mandell VS, Jaques PF, Delany DJ, Oberheu V. [Persistent sciatic artery: clinical, embryologic, and angiographic features](#). AJR Am J Roentgenol. 1985;144:245-9.
11. Aziz ME, Yusof NR, Abdullah MS, Yusof AH, Yusof MI. [Bilateral persistent sciatic arteries with unilateral complicating aneurysm](#). Singapore Med J. 2005;46:426-8.

12. Jain S, Munn JS, Simoni EJ, Jain KM. [Endograft repair of a persistent sciatic artery aneurism](#). EJVES Extra. 2004;8:5-6.
13. Bez LG, Costa-Val R, Bastianetto P, et al. [Persistência da artéria isquiática: relato de caso](#). J Vasc Bras. 2006;5:233-6.
14. Gabelmann A, Krämer SC, Wisianowski C, Tomczak R, Pamler R, Görich J. [Endovascular interventions on persistent sciatic arteries](#). J Endovasc Ther. 2001;8:622-8.

 Correspondence:

José Lacerda Brasileiro
Rua Gonçalo Alves, 59, Vivendas do Bosque
CEP 79021-182 - Campo Grande, MS
Tel.: (67) 8142.2314, (67) 3325.559, (67) 3326.2842
Email: jlbrasileiro@gmail.com

This study was carried out at the Vascular Surgery Service, HU/UFMS, Campo Grande, MS, Brazil.

Manuscript received October 16, 2007, accepted January 15, 2008.