A Case of Persistent Sciatic Artery Developing Spontaneous Occlusion without Ischemic Complications

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Abstract
We report a case of persistent sciatic artery which occluded spontaneously without lower limb ischemia. A 74-year-old woman presented with painless pulsation in her right buttock. She underwent computed tomographic angiography (CTA), which showed complete persistent sciatic artery. We decided on conservative management with 3-monthly CTA. After 12 months CTA showed that the persistent sciatic artery had developed spontaneous occlusion with thrombi. In conclusion, when there is little ischemia and risk of rupture, conservative treatment can be appropriate. CTA is a very useful imaging modality in the follow-up of persistent sciatic artery.

Key words: persistent sciatic artery, computed tomographic angiography, spontaneous occlusion

Introduction
 Persistent sciatic artery (PSA) is a rare congenital anomaly with an estimated frequency of only 0.01% to 0.05%¹. It is classified as complete or incomplete². In complete PSA, the superficial femoral artery (SFA) is hypoplastic and the PSA supplies mainly the lower limb. The symptoms associated with PSA are those of ischemia, gluteal pain, gluteal mass and ischialgia³. The PSA is prone to atherosclerotic change, and aneurysmal change is present in 46.1% of cases⁴. Surgery (exclusion of the aneurysm and revascularization)⁵ or endovascular stent graft repair⁶ have been reported for aneurysmal PSA. On the other hand, Forshaw et al. have noted that surgical intervention is not always required, and have reported a case of conservative treatment of complete PSA⁷. Recently, computed tomographic angiography (CTA) has been reported as a useful modality for the detection of PSA and the comprehensive evaluation of various complications, even in the presence of complete occlusion⁸. Herein, we present a case in which PSA developed spontaneous occlusion without lower limb ischemia during CTA follow-up.

Case Report
A 74-year-old woman was referred to our department by a urologist at our hospital after abdominal CT revealed abnormal findings. On questioning, she reported painless pulsation in the right gluteal region and ischialgia. She had first noticed the pulsation 1 year prior to the consultation, but she had not sought medical attention as the symptoms were mild. She had no history of trauma, infection, or peripheral vascular disease, and no noteworthy occupational history. There were no specific abnormalities on physical examination except for a right gluteal pulsatile mass, which was 17 cm long. The dorsalis pedis and posterior tibial arteries exhibited good pulsation. She underwent CTA to investigate vascular abnormalities, and this revealed a PSA arising from the right internal iliac artery. The PSA had mural thrombi and calcification, and was dilated to a maximum diameter of 20 mm. The right superficial femoral artery was hypoplastic and ended above the knee, and the PSA supplied mainly the
PSA developing spontaneous occlusion

right lower limb (Fig. 1a, 2a). The drainage vein from the popliteal vein to the external iliac vein was a large communicating vein. The contralateral limb had normal superficial arteries and veins. We accordingly diagnosed complete right PSA.

When we examined the patient's previous CT images taken at our hospital, PSA could be seen retrospectively in images from 2 years previously. Over this period PSA dilatation had not changed. Because the PSA did not show a tendency to enlarge and symptoms were mild, we elected to manage the patient conservatively with 3-monthly CTA follow-up. At 3 and 6 months after presentation, there was no change in symptoms or PSA dilatation on CTA. Her complaints were gluteal pulsatile mass and mild ischialgia. CTA after 9 months revealed that the PSA had occluded with mural thrombi; the thrombi showed slight, heterogeneous enhancement (Fig. 1b, 2b). CTA after 12 months showed no enhancement of thrombi (Fig. 1c, 2c). After PSA occlusion, the patient developed no symptoms of right lower limb ischemia. Her minimum ankle brachial pressure index was 0.79. Because there were no symptoms of lower limb ischemia, we did not perform any pharmacotherapy.

Discussion

PSA was first reported by Green in 1832. It is divided into complete or incomplete types according to the relationship between the PSA and the femoral artery. Mazet et al. described the difference as follows. (1) Complete type: the PSA is in continuation with a large internal iliac artery through the greater sciatic notch and the thigh to the popliteal region next to the sciatic nerve and provides the main blood supply of the lower limb. The SFA is normal, absent, or incomplete with collateral branches. (2) Incomplete type: the PSA is interrupted and seems like a collateral branch, the SFA is then complete in continuation with the popliteal artery and the deep femoral artery is absent or reduced. Because treatment depends on whether the PSA is complete or incomplete, the classification is important. The complete type usually needs revascularization, whereas revascularization is useless for the incomplete form. Further, regarding the indications for invasive treatment, it is important to determine whether the PSA has aneurysmal change. The PSA tends to show atherosclerotic change, and aneurysmal change is reported in 46.1% of cases. Cases of PSA with symptoms such as a painful pulsatile mass, or those of sciatic neuropathy or lower limb ischemia, need surgical intervention. Rupture of the PSA is also reported; hence this risk must be taken into account when determining operative indications. On the other hand, a case of conservative
treatment of complete PSA has been reported⁶, and some authors have proposed conservative treatment if the PSA is not dilated or aneurysmal and patients have no symptoms¹,².

Regarding diagnosis and monitoring of PSA, duplex sonography, CT, MRI, and angiography used to be mainstream. For example, Wilson et al. reported that continued surveillance of PSA, usually with duplex ultrasonography, was required because of the high incidence of aneurysm formation or thromboembolism⁷. Recently, however, Jung et al. described that asymptomatic PSA did not require operative management but should be monitored because of high risk of thromboembolic complications. They stated that CTA could serve as a new stand-alone tool to assess and treat any thromboembolic complications or atherosclerotic changes, in addition to providing comprehensive evaluation⁸. Our case appears to be the first in which the clinical course of a PSA that developed spontaneous occlusion was followed up with CTA, although patients who had PSA that had occluded at the time of consultation have been reported⁹.

CTA can analyze the PSA and associated venous abnormalities at the same time. Jung et al. described two types of venous drainage from the popliteal vein to the iliac vein. One was the persistent sciatic vein (PSV), and the other was a large communicating vein along the posterior aspect of femur⁹. Although PSV was reported in detail by Cherry et al., PSA appears to be frequently accompanied by the communicating vein⁹,¹¹.

CTA has mainly been reported as a very useful modality for the diagnosis and follow-up of patients with peripheral arterial occlusive disease⁶. Regarding PSA, as in the present case, CTA appears to be a very effective method not only for diagnosis, but also for follow-up of thromboembolic, aneurysmal, or limb ischemic complications.

**References**