Gastrocnemius venous aneurysm—a diagnostic dilemma

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ABSTRACT

A 63-year-old man with multiple previous orthopedic procedures in both lower extremities had presented to us for a third opinion regarding the point-specific pain in his right lateral calf. The initial diagnosis had been venous reflux at two other institutions. However, repeat imaging studies demonstrated an aneurysmal gastrocnemius vein without any other abnormalities, such as venous reflux or thrombosis. The patient had received compression stocking therapy for 6 months but had continued to experience increasing pain at night, especially when lying in bed. The patient was reexamined in the supine position, which showed a prominent bulge in the lateral calf. The bulge disappeared while he was in the upright position. The findings from a bedside ultrasound study confirmed that the gastrocnemius vein bulged out when the muscles were relaxed in the supine position and that the muscles compressed the vein in the standing position, squeezing the aneurysm. Thus, the decision was made to proceed with surgical excision. At 7 months after surgery, the patient remained symptom free. (J Vasc Surg Cases Innov Tech 2022;8:372-4.)

Keywords: Bilateral lower extremity; Gastrocnemius; Venous aneurysm

The patient was a 63-year-old man with a medical history of arthritis and multiple orthopedic procedures to both lower extremities. He had presented to us for evaluation of specific pain in his right lateral calf, which he had experienced for many years. Initially, the patient had been told at another institution that the pain was musculoskeletal, and it was recommended that he wear a brace. However, in the next 6 months, the pain had progressively worsened. The patient had experienced the pain mostly at night, including persistent aching, with a pain scale score of 7 to 8 of 10. The pain had reached the point at which he was unable to sleep. He denied any swelling of the legs or pain during walking. He had also undergone evaluations by two vascular surgeons for venous insufficiency, because he had spider veins in his bilateral ankles and some swelling at the right calf. At the first institution, the diagnosis was perforator vein reflux, and ligation of the perforator vein in the office was recommended. At the second institution, venous ablation for saphenous vein reflux had been recommended. Because of the conflicting information and recommendations, he had presented to our clinic for a third opinion. The patient provided written informed consent for the report of his case details and imaging studies.

On the physical examination, we saw spider veins in the bilateral lower extremities around the ankles, without skin pigmentation changes or ulcers. The pedal pulses were easily palpable in both feet. Subsequent venous duplex ultrasound demonstrated the presence of a right gastrocnemius vein aneurysm measuring >14.4 mm × 7.4 mm, without evidence of deep or superficial venous thrombosis or venous reflux (Fig 1). Ultrasound was performed with the patient in the standing and supine positions. The location of the venous aneurysm was consistent with the location of the pain. When standing, the gastrocnemius vein was small. However, when the patient was lying down, the vein was significantly dilated and the bulge in the calf easily observed. This phenomenon occurred because the gastrocnemius muscles were relaxed when the patient was supine, which allowed the vein to bulge out. However, the muscles were contracted when the patient was standing, with some plantar flexion, which compressed the vein. We recommended that he wear compression stockings with a pressure of 20 to 30 mm Hg, including during sleep. After 2 months, the patient reported decreased pain and discomfort. However, despite the continued compression therapy, the patient began experiencing aching in the right lateral calf at night, especially while lying in bed, and presented to our office 4 months later. After reevaluation and a repeat bedside ultrasound examination and a lengthy discussion with the patient, we decided to proceed with surgical excision of the venous aneurysm. After induction and endotracheal intubation, the patient was placed in the prone position. The right lower extremity was circumferentially prepared.
in sterile fashion. The venous aneurysm was located with ultrasound guidance, and two needles were used to locate the aneurysm. A 1-cm transverse incision was made. The subcutaneous tissue was dissected and the gastrocnemius muscle split. The target venous aneurysm was easily found (Fig 2) using needle localization. The aneurysm was excised after ligating the inflow and outflow. The patient was discharged the same day with a prescription for aspirin therapy. The pathologic examination confirmed the excised specimen was vein but no abnormality was detected. The patient was free of pain at 7 months after surgery, and follow-up venous duplex ultrasound demonstrated no recurrent aneurysm.

DISCUSSION

Venous aneurysms are rare, often asymptomatic and found incidentally; however, they can result in discomfort due to the venous dilation. Venous aneurysms can be found in any part of the body but, most often, have been reported in the popliteal veins and jugular veins. Primary venous aneurysms are caused by weakness of the wall resulting from conditions such as Klippel-Trenaunay syndrome, neurofibromatosis type 1, and Parkes-Weber syndrome. Because our patient lacked the physical features of these syndromes, the aneurysm was likely from a secondary cause, such as trauma, inflammation, or mechanical stress. A venous aneurysm found in a gastrocnemius vein is uncommon. However, it could be underdiagnosed, as indicated by our findings. The pathophysiology for formation of a venous aneurysm is trauma and inflammation. Owing to the rareness of this disease, no recommendations have been established to treat venous aneurysms. However, large aneurysms can cause thromboembolism and will usually be surgically treated in patients with a history of pulmonary embolism.

The differential diagnosis for calf pain includes musculoskeletal causes, neuropathy, peripheral artery disease, a Baker’s cyst, popliteal entrapment syndrome, venous insufficiency, post-thrombotic changes, and arteriovenous malformation. When examining patients suspected of having lower extremity venous disease, the standing position is recommended, especially when evaluating for reflux disease. The diagnostic dilemma of the gastrocnemius vein aneurysm is that it will become more prominent when the patient’s leg is relaxed in the supine position and will often be undetected with
the patient standing. The clinical presentation was key for our patient, because he had described his pain as aching in nature, localized to the lateral calf, and worse during the night—especially when he was lying down. This led us to reexamine the patient in the supine position and perform a focused examination where the pain was located.

CONCLUSIONS
Gastrocnemius venous aneurysm is a very rare disease. Our case has highlighted the diagnostic dilemma. Thus, when a patient complains of worsening calf pain while lying down, an intramuscular venous aneurysm should be suspected.

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