Posttraumatic versus Mycotic Dorsalis Pedis Pseudoaneurysm

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Abstract

Keywords

- ▶ aneurysm
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Reports of dorsalis pedis aneurysms are rare, and there are currently no reports of mycotic dorsalis pedis aneurysms in the literature. Most dorsalis pedis pseudoaneurysms are diagnosed by physical exam and color flow duplex. Surgical treatment includes aneurysm resection with or without reconstruction of the dorsalis pedis artery. We report a dorsalis pedis pseudoaneurysm diagnosed clinically and via duplex ultrasound, treated by excision and ligation of the aneurysm.

Reports of dorsalis pedis aneurysms are rare. They comprise only 0.5% of peripheral arterial aneurysms in the leg.¹ Of those reported, the majority of the literature describes pseudoaneurysms secondary to trauma.² Additionally, mycotic aneurysms are rare and when described are more commonly found within cerebral arteries or the aorta.³ There are currently no reports of mycotic dorsalis pedis aneurysms.

Most dorsalis pedis pseudoaneurysms are diagnosed by physical exam and color flow duplex. Surgical treatment includes aneurysm resection with or without reconstruction of the dorsalis pedis artery.⁴ We report a dorsalis pedis pseudoaneurysm diagnosed clinically and via duplex ultrasound, treated by excision and ligation of the aneurysm.

Case Presentation

A 50-year-old man presented to the emergency department with fevers and chills for 2 weeks and pain in the left arm, left hand, left foot, and lower back. The patient reported possible mild trauma to the dorsum of the left foot when he wore sandals to bale hay recently. He also reported a previous smoking history of ~10 pack years and has a known history of intravenous (IV) drug abuse. On physical exam, there were multiple abscess sites including one over the dorsum of the left foot. His white blood count was elevated at 32.

On hospital day 8, dressings to the left foot were noted to be saturated with blood with a bounding dorsalis pedis pulse at the site of the incision and drainage. A real-time duplex of the left lower extremity circulation was performed and a 1.0 × 2.0 cm dorsalis pedis pseudoaneurysm was noted (▶**Fig. 1**). An abdominal ultrasound was also done to screen for an abdominal aortic aneurysm (AAA); ultrasound showed no evidence of AAA.

Operative Technique

An incision was made over the left dorsalis pedis aneurysm. The dorsalis pedis artery was identified and the incision was extended cephalad. The anterior tibial artery was identified. There was intense inflammation of the surrounding tissue (▶**Fig. 2**). Proximal control of the dorsalis pedis artery was obtained. The aneurysm was opened. Dissection was continued from within the aneurysm and the outflow was suture ligated.

Thrombus was present within the aneurysm. The thrombus and aneurysm wall were sent for culture and pathology. The incision was loosely approximated with interrupted nylon sutures and the wound was packed. Following the procedure, the foot was warm and pink with no evidence of ischemia. The wound was checked daily following the operation and showed evidence of healing without signs of infection.

Fig. 1 Duplex Doppler ultrasound image of dorsalis pedis pseudoaneurysm.

Fig. 2 Inflammation surrounding the anterior tibial artery.

Pathology

Anaerobic cultures of the thrombus eventually grew *Propionibacterium acnes*. Tissue cultures of the thrombus grew coagulase-negative *Staphylococcus*. No organisms were seen on gram stain of the thrombus.

Discussion

Fewer than 30 cases of dorsalis pedis pseudoaneurysms have been reported in the literature.⁴ In almost all case reports describing them, there was a history of blunt trauma to the foot.⁵ In one case report, a pseudoaneurysm developed within 2 months after blunt trauma to the dorsum of the foot after the patient kicked a statue.⁵ In another case report, blunt trauma occurred 5 years previous to presentation.² In our case, it is not certain as to when, how, or if trauma occurred.

Mycotic aneurysms develop due to destruction of the arterial wall by lytic enzymes in an infected thrombus.⁶ Mycotic aneurysms are rare but when seen are most commonly seen in cerebral arteries. A review of 149 cases of upper extremity mycotic aneurysms revealed the brachial artery as

the most frequently reported site. These aneurysms were mostly associated with drug abuse, catheterization, or endocarditis.³ Aneurysms of the common femoral artery have as well been reported secondary to IV drug injection.⁷

In the case of our patient, mycotic aneurysm of the dorsalis pedis artery secondary to IV drug use is possible. Although the patient denied use of IV drugs via dorsalis pedis, he did have a recent abscess at the site of the aneurysm. Echocardiogram revealed no valvular vegetation and the patient was never diagnosed with endocarditis by Duke criteria. Cultures of the thrombus grew only *P. acnes* and coagulase negative *Staphylococcus*, both of which could have been skin flora contaminants. However, gram positive bacteria present in skin flora are the most common organisms isolated from mycotic aneurysms associated with IV drug use.² The patient had been taking empiric antibiotics following incision and drainage of the abscess over 1 week before the aneurysm was discovered and treated. These factors make certain diagnosis of mycotic pseudoaneurysm difficult.

Duplex Doppler is a noninvasive and cost-effective technique for diagnosing aneurysms and pseudoaneurysms. Computed tomography (CT), magnetic resonance imaging (MRI), and angiogram have also been described as other modes of diagnosis.¹ In our case reported, a duplex as well as clinical evaluation was used to make the diagnosis. We also elected to do an abdominal ultrasound to screen for an AAA.

Surgical treatment of dorsalis pedis aneurysm includes excision of the aneurysm in addition to ligation or reconstruction of the artery. Repair of the dorsalis pedis aneurysm is important to prevent future morbidity from thrombosis or embolism. It is often recommended that patients who are at higher risk for peripheral vascular disease, such as diabetics, undergo vascular reconstruction of the dorsalis pedis.⁴ The patient in this case did carry risk factors for peripheral vascular disease such as increasing age and smoking history, but did not have diabetes or previous history of peripheral arterial disease. The patient had good perfusion of the foot via the posterior tibial artery as well as branches from the peroneal artery.

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