

# AN OFTEN MISSED ETIOLOGY FOR UNILATERAL PAINFUL SWOLLEN LEG

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## Introduction

In unilateral leg swelling, we often think of venous or lymphatic disease and rarely think about arterial disease. The latter group, though uncommon, remains an important and easily missed cause, especially in long standing cases. Arteriovenous fistula (AVF) is one such entity. It is an abnormal communication between an artery and a vein, resulting from trauma (especially penetrating), surgery or iatrogenic causes. Fistulas are seen most commonly in the neck and that too involving common carotid artery and internal jugular vein.<sup>1</sup> In the lower limbs, they may remain un- or misdiagnosed for long periods and in the mean time produce disability. We present one such case which was diagnosed late in the course of disease.

## Case Report

A 37- years- old soldier from the Sierra Leone Army, deployed in Darfur (Sudan) on United Nations peace keeping mission, reported to our hospital with 10 years history of pain in his right leg. He used to have moderately severe pain in the right calf on physical exertion, which used to get relived with rest and for the last couple of years, had not progressed in severity. During this period, he had also noticed swelling of his right leg especially after having worn long shoes for prolonged duration and after standing on guard duty. He was a non- smoker and had never noticed any ulcers on the affected limb. On several occasions, he had consulted different doctors who used to dismiss these symptoms and treat him symptomatically. On

direct questioning, he admitted to have sustained a gunshot injury to his right calf during the civil war in his native country in 2001, about two months prior to the onset of current symptoms. At that time, tibia and fibula were spared; he was treated in outdoor and the wound healed in completely in 6 weeks time. On examination, his right calf was swollen but non-tender. Superficial veins were dilated and mild stasis eczema was seen. Two scars were visible on both sides of the calf. A thrill was palpable over the popliteal fossa. Distal pulses were easily palpable but there were no bruits or thrills.

Doppler scan was done with Philips HD3 Ultrasound System. It showed absence of normal triphasic waveform pattern in common femoral, superficial femoral and popliteal arteries on right side (Fig 1). Both the superficial and deep veins were dilated and showed turbulence and arterial flow (Fig 2). There were abnormal communications between arteries and veins in the popliteal fossa (Fig 3). No thrombus was seen. The heart shadow was normal sized on chest X ray. We did not order any laboratory investigations as they were not required.

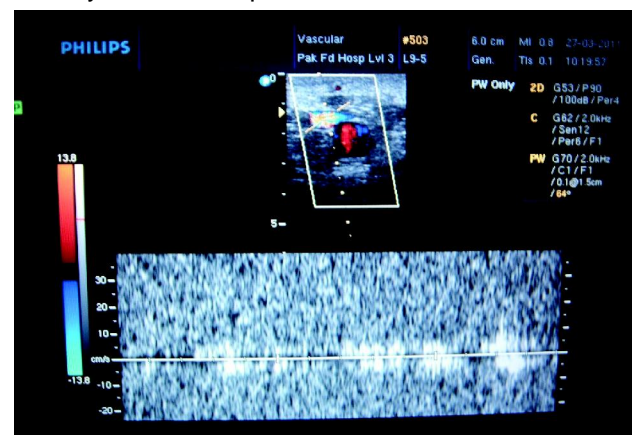


Figure 1: Abnormal waveform in popliteal artery

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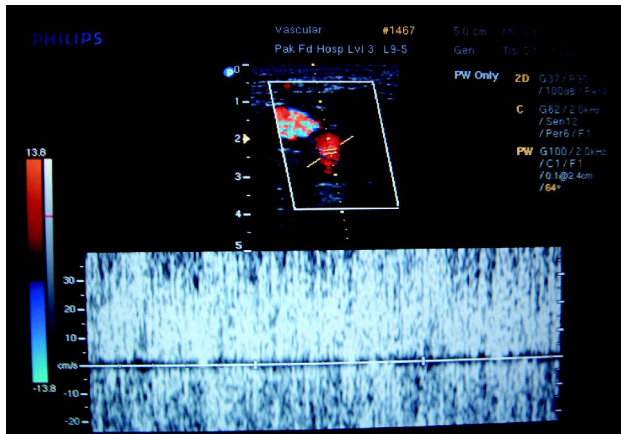


Figure 2: Turbulence and arterial flow in popliteal vein

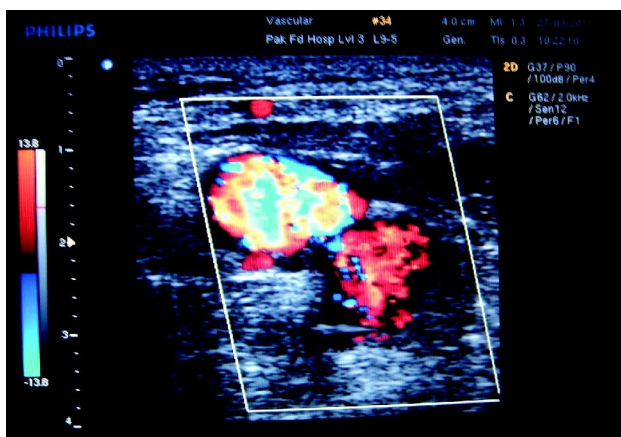


Figure 3: Abnormal communication between popliteal vessels

The patient was referred to Khartoum for angiography and further management at a tertiary care setup.

## Discussion

AVF following trauma are a well recognized entity, but clinicians often miss them since they are seen rarely.<sup>2</sup> Same was the case with this patient who had been harbouring this undiagnosed fistula for the last 10 years or so. During this time period, fistulas are expected to produce complications like local thrombosis, tissue ischaemia, varicosities, stasis eczema or uncommonly high output cardiac failure. Young patients tolerate high cardiac output very well and thus cardiac insufficiency should be borne in mind, even in asymptomatic patients.<sup>3</sup> Fortunately, our patient did not have any evidence in favour of it, probably indicating low flow through the fistula. It is essential to clinch a diagnosis as soon as possible

because of the advantages associated with early surgery, which is the definitive treatment for AVF.<sup>2</sup> Like any other pathology, the diagnosis requires adequate physical assessment combined with optimal radiological evaluation. A vigilant physical examination should be carried out in all patients with long standing leg swelling. Thrill and bruit were strong indicators towards the presence of the fistula in this patient. They had probably been overlooked in the past as most of us tend to neglect the examination from posterior side in a patient lying supine in the bed.

Another lesson to learn from this case is that at least a color doppler scan must be done in all patients with swollen legs as it is non- invasive, cheap and readily available. It remains highly effective in diagnosing and following up patients with AVF. Li et al have suggested criteria for the diagnosis of AVF by color doppler and duplex sonography.<sup>4</sup> Major criteria include a junction of low and high resistance flow in the supplying artery, high velocity arterialized waveform in the draining vein, and turbulent high-velocity flow spectrum at the junction of the artery and vein. Minor criteria include a direct communication seen between the artery and vein, significant change in the diameter of the supplying artery, a focal point of venous dilatation, and focal perivascular color artifact.

Computed tomography (CT) and magnetic resonance imaging (MRI) are non- invasive techniques that have the potential of providing complete information about AVF and can detect additional pathologies simultaneously.<sup>5</sup> The gold standard for diagnosis of AVF is the use of arteriography.<sup>1</sup> It identifies the anatomical localization of the lesion with a great accuracy and depicts the collaterals very well. Arteriography is also required in most cases of for tailoring of the surgical or endovascular treatment.<sup>6</sup>

## Conclusion

The role of color Doppler Sonography in initial evaluation of AVF cannot be undermined even today when advanced radiological technologies are available.

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