

THE CHALLENGES OF SALVAGING AN ISCHAEMIC LOWER LIMB IN NIGERIA- A CASE REPORT

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ABSTRACT

BACKGROUND: chronic leg ulcer from arterial insufficiency can be a nightmare either due to the pain or lack of facilities to intervene. This case report highlight the challenges involved in salvaging an arterial leg ulcer.

PATIENT AND METHOD: This is a 75years old known hypertensive woman who presented with ulcer on the right leg of 3 weeks duration and positive history of intermittent claudication. Investigations supported the diagnosis of arterial insufficiency. Patient had balloon angioplasty and wound care.

RESULT: Ulcer healed and the patient discharged pain free with improved claudication distance

CONCLUSION: With proper attention to details and interdisciplinary collaboration, ischaemic limbs can be salvaged.

KEY WORD: Limb salvaging, peripheral vascular disease.

INTRODUCTION

Chronic leg ulcers are very common in sub-Saharan Africa. There are different causes which include infection, vascular, neuropathic, sickle cell and diabetes mellitus. Vascular ulcer of venous origin is far commoner than that of arterial origin¹. Arterial ulcers are less common in the sub-Saharan Africa; it is the second commonest cause of chronic leg ulcer in the western world². Poverty and ignorance is a strong factor militating against these patients presenting early and thereby adding to the amputation rate. The diagnosis of arterial ulcer can be made from meticulous history taking and examination. Investigation and treatment of these patients can pose some challenges because they involve expensive facilities which are not readily available. Where available the cost is out of the reach of even the middle class. We hereby present a case report on the challenges of saving an ischaemic limb at all cost in Nigeria.

CASE REPORT

A. U is a 75 year old woman who presented with three weeks history of ulcer on the right leg. It started initially as a blister which ulcerated with production of serous discharge. The resulting ulcer progressively increased in size with no bleeding.

Prior to the presenting complaints, there was positive history of intermittent claudication. There was no history of preceding trauma or visible dilated vein on the lower limbs. She is not a known diabetic but a known hypertensive diagnosed over 20years ago with poor follow up compliance.

She uses tobacco as a teenager up till presentation.

Essential findings on examination are arcus seniles with pulse rate of 68beat per minute which was irregular and a blood pressure of 200/90mmHg. There was an ulcer of 7cmX 9cm just above the medial malleolus with punched out edges and necrotic floor exposing tendons. The base was soft and the surrounding skin, was hairless and cold to touch (Fig.1). The posterior tibia and dorsalis pedis pulsations were not felt. The contralateral leg was also cold and hairless with the Pulses faint and ABPI=0.8

Our working diagnosis was arterial ulcer. This was confirmed with a coloured Doppler ultrasound scan which revealed generalized arteriosclerotic changes and ischaemic /post stenotic changes in the infrapopliteal arteries on the right leg. Parvus tardus wave form and signs of arrhythmias was also noted in the spectral wave. We could not do an MRI

angiography for lack of facilities in Edo state. The Full blood count, fasting blood sugar and urine investigation reported no abnormalities.

A multidisciplinary group composed of the plastic surgeon, Orthopaedic Surgeon, physician, vascular surgeon; the nurses and the physiotherapist were involved in the management of this patient. Patient was advised to lower his limb intermittently out of bed. She was placed on soluble Aspirin, cilostazol, Nifedipine, moduretic, ibuprofen and haematinics.

Effort to arrange for a balloon angioplasty within the country was not successful because of lack of expertise and facilities. This necessitated our sending the patient abroad just for the procedure. On the second week post presentation, patient had balloon angioplasty via the femoral approach. The popliteal arteries, the anterior and posterior tibial arteries with the arteries of the arc of the foot were systematically dilated for both limbs. The residual stenosis was <15%, <10% and <5% for the popliteal, the tibial and the arteries of the arc respectively. The feet were noticed to be warm with active bleeding from the ulcer on table. She was sent back to our hospital one week after surgery.

Post operatively, patient was continued on cilostazol, Warfarin and antihypertensive. The international normalized ratio was maintained at 2-3. The wound was serially debrided and dressed twice daily with honey.

One week post op, healthy granulation with actively growing edges (AGE) was noticed and the ulcer progressively contracted and healed after 3 months (Fig.2). Patient refused any surgical intervention including skin grafting. She is still on cilostazol and presently ulcer and pain free. The estimated cost of treatment is three million naira.

DISCUSSION

Peripheral arterial disease is the second most common cause of leg ulcer in the western world. Accounting for 10 to 30% of lower-extremity ulcers.^{2, 3, 4} Typically, these lesions are painful and affect the toes and/or pressure points, such as the heel, malleoli, or anterior shin.² The arterial pathologies that can lead to arterial ulcers are many, but their common pathway is arterial obstruction. Peripheral arterial disease (PAD) is a major contributor, affecting 8 to 12 million Americans with significant associated morbidity and mortality.⁵ In Most African countries, PAD is lower down in the differential of causes of lower leg ulcer. It is majorly a disease of the elderly usually above 70 years of age. Atherosclerotic obstruction usually occurs in the iliac, femoropopliteal, and the distal branches (peroneal and tibial arteries). In some cases, only small-sized arterial branches are affected, leading to limited infarctions of skin and subcutaneous tissue.³ The patient presented in this case report had the popliteal and the distal arteries involved. Some risk factors for PAD include smoking, diabetes mellitus, elevated low-

density lipoprotein, hypertension, elevated fibrinogen, and advanced age.^{6, 7} In Africa, the low life expectancy might be contributory to the low prevalence. The index patient in addition to being a high user of tobacco is an elderly hypertensive. Consequently, the PAD leading to the ulcer in this patient may be caused by more than one etiology.

Managing a patient with arterial ulcers in rural Africa poses a huge challenge. They will usually present late because of poverty and ignorance. In Esanland where Irrua specialist teaching hospital is situated, it is believed that spontaneous ulcers result from patient stepping on native poison called "Ebafi" meaning what is thrown. Most of the patient will approach the traditional medical practitioners for treatment. The superstitious belief of the people is one reason why the patient present late.

History of spontaneous ulcer following a period of intermittent claudication with Ankle-brachial pressure index of <0.9 is diagnostic. To confirm the diagnosis patient will require duplex USS which has now succeeded the more sensitive technique like computerized tomogram angiography and the Magnetic resonance imaging angiography because it is available, more affordable and less invasive. However, in rural practice the Doppler USS is not readily available. The patient in this case report has to travel so many kilometres to have Doppler USS done.

Treatment of these patients involves taking away the risk factors and relief of

symptoms.⁸ The latter can be approached medically or surgically.

Erb in 1911 attributed threefold increase in intermittent claudication in smokers compared to non smokers. There is a considerable body of evidence supporting the clinical benefits of structured exercise programmes in improving pain-free walking distance and maximum walking distance. Exercise training beyond 6 months has been associated with good outcomes.^{8, 9} Best exercise till date still remains walking, but other alternatives are also useful.¹⁰ For the elderly, even though they can comply with quitting tobacco use, complying with exercises can be challenging which was the case in the index patient.

To date, no pharmacologic or biologic therapy has demonstrated efficacy in reversing the circulatory impairment seen in patients with critical limb ischemia. What is known is that Cilostazol, a phosphodiesterase III inhibitor at a dose of 50-100mg daily has been found to increase the claudication distance more compared to pentoxifylline. It acts by causing antiplatelet effect, decreasing lipid and vasodilatation. However, it can provoke dose dependent cardiac arrhythmias and haemorrhage. It is contraindicated in patient with congestive cardiac failure. Other adjuncts to the medical treatment are to control hypertension diabetic and hyperlipidaemia. This patient had challenges with getting cilostazol which had to be imported from abroad.

Surgical modalities include minimally invasive interventional techniques such as balloon percutaneous transluminal angiography (PTA), peripheral bare-metal stents, peripheral stent grafts (stents covered with fabric material) and, rarely, plaque debulking techniques. Operative modalities include endarterectomy (removing the plaque from occluded or severely stenotic segments, e.g. aorto-iliac endarterectomy) and bypass surgery utilising vein or prosthetic conduits.

Traditionally, open surgical bypass was the only effective treatment strategy for limb revascularization in the past. However, during the past decade, the introduction and evolution of endovascular procedures have significantly increased treatment options. In a certain subset of patients for whom either surgical or endovascular revascularization may not be appropriate, balloon percutaneous transluminal angiography (PTA), stenting and rarely plaque debulking technique has reduced the incidence of amputation.

Definitive high-level evidence on which to base treatment decisions, with an emphasis on clinical and cost effectiveness, is still lacking. Treatment decisions in patient with critical limb are individualized based on life expectancy, functional status, anatomy of the arterial occlusive disease, and surgical risk. The widespread adoption of endovascular procedures by multiple disciplines has significantly increased treatment options. This change in treatment

paradigm has been driven by technological advances, as well as by the desire of patients and physicians to reduce procedural risk, albeit with potential tradeoffs of inferior durability and greater cost.⁷ Between 1996 and 2006, the number of endovascular lower-extremity interventions in the Medicare population in United State reportedly increased by 230%, whereas the number of bypass procedures decreased by 42%.¹² For the ulcer in this patient to heal, the vascular problem needed to be resolved. This cost the patient fortune because of flight ticket and other logistics required to get to a centre with competence and technology in the treatment of peripheral arterial disease. The modality best suited for our patient was balloon PTA because of her age and heart condition. Balloon angioplasty is indicated for focal stenoses (generally under 5 cm in length) or short occlusions. Complications include haematoma, pseudoaneurysm, dissection, vessel perforation, embolisation, thrombotic occlusion and contrast-related problems. Though, the index patient had wild spread arteriosclerosis, the major point of obstruction was at the popliteal region.

CONCLUSION

At present, there are so many challenges in managing patients with arterial ulcer in Nigeria. Though the diagnostic facilities can be found, they are not widespread and affordability could be an issue. Many technologies have been developed to relieve arterial obstruction

but these are not readily available to the vascular surgeons in Nigeria. A lot of Nigerians that have presented with intermittent claudication and feature of critical limb ischaemia have gotten amputation as the only treatment option. Effort should be geared at providing the necessary facilities and training to treat peripheral vascular diseases so that the incidence of amputation from arterial ulcer can be reduced.

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