

Original Article

# Epidemiology, etiology, and treatment of chronic leg ulcer: Experience with sixty patients

G. A. Rahman, I. A. Adigun, A. Fadeyi<sup>1</sup>

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Department of surgery, University of Ilorin Teaching Hospital, Ilorin, Nigeria, <sup>1</sup>Department of Microbiology, University of Ilorin Teaching Hospital, Ilorin, Nigeria

Correspondence to: Dr. G. A. Rahman, Department of Surgery, College of Medicine, King Khalid University/ Asir Central Hospital, Abha, Kingdom of Saudi Arabia. E-mail: garahman1@yahoo.com

## Abstract

**Background:** Chronic leg ulcer (CLU) is reported to have an impact on virtually all aspects of life. Treatment is expensive and has large economic burden on many countries' health services. This presentation is to determine the impact, etiology, and presentation of CLU as well as the procedures for processing in a Nigeria tertiary care facility.

**Methods:** All patients with CLU seen that were prospectively managed in our hospital between 2004 and 2006 have been included in the study. The data were analyzed by SPSS version 11.0 of software.

**Results:** Sixty consecutive patients seen over a period of 3 years (2004–2006) were prospectively studied. There were two peak period of age presentation 30–39 and 50–69 years. The male female ratio was 1:1. Most of the patients (93.3%) had unilateral ulcers and it was as common on the right as on the left. Fifty percent of patients had medical disorders. The commonest cause of CLU was poorly managed traumatic wound.

**Conclusion:** Most patients benefited from debridement with or without split thickness skin graft or flap.

**Keywords:** Chronic, epidemiology, leg ulcer, treatment

## Résumé

**Background:** Ulcère de jambe chronique (UDC) est signalé à avoir un impact sur pratiquement tous les aspects de la vie. Le traitement est coûteux et a de grandes fardeau économique sur les services de santé de nombreux pays. Cette présentation est de déterminer l'incidence, l'étiologie et de la présentation de UDC ainsi que les modalités de traitement dans un établissement de soins tertiaires du Nigeria.

**Méthodes:** Tous les patients avec UDC vu l'avenir qui ont été gérées dans notre hôpital entre 2004 et 2006 ont été inclus dans l'étude. Les données recueillies ont été analysées à l'aide de SPSS version 11.0 du logiciel.

**Résultats:** Soixante patients consécutifs vus sur une période de 3 ans (2004–2006) ont été étudiées prospectivement. Il ya deux ans de période de pointe de la présentation 50–59 et 30–39 ans. Le ratio homme femme est 1:1. La plupart des patients (93.3%) avaient des ulcères unilatérale et il est commun que sur la droite que sur la gauche. Cinquante pour cent des patients avaient des troubles médicaux. La cause de l'UDC a été mal géré plaie traumatique.

**Conclusion:** La plupart des patients ont bénéficié d'un débridement avec ou sans diviser l'épaisseur du greffon ou de lambeau de peau.

**Mots clés:** Chronique, épidémiologie, jambe ulcère, traitement

## Introduction

Chronic leg ulcer (CLU) also known as chronic lower limb ulcer is a chronic wound of the leg which does not heal within 6 weeks. CLU is reported to

have impact on virtually every aspect of daily life: pain is common, sleep is often impaired, mobility and work capacity tend to be restricted, and personal finances are often adversely affected.<sup>[1]</sup> It is also known that social activities are restricted due to fear

of injury and negative body image.<sup>[2]</sup>

CLU is a common cause of morbidity and their prevalence in the community ranges from 1.9% to 13.1%.<sup>[3-5]</sup>

Estimate of annual incidence of leg ulcer in the UK and Switzerland are 3.5 and 0.2 per 1000 individuals, respectively. The prevalence of vascular ulcer in US is estimated at 500,000 to 600,000 and increases with age. It is thought that the incidence of ulceration is rising as a result of aging population and increased risk factors for atherosclerotic occlusion such as smoking, obesity, and diabetes. The treatment of venous ulcer is expensive, leading to large economic burden on health services in many countries.

The aim of this communication is to determine the incidence, etiology, and presentation of chronic leg ulcer. It is also to evaluate the various modalities of treatment used in a Nigerian tertiary health institution.

## Materials and Methods

All patients with CLU seen that were prospectively managed in our hospital between January 2004 and June 2006 were included in the study. Information on patient's demographics, clinical presentation (including detailed description of the ulcer), cause of ulcer, skin changes and vascular impairment, associated medical and surgical conditions, and different treatment modalities based on the etiology, clinical condition, and in some cases the results of investigations of the ulcer were documented. Data collected were analyzed using SPSS Version 11.0 for window.

## Results

Sixty patients with CLU were seen during the period under study. There were 30 males and 30 females giving a ratio of 1:1. There were two peak periods of age of presentation 30–39 and 50–69 years, respectively [Figure 1].

Most patients (93.3%) had unilateral ulcers with only 6.7% presenting with bilateral CLU. CLU is as common on left as on the right leg.

Poorly managed trauma is the commonest cause followed by infection [Figure 2].

More than 50% of the patients do not have any associated medical condition. Of those that have associated condition, diabetic mellitus (DM) and hypertension were the commonest [Table 1]. In the physical examination of the ulcer, 78.3% presented

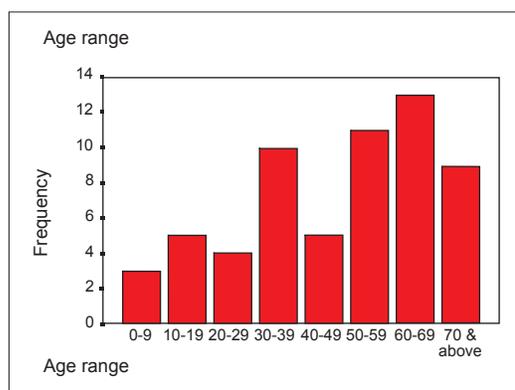


Figure 1: Age distribution of patients with chronic leg ulcer (n= 60)

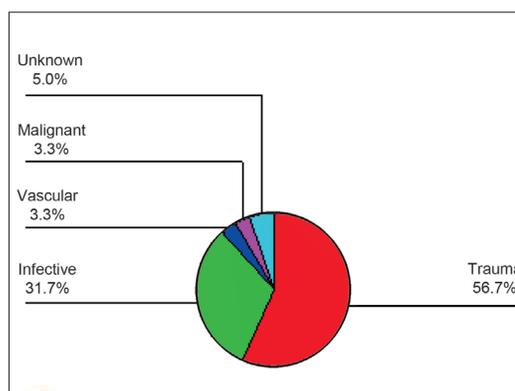


Figure 2: Etiology of chronic leg ulcer (n=60)

Table 1: Associated medical conditions seen in patients with chronic leg ulcer (n=60)

	Frequency	Percent
Diabetic mellitus	10	16.7
Hypertension	8	13.3
Diabetes and hypertension	4	6.7
Sickle cell disease	1	1.7
Chronic osteomyelitis	1	1.7
Varicose veins	2	3.3
Others	3	5.0
None	31	51.7
Total	60	100.0

with Slopping edge, 11.7% raised, and only 1.7% with elevated edge. In 8.3% of the patients, the description of the edge was not clearly defined.

Here 47 (78.3%) patients had clinical wound infection out of which 39 (82.9%) were culture positive. *Pseudomonas aeruginosa* and *Staphylococcus aureus* constituted the majority of the isolates recovered accounting for 32.61% and 23.91%, respectively. Radiological investigation with plain X-ray showed evidence of bony involvement in two patients.

We managed our patients with wound dressing using

antiseptic lotions like cetrimide, hydrogen-peroxide, and hypochlorite solution. Highly infected wounds were dressed with honey. And 26 patients (43.3%) and 17 patients (28.3%) had wound debridement only and wound debridement, dressing and split thickness skin graft (STSG) done. Only two patients had wound debridement with cross leg flap. We explore the use of fenestrated foam in those patients with pressure ulceration.

More than 80% of patients had satisfactory outcome at discharge.

## Discussion

CLU is usually associated with significant morbidity, high cost of healthcare, loss of productivity, and reduced quality of life.

In this study, there were two peak periods in the age of presentation. The ages were 30–39 and 50–69 years. This shows the increase in the incidence with increasing age as in previous studies.<sup>[6,7]</sup>

Majority of CLU are the result of venous hypertension, arterial insufficiency, or a combination of both.<sup>[8,9]</sup> Uncommon causes include lymphoedema, vasculitides, malignancy, and pyoderma gangrenosum.<sup>[8]</sup> In this study, trauma is the commonest cause. It constitutes 56.7% (34 patients) followed by infection 31.7% (19 patients), vascular causes and malignancy contributing 3.3% (2 patients) each. This may be as a result of low incidence of arterial and venous diseases in developing countries like Nigeria.

Majority of the patients did not have associated medical conditions. Diabetes mellitus, hypertension and combination of diabetes and hypertension were seen in 10 patients (16.7%), 8 patients (13.3%) and 4 patients (6.7%) respectively in patients with chronic leg ulcer. Only 1 patient (1.7%) had sickle cell disease.

In patients with CLU a comprehensive assessment of the patient, skin, vascular status, limb and ulcer is required to determine their aetiology and to formulate an appropriate management plan. In this environment where sophisticated investigative tools are not readily available, proper clinical evaluation of the ulcer could be helpful. In 78.3% the edge is sloping. The floor had necrotic tissue in 41.7% and was discharging pus in 10% of patients. This will probably explain the need for debridement in many of these patients. Only 8.3% of the patients had reduced skin sensation. Since majority of the patient had traumatic ulcer it was not surprising that only 5% of the patients

had lymphadenopathy.

In our patient with confirmed wound infection, the isolates were sensitive to third generation Cephalosporin and Fluroquinolones. These drugs constitutes the first line antimicrobial agents used for our patients except when contra-indicated.<sup>[10]</sup>

Treatment modalities readily available were wound debridement only, wound debridement, dressing and split thickness skin graft (STSG) in 26 patients (43.3%) and 17 patients (28.3%) respectively [Table 2]. Only 5 patients (8.3%) had wound dressing only, and 2 patients had cross leg flaps. Patients with pressure ulceration should ideally be managed on specialized beds such as Low Air Loss or Clinitron, but these are not available in our Centre. So we explore the use of fenestrated foam as suggested by Oluwatosin *et al.*<sup>[11]</sup> Sickle cell leg ulcers occur either spontaneously or as a result of local trauma. In endemic zones like in West and Central Africa, higher rate of more than 40% ulcers have been described.<sup>[12,13]</sup> 1 patient was managed for sickle cell leg ulcer; this low number in an endemic zone like ours may be due to the period of study. Wound in sickle cell patient healed slowly as much as six times the normal healing rate and they usually have prolonged hospital stay.<sup>[12]</sup> The different treatment modalities in this studied group may be a reflection of the centre of study which is a tertiary health institution. It may however be a reflection of the need for specialist service in the management of chronic leg ulcer. There is a debate not just how to treat but where.<sup>[14]</sup> Recently the trend has been toward treating patient almost exclusively in the community. But, Ruckley recently suggested that CLU is perfectly suited to share care. The hub and spoke model, in which a hospital specialist unit supports outreach services linked to it by specialist nurses, offers an ideal blend of specialist intervention and community based care.<sup>[14]</sup>

Complete healing at discharge from the hospital was

**Table 2: Treatment for patients with chronic leg ulcer (n=60)**

	Frequency	Percent
Wound dressing only	5	8.3
Wound debridement and dressing	26	43.3
Wound debridement, dressing, and STSG	17	28.3
Secondary closure	1	1.7
Sequestrectomy	2	3.3
Cross leg flap	2	3.3
Others	7	11.7
Total	60	100.0

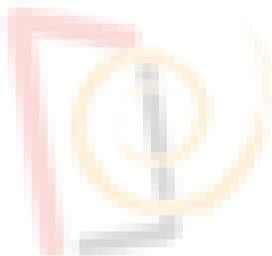
achieved in 80% of the patients. This is satisfactorily acceptable to both the patient and the surgical team. In conclusion, chronic leg ulcer increases with age, the commonest cause in a developing country like Nigeria is poorly treated traumatic wound. Many of the patients will benefit from wound debridement with or without STSG or flap cover. They will therefore need specialist service. The outcome of treatment is usually satisfactory.

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