

Chronic Leg Ulcer Presenting Through Emergency Surgical Unit

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Abstract

Objective: This study aims at evaluating chronic leg ulcers presenting via the emergency unit in a Nigerian University Teaching Hospital.

Design: Prospective Clinical based Study.

Setting: Obafemi Awolowo University Teaching Hospital Complex Ile-Ife, Nigeria

Subjects: All Chronic leg ulcer patients admitted through the emergency unit at the Obafemi Awolowo University Teaching Hospital Complex Ile-Ife, Nigeria between January 2000 and December 2004.

Outcome Measures: The morbidity and mortality of emergency chronic leg ulcer.

Results: A total of 586 patients with chronic leg ulcers were treated in the hospital during the study period. Of these 30 [5.1%] (male-19, Female-11) were admitted through emergency department. The mean duration of ulceration and hospitalization were 38.2+/-61.8 (S D) months and 64.2+/-61.5 (S D) days respectively. Some of the underlying uncommon associated factors include leprosy (1), obesity (3), guinea worm (1), malignancy (5), and tibia exostosis (1). The microorganisms cultured on admission were *Pseudomonas* spp. 10 (23.8%), *Staphylococcus aureus* 11 (26.2%), *Staphylococcus albus* 1 (2.4%), *Klebsiella* spp. 6 (14.3%), *Escherichia coli* 4 (9.5%), and *Proteus mirabilis* 5 (11.9%). There was no growth in 5, (11.9%). Three patients [10.0%] were admitted with maggots in their wounds. Twenty-five patients (83.3%) had surgery ranging from excision biopsy to amputations. Seven patients died representing 23.3% of all admitted emergency chronic leg ulcer mortality.

Conclusion: Emergency presentation of chronic leg ulcer is unique with uncommon underline factors, microbiology and mortality. To reduce high mortality, uncommon underlying factors must be recognized early and treated.

INTRODUCTION

Chronic leg ulcer (CLU) is a common cause of morbidity and their prevalence in the community ranges from 1.9% to 13.1_(1,2,3). Chronic venous insufficiency (CVI) occurs in a relatively large proportion of the population and is associated with significant morbidity, high cost of healthcare, loss of productivity and reduced quality of life. Lower extremity ulcers related to CVI have been estimated to affect 0.2-1% of the population in developed countries.₍₄₎ The prevalence of venous ulcers in the US is estimated at 500,000-600,000, and increases with age. Estimates of the annual incidence of leg ulcer in the UK and Switzerland are 3.5 and 0.2 per 1000 individuals, respectively. Treatment of venous ulcers can be expensive, leading to a large economic

burden on health services in many countries. The annual cost of CVI is estimated to be more than 1 billion US dollars in the US and between pound 400-600 million in the UK. ₍₄₎

The incidence of ulceration is rising as a result of the ageing population and increased risk factors for atherosclerotic occlusion such as smoking, obesity and diabetes. Ulcers can be defined as wounds with a 'full thickness depth' and a 'slow healing tendency'. ₍₄₎ Patients who develop chronic venous ulcer before their 50th birthday appear to represent a distinct group in terms of aetiology, natural history and prognosis. The importance of thrombo-embolic prophylaxis in the prevention, and the detection and correction of superficial venous reflux in the treatment, of such ulcers is

important.⁽³⁾ Quantitatively, wounds harboring bacteria that exceed 105 colony-forming units per gram are considered infected wounds. ⁽⁶⁾ In general, the slow healing tendency of CLU is not simply explained by depth and size, but caused by an underlying pathogenetic factor that needs to be removed to induce healing. The main causes are venous valve insufficiency, lower extremity arterial disease and diabetes. Less frequent conditions are infection, vasculitis, skin malignancies and ulcerating skin diseases such as pyoderma gangrenosum. But even rarer conditions exist, such as the recently discovered combination of vasculitis and hypercoagulability. For a proper treatment of patients with leg ulcers, it is important to be aware of the large differential diagnosis of leg ulceration.⁽⁴⁾

Teledermatology may offers great potential for the future in chronic wound care. By reducing the need to travel long distances to the hospital or to consult a physician with expertise in wound care, wound teleconsultation might lower health care costs and improve the quality of life for patients with chronic wounds, while still maintaining a high quality of wound care.⁽⁷⁾

Current treatments for CLU include surgery, sclerotherapy, compressive therapy (conventional therapy) and adjuvant pharmacotherapy. . In view of the chronicity and indolence of these ulcers various measures, orthodox and non-orthodox are often sought for cure in Nigeria as in most other black African country. Some patients, however present in the emergency unit with complications. This study evaluates the pattern of presentation of chronic leg ulcers (CLU) in the emergency room, the uncommon associated factors, management and outcome.

PATIENTS AND METHODS

All patients with chronic leg ulcer (CLU) who presented at the Obafemi Awolowo University Teaching Hospital Complex, (OAUTHC) Ile-Ife, Nigeria between January 2000 and December 2004 were recruited into the study. The CLU patients admitted and managed were grouped as emergency (EMCLU) and non-emergency (NECLU) patients. The emergency group was made up of those admitted through the emergency surgical unit while the Non- emergency group comprised of those admitted through the surgical and medical out- patients' clinics. Informed consent was obtained from the patient and a semi-structured questionnaire was administered to each patient. Information on patients' demographics, clinical presentation, duration of ulceration, month of presentation, duration of hospitalization,

underlining factors, associated medical and surgical conditions, microbiology, treatment modalities, mortality and follow-up period were documented. Data were analyzed using SPSS version 11.0 computer soft ware.

RESULTS

A total of 586 CLU patients were treated and 30 (5.1%) were EMCLU patients. There are nineteen (63.3%) males and eleven females (36.7%) with a M: F of 1.7:1. Figure 1 shows the age distribution, and figure 2 shows the seasonality of NECLU and EMCLU patients respectively.

Figure 1

Figure 1: Age Distribution Of NECLU And EMCLU Patients

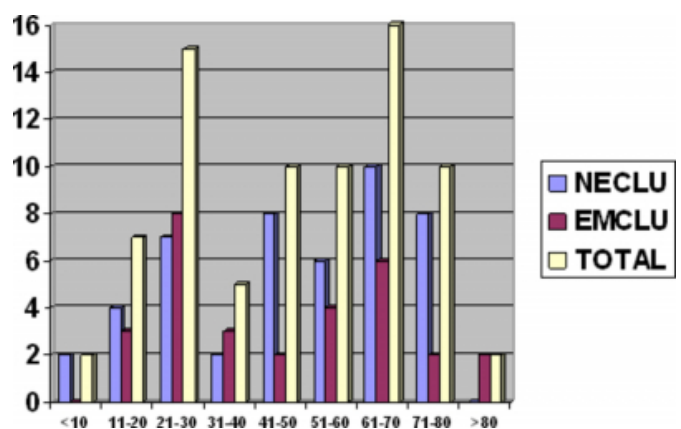


Figure 2

Figure 2: Seasonal Hospital Presentation Of NECLU And EMCLU Patients

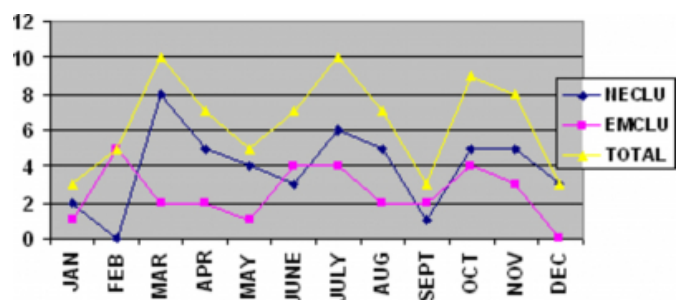
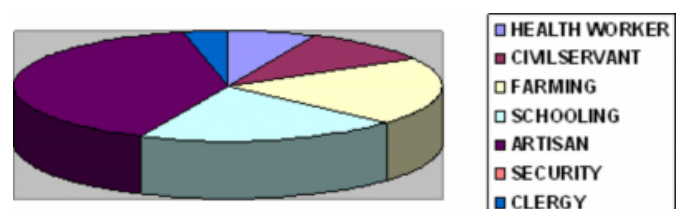


Figure 3

Figure 3: Occupation Distribution Of EMCLU Patients



The peak age incidence of EMCLU was 21 – 30 year, and

means age 46.8 +/- 22.6 years (S D). The reasons for hospital presentation include complications of CLU such as bleeding (4), severe cellulites (4) and auto-amputation of toes (1). The duration of leg ulceration among EMCLU patients ranged from 3-264 months with a mean of 38.2 months +/-61.8 (S D). The average wound surface area was 61.5cm² (range: 4-300cm²) and the mean hospital stay was 64.2 +/-61.5days(S D). Reasons for multiple hospitalizations were related to the chronic leg ulcer among 25 (83.3%) EMCLU patients. Self management was a problem in 5(16.7%) patients. Tables 1 to 3 shows the Locations, Types of ulcers and Factors associated with delay wound healing respectively. Twenty four (80.0%) patients, 5 [16.7%] and 1 (3.3%) were admitted with single, double and triple ulcers respectively. The mean packed cell volume (PCV) and Erythrocyte sedimentation rate (ESR) using Westergreen method were 30.5%+/-9.4 and 92.5+/-13.2mm/hr respectively.

Figure 4

Table 1: Location of 37 Ulcers in EMCLU patients.

SITE		
Malleolus	Medial (%)	Lateral (%)
Above	20.0(50.1%)	9.0(24.3%)
Directly overlying	5.0(13.5%)	3.0(8.1%)
SIDE	Right (%)	Left (%)
Single Leg	22.0 (59.5%)	13.0(35.1%)
Both Legs	10 (2.7%)	1.0 (2.7%)

Figure 5

Table 2: Types of Ulcers among the EMCLU patients.

TYPE OF ULCER	NO. OF PATIENTS (%)
Traumatic	20.0 (54.1%)
Venous	9.0 (24.3%)
Arterial	2.0 (5.4%)
Malignant (primary)	2.0 (5.4%)
Tropical	2.0 (5.4%)
Marjolin	1.0 (2.7%)
Neuropathy	1.0 (2.7%)

Figure 6

Table 3: Factors delaying wound healing in EMCLU patients.

FACTORS	and	No of Patients (%)
INFECTION	14.0(46.7%)	Trauma 14.0(46.7%)
Hansen disease	1	Penetrating 6
Chronic Osteomyelitis	3	Burns 2
Guinea worm	1	Old Scar 6
Tuberculosis	1	NUTRITION 6.0(20.0%)
Non specific	8	Protein Energy Malnutrition 6
VASCULAR 10.0(33.3%)		NEOPLASM 5.0(16.7%)
Haemoglobinopathy	4	Squamous cell carcinoma 3
Atherosclerosis	2	Multiple myeloma 1
Varicose Vein	4	Tibia exostosis 1
METABOLIC 12.0(40.0%)		
Diabetes		
Juvenile	1	
Adult onset (Type 11)	5	
Obesity	3	
Steroid/Oral contraceptive	3	

The Plain radiographs revealed Tibia and Fibular periosteitis (16), Osteoma (1), Chronic tibia osteomyelitis (3), Tibia exostosis (1) and pathological tibia fractures (2).The microorganisms cultured on admission were Pseudomonas spp. 10 (23.8%), Staphylococcus aureus 11(26.2%), Staphylococcus albus 1 (2.4%), Klebsiella spp. 6 (14.3%), Escherichia coli 4 (9.5%), Proteus mirabilis 5(11.9%). There was no growth in 5 (11.9%). Three [10.0%] patients were admitted with maggots in their wounds.

The surgical operations performed were Incision and drainage (6), Crocket's varicoclectomy (3), partial thickness skin grafting (13), Wound debridement (16), and biopsy (30). Three above knee amputations were performed in diabetic leg ulcer (1) and advanced malignant ulcer (2). The complications of EMCLU surgeries are recurrent ulceration, (4), skin graft failure (7), recurrent exostosis (1), stitch abscess (1), anaemia (2), superficial wound infection (2); mortality (1); unstable scar (1) and Depressive psychosis (2).

Sixteen (53.3%) patients received homologous blood transfusion and ten had multiple transfusions. Seven (23.3%) EMCLU patients died. The causes of death were anaemic heart failure (2), Gram-negative septicaemia (3) and multiple organ failure (2). Twenty-two EMCLU patients (95.7%) were followed-up for between 1 to 24months with a mean of 6+/- 5.1months.

DISCUSSION

Leg ulcers are often the cause of a long hospital admission [8]. None of the EMCLU patients in this study was under 10 years. Leg ulcers of juvenile onset are uncommon [9]. The EMCLU patient's peak age incidence falls within the third decade of life. Increased activity and repeated trauma may explain the delay in wound healing and complication in this group of patients. However, delay in wound healing in the more elderly ones especially in the 9th decade of life could be attributed to self-neglect and "empty-net" home syndrome.

The main reasons for hospital presentation are associated complications of the ulcers and treatment (10) and associated medical conditions. Associated medical conditions in EMCLU patients were Asthma, intermittent porphyria from Cotrimoxazole, diabetic neuropathy, Septicemia, Hypertensive heart disease, Aplastic anemia linked to chloramphenicol, Sickle cell disease bone pain crisis, and chronic back pain. The associated surgical factors include avascular necrosis of the femur, post-burn wound contracture, Priapism, bilateral cataract, Tibia osteochondroma, Pelvic abscess, and Varicose vein.

Long-standing CLU as found among the EMCLU patients is the most common predisposing factor to malignant leg ulcer [11] and trauma is an important risk factor in CLU patients. Among EMCLU patients, trauma was mainly caused by bad fitting shoes, football or knocking the legs against furniture or sharp pointed objects (bamboo, cutlass), road traffic injuries and scratching of insect bites. There is no bias for social class [12]. EMCLU Patients may be having non-adaptive mechanisms (13) thus explaining their emergency presentation. This is in agreement with previous report by Lorimer et al. [14]

EMCLU patients presented and were admitted in all the months of the year except December probably because of social and emotional attachment to the month. The bony involvement of EMCLU includes osteitis, osteoma, periostitis, chronic osteomyelitis and pathological fractures. Karasick et al, [15] has described two types of periosteal response to chronic leg ulcers and both were seen in EMCLU patients with sickle cell disease and Diabetics.

Chronic leg ulcers are contaminated or colonized with bacteria that seldom affect healing of the ulcer. Signs of clinical infection appear in only a minority of chronic ulcers [16]. Ulcers with growth of staphylococcus aureus or

hemolytic streptococci healed significantly more slowly than those without [17]. Growth of staphylococcus aureus or hemolytic streptococci was found to be associated with delay wound healing in EMCLU's patients.

Surgery is not the treatment of first choice for the EMCLU patients and surgical management was individualized. All the patients had surgical biopsy for histological analysis, microscopy, culture and antibiotic sensitivity. The advanced malignant leg ulcer patients had above knee amputation, prosthesis fitted and rehabilitation. Sixteen EMCLU patients had wound debridement; this reduces the prevalence of chronic inflammatory by-products and converts a chronic wound into acute one with adequate granulation tissues bed for skin grafting. Those who had maggots in their wound were biologically debrided. Maggot therapy is effective and efficient in debriding non-healing foot and leg ulcers [18]. Partial skin grafting was performed for patients admitted with large and recalcitrant ulcers resulting in 46.5% complete healing of wound. Some patients had multiple skin grafting due to graft failure from infection and repeated trauma while a few others had varicose vein stripping surgery without recurrence.

The reasons for short follow up are job transfer, long distance of domiciliary town, completed University education with relocation, and refusal of amputation. These reasons were similar to those described by Pieper and DiNardo's in an earlier study [19].

The EMCLU patients have a unique prevalence of blood transfusion. The high mortality of the EMCLU patients is related to the uncommon underlying factors such as anaemic heart failure), Gram-negative septicaemia and multiple organ failure.

CONCLUSION

Leg ulceration remains a recurring challenging condition in the Twenty first century within the black African nations where advances in CLU care are not readily available. The seasonal presentation, morbidity and mortality of the EMCLU patients are unique. The uncommon factors delaying wound healing and increasing complications should be identified early and treated to reduce the high mortality of the EMCLU patients.

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