

## The epidemiology and classification of chronic cutaneous ulcers in Tertiary Health Institutions in Makurdi, Nigeria

Priscilla Denen Akaa<sup>1</sup>, Enye Agada<sup>2</sup>, Chukwukadibia N. Ahachi<sup>1</sup>, Peter Inunduh<sup>2</sup>, Barnabas A. Eke<sup>1</sup>

### Abstract

**Background:** Chronic ulcers usually involve the lower limbs and have a negative impact on life in terms of lowered body image, increased healthcare costs and complication. The study was done to determine the epidemiology, aetiology of ulcers and their classification.

**Methods:** This was a five year retrospective study of all patients with chronic ulcers consecutively seen and managed in the plastic, general surgical clinics and wards that were analyzed at the two tertiary institutions in Benue State comprising Federal Medical Centre and Benue State University Teaching Hospital Makurdi.

**Results:** One hundred and forty patients with cutaneous ulcers were studied. The age group 41-50 years was mostly affected with chronic ulcers (30%). Both males and females were

equally affected. The lower limb was the most frequently affected anatomical site for ulcers (90%). The commonest aetiology of the chronic ulcers was diabetic foot disease (62.9%).

**Conclusion:**

Cutaneous ulcers affect persons of all age groups and sexes with diabetic foot disease being the commonest cause. Adequate care for persons with diabetes mellitus may limit the burden of cutaneous ulcers.

**Key words:** Diabetes, epidemiology, Cutaneous Ulcers, Leg Ulcers

Highland Med Res J 2017;17(2):104-107

### Introduction

An Ulcer is a break in continuity of surface epithelium<sup>1</sup>. In cutaneous ulcers, the defects may involve the epidermis with the dermis and sometimes subcutaneous fat. Ulcers can occur on any part of the body but are more common in the legs due to reduced vascularity and lack of muscle bulk in some areas of the leg.

Chronic leg ulcers are therefore defects in the skin below the knee lasting more than six weeks and failing to heal beyond three months<sup>2</sup>. Chronic leg ulcers are an important cause of morbidity and sometimes mortality in adults. They affect 1% of adult population and 3.6% of adults above 65 years with a mortality approaching 2.5%. In the UK, 68% of all patients with chronic ulceration are 65 years and above<sup>3</sup>. Prevalence of chronic ulcers in a study done in china was 1.5% to 20.3% and of the 489 patients studied, 63% had their ulcers on the lower limbs<sup>4</sup>.

A United State survey of skin ulcers in 19 states showed a prevalence of 6.8% of pressure ulcers<sup>5</sup>. Venous ulcers have been found to occur in 1% of United State population<sup>6</sup>. Tuberculous ulcers are caused by

mycobacterium ulcerans (Buruli ulcers) or mycobacterium tuberculosis. The Buruli ulcers usually occur from contact with environmental reservoirs and vectors and isolated detection rate of 21.5/100.000 have been reported<sup>7,8</sup>. Tuberculous ulcers occur predominantly from pulmonary disease and the prevalence of 0.1% has been reported in some dermatological clinics<sup>9</sup>. Women are more affected compared to men<sup>6,10</sup>. The hall mark of ulceration is pain, malodorous discharge, repeated wound break down and failure to heal. This results into social and psychological distress as a result of negative body image, reduced mobilization, increased hospital expenses and poor quality of life<sup>2,11</sup>.

Chronic ulcers are important cause of morbidity and mortality all over the world. The etiology is varied and correct diagnosis is important for successful treatment. Aetiology of ulceration include venous disease, arterial insufficiency, metabolic disorders like diabetes, haematological diseases like sickle cell anemia, infective causes, trauma, malignancy and neuropathy<sup>2,4,11</sup>. Other pathologies associated with increased risk of development of ulcers particularly on the foot are malnutrition, chronic kidney disease, hypertension and myocardial Ischemia. The best management outcomes depends on accurate diagnosis of the etiology of the ulcer, treating the underlying cause as well as symptomatic management and care of the ulcer itself<sup>8</sup>.

In the United States about US \$ 25 billion is spent on the management of chronic wounds and it's thought to be due to increasing population of the elderly, increasing

<sup>1</sup>Department of Surgery, Benue State University Teaching Hospital, Makurdi <sup>2</sup> Department of Surgery, Federal Medical Centre, Makurdi

All correspondences to:  
Dr. Priscilla Denen Akaa  
E-mail: Priscillaswem@yahoo.com

numbers of patients with diabetes and obesity all over the world and general increase in the cost of health care<sup>12</sup>.

The location of the ulcer and symptoms and signs determine the type of ulcer<sup>2</sup>. Venous ulcers are typically located in the gaiter area (between the malleolar and calf muscles)<sup>1</sup>

Arterial ulcers usually are located on the toes, dorsum of the foot, and shin<sup>2</sup> are pale, very painful and peripheral pulse may be diminished or absent. A positive history of diabetes, trauma, sickle cell disease and others will point towards the aetiology of the ulcer.

There was need to establish a baseline classification of the common causes of ulcers, their epidemiology and management in Benue state, Nigeria.

### Materials and Methods

Federal Medical Centre and Benue State University Teaching Hospital Makurdi are tertiary health institutions located in Makurdi, the capital of Benue State in north central Nigeria. They serve as referral centers for patients in and around the state and neighboring states.

This was a retrospective study of all patients seen in the plastic, general surgical clinics or admitted on the surgical wards with chronic ulcers from March 2012 to February 2017. Patient records were retrieved and information which included age, sex, anatomical location of ulcer, Histopathological diagnoses and any other investigation that assisted in the diagnoses were also retrieved. Where necessary, ulcers were biopsied and sent for various investigations including histology and microbiological analysis, so data was collected from histopathology laboratories also.

The information was coded and entered into the computer. Data was presented as frequency with proportions.

### Results

The files of one hundred and forty patients seen and treated with chronic cutaneous ulcers from March 2012 to February 2017 were analyzed. There were sixty (42.9%) males and eighty (57.1%) females giving a male female ratio of 1:1.3. The age group 41 – 50 years was the most affected and constituted forty two (30%) patients (Table 1).

The commonest aetiology for the cutaneous ulcers was diabetic foot disease, accounting for eighty eight (62.9%) cases. This was followed by traumatic and infective ulcers in thirteen (9.3%) patients each (Table 1). The lower limbs were the commonest anatomic site for occurrence of ulcers and was seen in one hundred and twenty six (90%) patients

Surgical modalities of management were skin grafting done in forty (28.6%) patients, flap cover in five (3.6%) and amputations for those with gangrene of the limbs or malignant bony metastasis in sixteen (11.4%) patients.

Table 1: Socio-demographic characteristics, aetiology and anatomical location of cutaneous ulcers in Makurdi, Nigeria

Variable	Frequency	%
Female sex	80	57.1
Age group (years)		
0-10	1	0.7
11-20	3	2.1
21-30	14	10
31-40	14	10
41-50	42	30
51-60	35	25
61 and above	30	21.4
Aetiology		
Diabetic	88	62.9
Traumatic	13	9.3
Infective	13	9.3
Malignant	6	4.3
Pressure	5	3.6
Arterial	4	2.9
Sickle cell	4	2.9
Venous	3	2.1
Post burn	3	2.1
Tuberculous	1	0.7
Anatomical location	Frequency	%
Lower limbs	126	90
Trunk (anterior)	3	2.1
Trunk (posterior)	5	3.6
Upper limbs	2	1.4
Head/neck	4	2.9

Thirty eight (43.2%) of the patients with diabetic foot ulcers refused skin grafting (Table 2). The standard care in the two institutions for wound cover is skin grafting of traumatic ulcers greater than 3cm in diameter. Standard care for patients with traumatic spinal cord injuries in form of use of pressure relief mattresses, cushions, wheel chairs and two hourly bed tuning is the norm in the two hospitals. There was multidisciplinary care with the physicians in the medical management of diabetic patients most of whom had hypertension and the pulmonary tuberculosis patient who also had HIV/AIDS.

Table 2: Surgical modalities of treatment of cutaneous ulcers and their outcomes in Makurdi, Nigeria

Type of ulcer	Skin grafting N, (%)	Amputation N, (%)	Flap cover N, (%)	Discharged against medical advise N, (%)	Healing by Spontaneous epithelialization N, (%)	Mortality N, (%)
Diabetic	8 (5.7)	14 (10.0)	-	12 (8.6)	38 (27.1)	16 (11.5)
Traumatic	9 (6.4)	-	3 (2.2)	-	-	1 (0.7)
Infective	9 (6.4)	-	-	-	3 (2.2)	1 (0.7)
Malignant						
Marjolins	2 (1.4)	2 (1.4)	-	-	-	-
Melanoma	2 (1.4)	-	-	-	-	-
Pressure	-	-	2 (1.4)	-	1 (0.7)	2 (1.4)
Arterial	-	-	-	2 (1.4)	2 (1.4)	-
Sickle cell anemia	4 (2.9)	-	-	-	-	-
Venous	3 (2.2)	-	-	-	-	-
Post burn	3 (2.2)	-	-	-	-	-
Tuberculous	-	-	-	-	1 (0.7)	-

### Discussion

Our study has shown that chronic cutaneous ulcers at Federal Medical Centre and Benue State University Teaching Hospital Makurdi occur predominantly in the lower limbs with the commonest aetiology being diabetic foot disease. Other authors have also documented the lower limbs as the commonest anatomic site for chronic wounds/ulcers as seen in the study by Fu and colleagues<sup>4</sup> in China and Rahman and associates<sup>11</sup> in Ilorin, Nigeria.

The aetiology of chronic cutaneous ulcers varies in different locations and our study has demonstrated that diabetic foot disease was the commonest cause for ulceration. The incidence of diabetes mellitus is increasing worldwide<sup>13,14,15,16</sup>. This is associated with an increase in the complications which include diabetic foot ulcers, nephropathy, retinopathy, neuropathy, ischaemic heart disease, peripheral vascular disease, stroke syndrome and so on. These complications, with increased healthcare costs, poor quality of life that may result in amputation and sometimes mortality makes diabetes an important public health problem<sup>16,17</sup>. Good glycaemic control with anti-diabetic drugs, appropriate diet and avoidance of risk factors by a positive social life style of stopping cigarette smoking and alcohol consumption will make diabetics not prone to complications. These in addition to foot care, and timely attendance of hospitals when patients have ulcers will give rise to appropriate interventions and healing of ulcers to reduce their morbidity and mortality. Rahman<sup>11</sup> found in Ilorin that the aetiology for chronic ulceration was traumatic wounds seen in 56.7% while Fu<sup>4</sup> found that a combination of trauma and infection caused chronic ulcers in 67.48% of his study population. Both Rahman<sup>11</sup> and Fu<sup>4</sup> had diabetes as an aetiology in 16.7%

and 4.91% respectively. In our study, trauma and infection were the second most common aetiology of chronic ulceration. In these tertiary centres at Makurdi, skin grafting was being proactively done on post traumatic wounds with large surface area and diameter greater than 3cm, so the wounds do not progress to chronic ulcers. This could be the reason chronic traumatic ulcers were not predominant. Many of the patients that were admitted with traumatic and infective ulcers did well after skin grafting.

The malignant ulcers seen in our study comprised mainly marjolins ulcers, four (66.6%) cases. Traumatic pressure ulcers were seen following spinal cord injuries. The hospitals have pressure relief water and air mattresses in their facilities and most of the patients did well with their use. This is the current advance to prevent development of bed sores in spinal cord injury<sup>18</sup>. Unfortunately most pressure ulcers patients were admitted with them having been mismanaged in peripheral hospitals, an index of poor nursing and medical care in those hospitals. Sickle cell ulcers managed in our study all did well after skin grafting also. Arterial and venous ulcers were not seen commonly in our study and Rahman<sup>11</sup> also documented a low prevalence of 3.3% for both vascular and malignant ulcers at Ilorin. Vascular ulcers are not common in our environment. We had few post burn ulcers that did well after skin grafting.

In our study, we saw one case of tuberculous ulcer whose primary was in the lungs with cervical lymphadenopathy and breakdown of the lymph nodes in the left posterior triangle of the neck forming a typical ulcer with undermined edges. The patient was HIV positive and so was being co-managed by the infectious diseases physician. Cutaneous tuberculosis has been

seen in countries with high disease burden of pulmonary tuberculosis and with the HIV pandemic and emergence of multidrug resistant strains of the mycobacterium, the problem requires aggressive proactive detection and treatment of new and old cases<sup>9,19,20,21</sup>.

### Conclusion

Chronic cutaneous ulcers good outcome is dependent on correct diagnosis of aetiology, institution of appropriate treatment modality and wound cover usually skin grafting. There is need to educate the citizens of Benue State on the importance of early diagnosis of diabetes and institution of control in terms of diet, anti-diabetic chemotherapy and foot care to prevent the problem of ulceration.

### References

1. Mork F. Cutaneous ulcer, sinuses and fistulae. In: Badoe AE, Archanpong QE, da Rocha – Afodu TJ (eds). Principles and practice of surgery including pathology in the tropics. (3<sup>rd</sup> Ed.) Ghana Publishing Corporation, Tema, Ghana. 2000:65–76.
2. Agale VS. Chronic leg Ulcers: Epidemiology, aetiopathogenesis, and management. *Ulcers*. 2013 Article ID 413604, 9 pages. Doi:10.1155/2013/413604 www.hindawi.com/journal/ulcers/2013/413604/ (Accessed on 18<sup>th</sup> March 2017)
3. Posnett J, Franks PJ. The burden of chronic wounds in the UK. *Nurs Times*, 2008;104:44–45.
4. Fu X, Sheng Z, Cherry WG, Li Q. epidemiological study of chronic dermal ulcers in China. *Wound Repair Regen* 1998;6:21-27.
5. Meehan M, O'Hara L, Morrison YM. Report on the prevalence of skin ulcers in a home health agency population. *Adv Wound Care* 1999;12:458-467.
6. Collins L, Seraj S. Diagnosis and treatment of venous ulcers. *Am Fam Physician*. 2010; 81:989-996.
7. Røtgen K, Pluschke G. Mycobacterium ulcerans disease (Buruli ulcer): potential reservoirs and vectors. *Curr Clin Microbiol Rep*. 2015;2:35-43.
8. Debacker M, Aguiar J, Steunou C et al, Mycobacterium ulcerans disease (Buruli ulcer) in rural hospital, Southern Benin, 1997-2001. *Emerg Infect Dis*. 2004;10:1391-1398.
9. Kumar B, Muralidhar S. Cutaneous tuberculosis: A twenty – year prospective study. *Int J Tuberc Lung Dis* 1999;3:494–500.
10. Adeyi A, Muzerengi S, Gupta I. Leg ulcers in older people: A review of management. *BJMP*. 2009;2:21-28.
11. Rahman AG, Adigun AI, Fadeyi A. epidemiology, etiology and treatment of chronic leg ulcer: Experience with sixty patients. *Ann Afr Med*, 2010;9:1–4.
12. Sen KC, Longaker TM. Human skin wounds: A major and snowballing threat to public Health and the Economy. *Wound Repair Regen*. 2009;17:763-771.
13. Nwafor A, Owhoji A. Prevalence of diabetes mellitus among Nigerians in Port Harcourt correlates with socio-economic status. *J Appl Sci Environ Mgt*. 2001;5:75-77.
14. Oputa NR, Chinenye S. diabetes in Nigeria – A translational medicine approach. *African Journal of Diabetes Medicine*. 2015;23:7-10.
15. Ejike CCEC, Uka KN, Nwachukwu OS. Diabetes and pre-diabetes in adult Nigerians: prevalence, and correlations of blood glucose concentrations with measures of obesity. *Afr J Biochem Res*. 2015;9:55-60.
16. Forouhi GN, Wareham JN. Epidemiology of diabetes. *Medicine (Abingdon)*. 2014;42:698-702.
17. McInnes DA. Diabetic foot disease in the United Kingdom: about time to put feet first. *Journal of Foot and Ankle Research*. 2012;5:26.
18. Zakrasek CE, Creasey G, Crew DJ. Pressure ulcers in people with spinal cord injury in developing nations. *Spinal Cord*. 2015;53:7-13.
19. Osifo OD, Oludiran OO. Cutaneous tuberculosis in Nigerian rural communities: A case report. *Journal of Applied and Basic Science* 2006; 4:104–107.
20. Chong LY, Lo KK. Cutaneous tuberculosis in Hong Kong: A 10 year retrospective study. *Int J Dermatol* 1995;34:26–29.
21. Singal A, Sonthalia S. Cutaneous tuberculosis in Children: The Indian perspective. *Indian J Dermatol Venereol Leprol* 2010;76:494-503.