Chronic leg ulcers in Irrua

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Abstract

Background: Chronic leg ulcers (CLU) are a common disease globally, that involves the lower leg with the presentation of a non-healing wound above six weeks duration. Chronic leg ulcers have been documented since antiquities. They present with heavy economic and social burden to the individual, family and the nation as a whole reducing productivity and social interactions. Breaking this cycle of chronicity and achieving healing is the target of patient care. Material and Methods: This is a retrospective study of patients who presented to the Plastic Surgery Division of the Department of Surgery, Irrua Specialist Teaching Hospital between January 2021 and December 2022. The data was collected from the Outpatient Clinic, Ward and Operation records during the period under review. The data including the biodata, duration of the ulcer, size of the ulcer, aetiology and treatment modality were retrieved from the records. This information was analyzed using the SPSS version 23. Categorical data were analyzed using the chi-square presented in frequencies and percentages while the nominal data were analyzed using the t-test. the statistical significance is measured at a 95% coefficient or P-level less than 0.05. RESULTS: 60 patients presented to the Plastic Surgery Division of the Department of Surgery during the period under review. 57 of them have complete documentation. The male-to-female ratio is 1:1.1, while the age ranges from 20 to 88 years (mean 54.58 and SD 18.125). Most patients (45.7%) presented in the sixth and seventh decade of life. The commonest aetiology is a venous imcompetency (38.6%) followed by diabetes mellitus (22.8%). 49 (86%) of the patients had either a secondary or tertiary level of education. Traders and farmers are the two most common occupations (52.6%) of our patients. Left-sided ulcer is the most common (49.1%), and the modalities of treatment were sterile dressing (18), compression bandaging (26) and skin grafting (13). Compression bandaging was used more in venous, sickle cell and post-traumatic ulcers. There is a significant correlation between the duration and the size of the ulcers with a 2-tailed correlation of 0.006. CONCLUSION: More females presented with chronic leg ulcers which may be a result of cosmetic awareness, hormonal and pregnancy interplay. The level of education increases presentation at the hospital, so the more educated the community, the more the likelihood of presentation for care.

***Keywords**: chronic leg ulcers, epidemiology, aetiology, treatment modality.*

Introduction

Chronic leg ulcer (CLU) is a common disease of the lower limb with its attendant socio-economic consequences. An ulcer is a loss in the continuity of an epithelial lining. CLUs are ulcers that present below the knee: ulcers of both leg and foot. The disease has various etiological factors that vary from one part of the world to the other. It has been established that the commonest cause of chronic leg ulcers in the temperate region of the world is vascular in origin (peripheral arterial disease, varicose veins, and lymphoedema). While in the tropics, it is post-traumatic, poorly managed diabetic foot ulcers, infections and venous ulcers have been reported as the commonest causes. These causes varied from one area to another in presentation and chronicity[1-5]

The modality of treatment and outcomes also varies due to the availability of the personnel, materials, facilities and resources. Since the patients have to provide resources for their healthcare completely out-of-pocket, the presentation of the patients to the healthcare facilities

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is usually late. The chronicity of these ulcers in our region of the world is due to the interplay of poor healthcare systems, ignorance and poverty. Despite these factors, there is a need to know the present epidemiology, and aetiology and possibly know the outcome of the common treatment modalities, due to the socio-economic dynamics of our society. Technological advancement has turned the whole world into a global village so that what used to be unavailable, inaccessible and unaffordable in rural and suburban areas is now possible with a snap of the fingers. Encouraging patients to present early may reduce the disease burden, hence reducing the cost of treatment, less in the out of work days and an eventual increase in productivity.

Materials and Methods

This is a retrospective study of all clients that presented with CLU to the Plastic Surgery Division of the Department of Surgery, Irrua Specialist Teaching Hospital (ISTH), Irrua, Edo State over 2 years (from January 2021 to December 2022). ISTH is a tertiary healthcare and teaching hospital for Ambrose Alli University, College of Medicine. It is a 450-bed capacity hospital. It serves approximately about 5 million people covering the Edo Central, Edo North Senatorial Area and the adjoining areas of the Ondo, Ekiti and Kogi State.

All the patients that presented to the Plastic Surgery outpatient clinics, admitted into the surgical wards through the emergency room were included in the study except those whose documentation was not adequate for the study. The sociodemographic data (including age, sex, occupation, level of education etc.), clinical characteristics (like duration, aetiology, the side affected (or both legs), the size of the ulcer), the treatment modality (non-operative and operative modalities), and the outcome (post-operative complications, and mortality) was obtained from the case notes of the clients from the health records department, the operation records in the theatre and the ward documentation.

Exclusion criteria include patients who presented with acute wounds and have stayed beyond 6 weeks on admission or follow-up clinics and patients who presented with ulcers of the leg that healed in less than 6 weeks. The data were obtained using a designed questionnaire. These collected data were analyzed using the Statistical Package for Social Sciences version 26 (SPSS 26) from International Business Machines Inc. Illinois USA (IBM Inc). Data were expressed in the form of proportions and frequency tables for categorical variables. Means and standard deviation were used to summarize continuous variables. The test statistics used include the student's test and the Chi-squared test. The student's t-test was used to test for differences between quantitative variables and the Chi-squared test was used to test associations and comparisons of proportions. Significance was taken as a p-value less than 0.05.

Results

60 patients presented to the Plastic Surgery Division of the Department of Surgery with CLU during the period of study. Three of these patients had no complete documentation necessary for the study and were exempted from the data analyses. There were more females than males, with a male-to-female ratio of 1:1.1 (as shown in Fig. 1).The age ranges from 20 to 88 years (mean 54.58 and SD 18.125). the youngest patient was a sickle-cell disease patient with bilateral chronic leg ulcers, while the oldest presented with a recurrent venous left leg ulcer. Most patients (45.7%) presented in the sixth and seventh decade of life as represented in Table 1. The commonest aetiology is venous incompetency/insufficiency (38.6%) followed by diabetes mellitus (22.8%); this is followed closely by trauma. This is shown in the cross tabulation of the age and aetiology in Table 2.

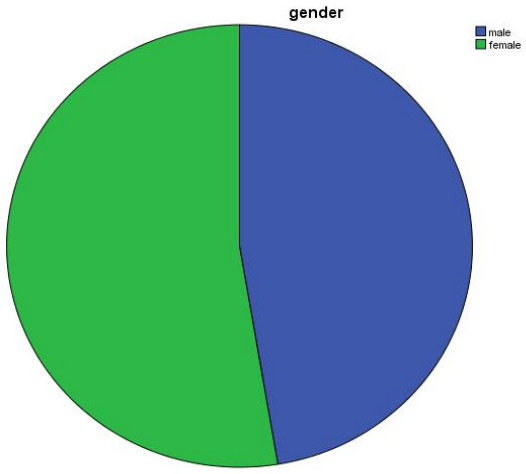

Fig.1: Gender distribution of the patients

The diabetic leg and foot ulcers did not present until the 5th decade of life and also peripheral arterial disease ulcers presented after the 7th decade. Peripheral arterial disease is mainly a disease of the elderly. Post-traumatic ulcers were the third most common.

Table 1: Age of the patients

	Age				
		Frequency	Per cent	Valid Percent	Cumulative Percent
Valid	20-29 years	8	14.0	14.0	14.0
	30-39 years	5	8.8	8.8	22.8
	40-49 years	8	14.0	14.0	36.8
	50-59 years	11	19.3	19.3	56.1
	60-69 years	15	26.3	26.3	82.5
	70-79 years	5	8.8	8.8	91.2
	80-89 years	5	8.8	8.8	100.0
	Total	57	100.0	100.0	

Table 2: Cross tabulation of age and aetiology

Age * Aetiology Cross tabulation

Count									
		Aetiology							
		Venous	Peripheral arterial disease	Post-traumatic	Sickle cell	Diabetes	Post-infective	Others	Total
age	20-29 years	3	0	1	4	0	0	0	8
	30-39 years	2	0	1	2	0	0	0	5
	40-49 years	3	0	4	0	1	0	0	8
	50-59 years	4	0	2	0	4	0	1	11
	60-69 years	5	0	2	0	7	1	0	15
	70-79 years	3	1	0	0	0	1	0	5
	80-89 years	2	1	1	0	1	0	0	5
Total	22	2	11	6	13	2	1	57	

Table 3: Size of the ulcer

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	less than 100cm²	20	35.1	35.1	35.1
	100cm² - 200cm²	22	38.6	38.6	73.7
	greater than 200cm²	15	26.3	26.3	100.0
	Total	57	100.0	100.0	

73.7% of the ulcers were mainly less than 200m² as in Table 3. There were 68 ulcers in the 57 patients with 11 patients presenting with bilateral ulcers. There were more ulcers on the left than on the right (39:28) and the left-sided ulcers were more than the left across all the aetiology as shown in Tables 4 and 5.

Table 4: Side affected by the ulcer

	Side Affected				
		Frequency	Per cent	Valid Percent	Cumulative Percent
Valid	Right	18	31.6	31.6	31.6
	Left	28	49.1	49.1	80.7
	Both sides	11	19.3	19.3	100.0
	Total	57	100.0	100.0	

Table 5: Cross tabulation of the side affected and the aetiology.

Side affected * Aetiology Cross tabulation

Count									
		Aetiology							
		Venous	Peripheral arteria disease	Post-traumatic	Sickle cell	Diabetes	Post-infective	Others	Total
Side affected	Right	8	0	4	2	4	0	0	18
	Left	10	1	5	2	8	2	0	28
	Both sides	4	1	2	2	1	0	1	11
	Total	22	2	11	6	13	2	1	57

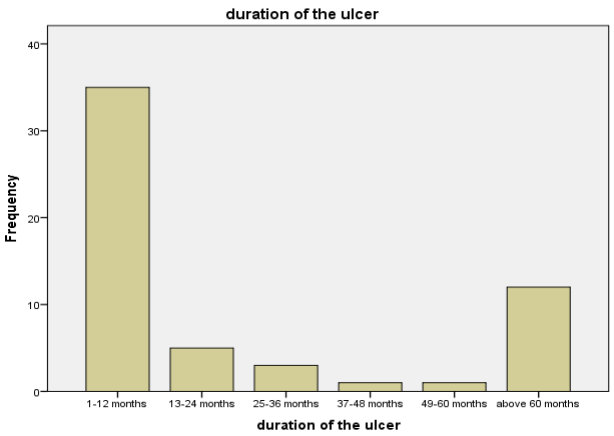

Fig. 2: Showing the distribution of the duration of the ulcers

Table 6: Correlation between age, duration and size of the ulcer

Correlations					
			Age	Duration of the ulcer	Size of the ulcer
Spearman's rho	Age	Correlation Coefficient	1.000	-.173	-.098
		Sig. (2-tailed)	.	.199	.468
	duration of the ulcer	Correlation Coefficient	-.173	1.000	.357**
		Sig. (2-tailed)	.199	.	.006
	size of the ulcer	Correlation Coefficient	-.098	.357**	1.000
		Sig. (2-tailed)	.468	.006	.

****. Correlation is significant at the 0.01 level (2-tailed).**

b. List wise N = 57

There is no significant correlation between the age of the patient and the duration of the ulcer, nor there is any significant correlation between the age of the patient and the size of the ulcer but there is a moderate association between the duration of the ulcer and the size of the ulcer. Most of the patients who presented in the hospital have at least a secondary level of education (49 patients).

Those who had only regular sterile dressing were 18, those with sterile dressing combined with compression bandaging were 26 and those who had regular sterile dressing, with or without compression and skin grafting before healing of the ulcers were 13. Regular sterile dressings with or without compression bandaging were adequate in most of the patients (44). One of the patients who had compression bandaging was lost to follow-up before the wound was completely healed.

Table 7: Modality of treatment

Modality of treatment					
			Frequency	Per cent	Valid Percent	Cumulative Percent
Valid	Compression bandaging	right	18	31.6	31.6
	Sterile dressing	left	28	49.1	49.1
	Skin graft	both sides	11	19.3	19.3
	Total	Total	57	100.0	100.0

Discussion

Chronic leg ulcers (CLU) are common debilitating diseases, that lead to both social and economic predicaments. CLU is usually associated with significant morbidities, high cost of healthcare, loss of productivity and reduced quality of life.[1-3] It is common in developed countries with leading aetiology being of vascular origin especially venous rather than arterial. It leads to an annual economic burden of up to $12 billion as a result of human capital loss and the cost of healthcare for these patients in the US. Every year 2-3 million more Americans are diagnosed with various types of chronic wounds. The estimated annual incidence of leg ulcers in the UK and Switzerland are 3.5 and 0.2 per 1000 individuals respectively.[4-6] There is an incidence of 120:10000 of the population, increasing as most of the population becomes older or elderly.[5-7]

However, the population of the developing and underdeveloped countries are mainly made up of youths, so the aetiology is expected to be different, in their presentation.

In this study, there was a slight preponderance of females over males with a male-to-female ratio of 1:1.1, which is not significantly different from the equal distribution in both males and that was reported in Ilorin[7]. Many researchers have stated that there are higher incidences in females especially in the study from Europe and the United States of America. Most of these patients (45.6%) that presented with CLU were in the sixth and seventh decade in this study and increasing progressively with age. However, it was reported that there were two peak incidences in the study in Ilorin,[7] where the first peak was in the fourth decade and the sixth decade[8-10]. This shows that the incidence increases as the population ages as reported earlier.

The etiologies were mainly venous and diabetes mellitus, followed closely by trauma. Post-traumatic ulcers were the commonest aetiology in the study of Ilorin. This may be because our patients are those who presented in the consultant outpatient clinic with chronic leg ulcers or presented to the emergency room due to complications or different pathology. Patients presenting with post-traumatic chronic ulcers due to poor or wrong treatment were fewer in this study, many presented as acute ulcers and appropriate treatment was instituted. Though their wounds may not have completely healed before the end of the sixth week but were in the process of healing due to the severity of the injury.

The CLU in patients with sickle cell anemia account for 10.5% in this study which is high compared to the study in Ilorin and Zaria.[2,7] Many of these patients had bilateral ulcers, which are painful and filled with pale, slouchy or unhealthy granulation tissues[11,12] Peripheral arterial disease caused ulcers presented after the sixth decade in this study, which indicated that this disease is usually the disease of the elderly and becomes commoner as the elderly population increases, due to better healthcare and increased literacy levels[2,7,10]

Chronic leg ulcers due to malignancy were not seen during the period of the study. This may be because most ulcerated malignant lesions or malignant ulcers run a very aggressive course and therefore patients usually present early. The common type of chronic malignant ulcer is Marjolin's Ulcer, which is a malignant transformation of chronic benign wounds, unstable scar or discharging sinus.[3,6]

The majority of our patients have a minimum of a secondary level of education. Many of these still patronized traditional medicine healers before presentation in the hospital. This may be due to a strong belief in tradition in this part of the world. However, their level of compliance with treatment modalities and follow-up was encouraging following the presentation 73.7% of the patients presented with ulcers size of less than 200cm², and the majority presented during the first 12 months of the ulcer. There is no significant correlation between the size of the ulcer and the age of the patient. However, there is a significant correlation between the size of the ulcer and the duration of the ulcer.

CLU are commoner on the left leg than on the right in this study which is similar to the previous studies.[2, 7,8] However, the reason for this is not known but may not be far from the fact that most people are right-footed, which indicates that the left foot is less active and more predisposed to venous congestion and hypertension.

Almost one-third of the patients had their ulcers healed using only sterile dressing, elevation and rest. This means that adequate knowledge about this simple, inexpensive method will resolve their problem. Even many of the other ones that needed compression bandaging or skin grafting to be combined with sterile dressing would not have progressed to those stages. In this study, flap cover or direct closure were not parts of the modalities of treatment. In extensive ulcers, we were able to achieve good granulation tissue followed by skin grafting. Vacuum-assisted therapy was used in patients with extensive and deep ulcers to encourage good granulation tissue filling the defect and wound contraction. This was followed by skin grafting in all cases.

Compression bandaging was added to the sterile dressings in the majority of the patients with venous ulcers and ulcers in patients with sickle cell anaemia, which encouraged compliance with treatment without the need for prolonged admission.[12-13] This also improves their functionality during the period of treatment. It also significantly reduces the cost of treatment and disturbance of daily sterile dressing. Depending on the rate of discharge from the ulcer, the frequency of the dressing can be reduced to once, twice or thrice a week. Compression therapy when appropriately applied increases the rate of healing. Fig 3a - d

Fig. 3a: Venous ulcer

Fig. 3b: compression bandage application

Fig. 3c: Healing after 4 weeks

Fig. 3d: Healed ulcer after 8 weeks

Conclusion

CLU is a common debilitating disease with significant adverse effects on the physical, emotional and financial well-being of the patients. The knowledge that a simple, inexpensive readily available and accessible combination of sterile dressing, elevation and rest can result in the healing of a third of these ulcers from this study. This can used to reduce the burden of this disease, in developing countries where the majority of the populace has limitations in accessing specialist healthcare facilities.

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