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Original Research Article

Non diabetic chronic leg ulcers: etiology and management

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ABSTRACT

Background: Chronic leg ulceration has varied etiologies and a systemic approach towards its pathogenesis, definitive diagnosis and optimal treatment is the need of the hour. Paucity of research data on non-diabetic chronic leg ulcer becomes the rational of present study.
Methods: Total number of 60 patients with non-healing ulcer below knee and above ankle for more than 6 weeks duration were included in this observational study. A detailed clinical presentation, relevant biochemical, microbiological and imaging investigations were recorded. The management of these ulcers was based on its etiology with an approach to conservative management (antibiotics, daily dressings, improvement in nutritional status) to surgical debridement, wide local excision followed by split thickness/full thickness skin grafting. Outcome of present study was in terms complete or partial healing of ulcer, persistence or recurrence of ulcer.
Results: Majority of patients (28.33%) with chronic leg ulcer presented during sixth decade with a male to female ratio of 5:1. The mean duration of chronicity of ulcer was 17.75 months with standard deviation of 7.83 months. Trauma was the commonest etiological factor (45%) followed by venous insufficiency (31.66%). About 31.66% of ulcers were managed conservatively and 68.32% by surgical procedure. Complete healing rate was found in 66.67% patients, persistence of ulcer in 18.32%, partial healing in 11.67% patients and 1.67% patient showed recurrence.
Conclusions: Trauma and venous etiology were commonest cause of chronic leg ulcer. A comprehensive etiological assessment and judicious use of conservative or surgical therapy are pivotal in management of these ulcers.

Keywords: Chronic leg ulcer, Lower extremity, Non-diabetic

INTRODUCTION

The ulcers present in leg that have no tendency to heal even after 6 weeks of appropriate treatment or are still not fully healed at 12 months are called as chronic leg ulcers.[1] It carries a negative physical, psychological and financial impact on the patient's quality of life.[2] Increasing geriatric population, lifestyle factors like smoking, obesity and diabetes are associated with increasing incidence of chronic leg ulcers across the world and its prevalence ranges from 1.9% to 13.1%.[3] The common causes of chronic leg ulcers are venous disease, arterial disease and neuropathy. Less common causes are metabolic disorders, malignancy, hematological disorders and infective diseases. Very few Indian studies have been done on the epidemiology of ulcers. One of the studies estimated the prevalence of chronic ulcers at 4.5 per 1000 population.[4]

An accurate diagnosis is essential to avoid inappropriate treatment that may cause deterioration of the wound, delay in wound healing or harm to the patient. Hence, knowing the etiology of the chronic leg ulcers becomes an important pivot for research in managing the wound and also increases the quality of life along with reduction of the financial burden. Since there is paucity of research

on chronic leg ulcers, this study was conducted with above said objectives.

METHODS

The present study was carried out in a tertiary care academic hospital at rural area of Nagpur, India from December 2016 to November 2018 as a longitudinal observational study. 60 patients with non-healing ulcer below knee and above ankle for more than 6 weeks duration were included in the study. Those patients with diabetes and also patients with a raw area after debridement following necrotizing fasciitis were excluded from the study. The demographic profile, detailed history, presence of co-morbidities, clinical examination for site and number of ulcers, discharge, presence of induration, vascular/venous insufficiency, loss of sensation, movement at knee and ankle joints and involvement of regional lymph nodes were recorded. Relevant biochemical investigations like complete blood counts (Hemoglobin, total leucocyte count and platelets), blood sugar (fasting and post meal), serum proteins and kidney function tests were done in all the patients. Any kind of pus or discharge from ulcer was sent for gram staining, culture and sensitivity. Arterial and venous colour doppler of lower limb vessels was done in patients with suspected vascular disease and X-ray of affected leg was done to look for underlying bony involvement. Edge biopsy of ulcer margin was taken for suspected malignant ulcers.

Conservative management was given to ulcers having pale or healthy granulation tissue which included rest and elevation of limb, nutritional supplements, daily dressings, and magnesium sulfate dressings as hygroscopic agent to reduce edema, antibiotics; vacuum assisted closure (VAC) of wounds and split skin grafts for healthy wounds. Surgical debridement was reserved for chronic unhealthy wounds with presence of slough or necrotic tissue with regular dressing. Venous ulcers were managed by compression stockings, limb elevation and/or surgery for sapheno-femoral valvular incompetence or perforator incompetence by either Trendelenburg flush ligation, subfascial perforator ligation or by radio-frequency ablation (RFA). Malignant ulcer was managed by wide local excision with skin grafting. Complete healing of ulcer was defined in terms of complete re-epithelization of surface with formation of scab.

Statistical analysis

Data was coded and analysed in statistical software, STATA version 10.1,2011. Descriptive statistics like mean and standard deviation were calculated to summarize continuous variables. Frequency and percentages were used to summarize categorical variables. p value < 0.05 was considered statistically significant.

RESULTS

The mean age of the study participants was 50.72 with standard deviation of 14.97 years. Majority of patients (28.33%) with chronic leg ulcer presented during sixth decade with a male to female ratio of 5:1. 80% subjects presented with single leg ulcers and 20% subjects with multiple ulcers. 45 patients had chronicity of ulcer between six weeks to six months, whereas 15 patients had the ulcer duration of more than six months. The most common aetiological factor for chronicity was trauma in 27 patients (45%), followed by vascular insufficiency in 19 patients (31.66%) and infection in 13 patients (21.66%). One of them had malignant aetiology in present study. The co-morbidities include anaemia in 35% patients, varicosities in 31.67%, hypertension in 13.33% and sickle cell disease in 3.33% patients. We found that 26.67% of the study participants were smokers and alcoholic and 8.34% were only alcoholic.

Majority of ulcers were found in lower 1/3rd of the leg followed by middle 1/3rd of the leg comprising 68.33% and 31.67% respectively. Out of 68.33% of ulcers on lower 1/3rd of leg majority of the ulcers were just above the medial malleolus (Figure 1).

Figure 1: An ulcer of size 7×4 cms present just above the medial malleolus.

Table 1: Showing different modalities of management for chronic leg ulcer.

Management	Frequency	Percentage (%)
Conservative (wound dressing only)	19	31.66
Debridement followed by dressing	15	25
Surgery for varicose vein	15	25
Debridement followed by grafting	10	16.66
Wide local excision with grafting	1	1.66
Total	60	100

In the present study more than 2/3rd of the total participants had negative pus/discharge culture report and only 28.33% participants had positive culture with pseudomonas being the predominant microbe. Among 60 participants none of them had an abnormal X-ray finding of affected leg. Histopathology by edge biopsy for a suspicious malignant ulcer lesion revealed squamous cell carcinoma in one patient.

The management of ulcer was based on aetiology of ulcer, size of ulcer and associated conditions. About 1/3rd participants with ulcer (31.66%) were managed by wound dressing only and rest of the patients required surgical intervention as shown in Table 1.

Of the 19 patients of chronic venous ulcer, 4 patients were managed conservatively, 8 patients underwent Trendelenberg's operation and in rest of the 7 patients, multiple perforator ligation was performed. All the 60 patients were followed up at four weeks and six weeks after treatment. 40 patients (66.67%) with chronic ulcer were healed (Figure 2), whereas in 18.32% cases, the ulcer remained unhealed. 11.67% cases showed reduction in size of ulcer and 1.67% showed recurrence of ulceration.

Figure 2: Ttraumatic ulcer over medial aspect of middle 1/3rd of left leg managed conservatively shows complete healing of ulcer in 6 weeks.

DISCUSSION

The incidence of chronic leg ulcers is increasing as a result of the increase in the aging population, occupations involving prolonged standing and increased risk factors and co-morbidities such as smoking, obesity and diabetes. The reason for chronicity in elderly male patient is thought to be poor financial condition, illiteracy, poor socioeconomic status and associated co-morbidities.[5] Incorrect diagnosis and treatment given at peripheral health center and belief in traditional medicines and quacks might have led patients seeking treatment initially from non-medical persons leading to flaring of infection and chronicity of ulcer.[6] In present study the main etiological factor was trauma in 45% patients, followed by infection in 20% subjects and vascular in 31.66% subjects. One of them had malignant etiology. A study done by Rahman et al reported that trauma (56.7%) was the most common etiology as rural population comprises mainly of hard working agricultural laborers, who are more prone to trauma.[7] The primary risk factors for venous ulcers are prolong standing, obesity, previous leg injuries, deep venous thrombosis, and older age. These ulcers are usually located in the gaiter zone i.e. medial aspect of lower leg above the ankle.[8] Valvular incompetence or deep venous thrombosis causes venous hypertension and increased endothelial permeability which results in extravasation of cellular components and release of inflammatory mediators causing local trauma and ulcerations.

Most of the ulcers can be management conservatively by doing regular dressings, improving the health and hygiene of the patient, antibiotics and treating the underlying cause. Surgical debridement is necessary to limit the spread of infection and getting rid of the slough and necrotic material that form a nidus for the microbes to grow and invade deeper tissues. Andrejuk et al studied the importance of early surgical treatment of venous ulcer.[9] The treatment method included the excision of the ulcers with the deep fascia, and the implantation of the mesh graft (thickness of skin) directly into the exposed muscle. Amongst patients evaluated at discharge, the healing of the transplant was 90 -100% in 44 patients out of 62 patients. Compared to diabetic foot ulcers which cause considerable morbidity and mortality along with increased cost of management, non-diabetic chronic lower extremity ulcers cause lesser morbidity and negligible mortality.[10] Therefore, a proper wound care, modification in lifestyle and hygiene, health education and treatment or removal of precipitating cause of chronic leg ulcer promotes healing. The regenerative

medicine is utilizing therapeutic potential of the stem cells to promote skin regeneration following injuries or post debridement. Stem cell scan be harvested from hair follicle or dermal papillae.[11] The results are promising and adequate data is necessary to access its role in improving the morbidity in patients of chronic leg ulcers.

CONCLUSION

Trauma and venous etiology were commonest cause of chronic leg ulcer. A comprehensive assessment of etiology in diagnosis of chronic leg ulcer and judicious use of conservative or surgical therapy are pivotal in management of these ulcers.

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REFERENCES

1. Agale SV. Chronic leg ulcers: epidemiology, aetiopathogenesis, and management. Ulcers. Hindawi Publishing Corporation; 2013.
2. Järbrink K, Ni G, Sönnergren H, Schmidtchen A, Pang C, Bajpai R, et al. The humanistic and economic burden of chronic wounds: a protocol for a systematic review. Syst Rev. 2017;6(1):15.
3. Anna F, Núria F, Gema W. Time of Chronic wound healing, as part of a prevalence and incidence study. Enferm Glob. 2017;46:454-63.
4. Shukla VK, Ansari MA, Gupta SK. Wound healing research: a perspective from India. Int J Low Extrem Wounds. 2005;4:7-8.
5. Kumar SA, Binitha MP, Sarita S. A Clinical and Aetiological Study of Chronic Leg Ulcers. Int J Contemprorary Med Res. 2016;3(12):3438-40.
6. Gokhale Y, Raut A, Lala DK, Kothari R, Kalekar L. Etiology and Outcomes of Lower Limb Ulcers in Non-Diabetic Patients, An Experience from Government Hospital in Western India. J Assoc Physicians India. 2017;65:47–50.
7. Rahman GA, Fadeyi A. Epidemiology, aetiology and treatment of chronic leg ulcer : Experience with sixty patients. Ann Afr Med. 2014;9(1):1–4.
8. Gre JE, Harding KG, Enoch S. Venous and arterial leg ulcers. BMJ. 2006;332(7537):347-50.
9. Andrejuk P, Błach J, Dudek E, Nogalski A. Evaluation of Early Surgical Treatment Results Considering Venous Leg Ulcers. Pol Przegl Chir. 2016;88(4):175-9.
10. Mukherjee S. A prospective, open label, clinical study for evaluation of management of chronic non-healing, non-diabetic leg ulcers in a tertiary care hospital.International Surgery Journal. Int Surg J. 2015;2(4):560-5.
11. Wong VW, Levi B, Rajadas J, Longaker MT, Gurtner GC. Stem cell niches for skin regeneration. International J Biom. 2012:8:2012.

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