

Chronic Leg Ulcers: Clinico-Etiological Study

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Abstract

Objectives : To associate selected demographic variables (age and sex) with incidence of chronic leg ulcers and to determine the factors contributing to and etiology of chronic leg ulcers.

Methods: The study included 60 cases pertaining to leg and foot ulcers admitted to K R Hospital, Mysore. Detailed history taking, thorough evaluation of risk factors and clinical examination, baseline investigations followed by specific investigations after taking written informed consent and diagnosis of primary cause of ulcer was done and the results analysed.

Results: In this study, we have been able to show that leg ulcers are a common presentation in elderly with about 58% cases above the age of 50 and only 8% below 30. It was found to be more common in males (73%). Most leg ulcers are caused by diabetes (37%) followed by venous insufficiency (19%) and arterial disorders (12%). *Pseudomonas* (31%) was found to be the most common organism isolated from the exudates followed by *staphylococcus aureus* (18%). 35% of the diabetic ulcers were found to be having neuropathy in the affected limb.

Conclusion: We concluded that it is essential to educate the patients about the leg ulcers as most of them were ignorant of the condition and presented late. Also interdisciplinary approach to the systematic assessment of the individual in order to ascertain the pathogenesis, determine etiology and to formulate an appropriate management plan is essential.

Keywords: chronic leg ulcer, clinical study, etiology.

I. Introduction

Chronic wounds are defined as wounds that have failed to proceed through the orderly process that produces satisfactory anatomic and functional integrity or that have proceeded through the repair process without producing an adequate anatomic and functional result. The majority of wounds that have not healed in 3 months are considered chronic.

Chronic leg and foot ulcers are non-healing wounds that occur due to a breakdown in the underlying physiology of the leg. The slow healing tendency of an ulcer is not simply explained by depth and size, but caused by an underlying pathogenetic factor that needs to be removed to induce healing. It is a frequent condition, with a prevalence of 3–5% in the population over 65 years of age.

The majority of chronic leg ulcers presenting in general practice are the result of venous hypertension, arterial insufficiency or a combination of both.^{1,2} Uncommon causes include lymphoedema, vasculitis, malignancy and pyoderma gangrenosum. Lower extremity ulcers are common and challenging problem for patient and clinician who provide their care. It also affects patient's quality of life, financial, social and psychological domain.

For a proper treatment of patients with leg ulcers, it is important to be aware of the large differential diagnosis of leg ulceration. The diagnosis of 'leg ulcer' is totally inadequate and must always be qualified by a statement of the cause. Chronic leg ulcers form a good bulk of patients in our hospital. Hence the present study is an attempt towards a closer appreciation of this problem as whole with an emphasis on etiology, pathophysiology, clinical and investigative studies of chronic ulcers of leg.

II. Methodology

The study included 60 cases pertaining to leg and foot ulcers admitted to K R Hospital from July 2015 to July 2016. Detailed history taking, thorough evaluation of risk factors and clinical examination, Baseline investigations followed by specific investigations after taking written informed consent. Diagnosis of primary cause of ulcer

Inclusion Criteria: Patients with Chronic non healing leg ulcers admitted to K.R Hospital and who are willing for investigations and further management.

Exclusion Criteria: Patients who are not willing for investigations and further management.

III. Results

Statistical analysis of the 60 patients who presented to our hospital with chronic ulcers was done and the results analysed.

Out of the total 60 patients, 44 were male patients and 16 were female. (table1)

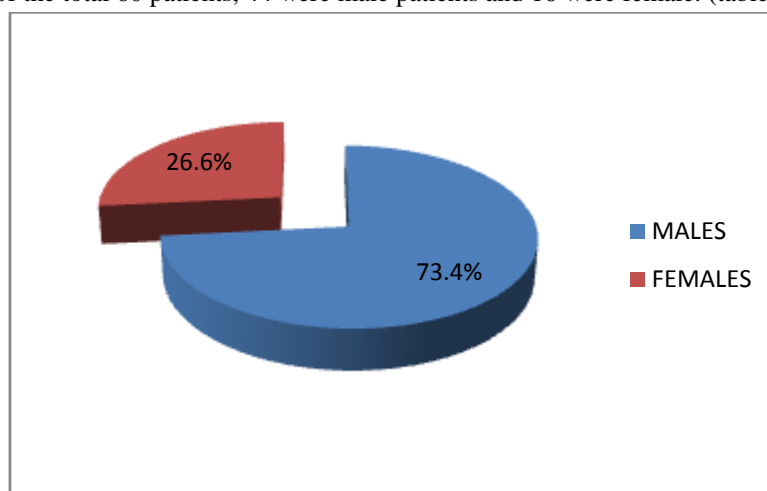


table 1 sex distribution

Age distribution of the patients showed that CLU were most common in the patients more than 50 years (58%). Next most common age group was 41-50(22%). Followed by 31-40(12%), 21-30(4%) and 10-20(4%) (table2.)

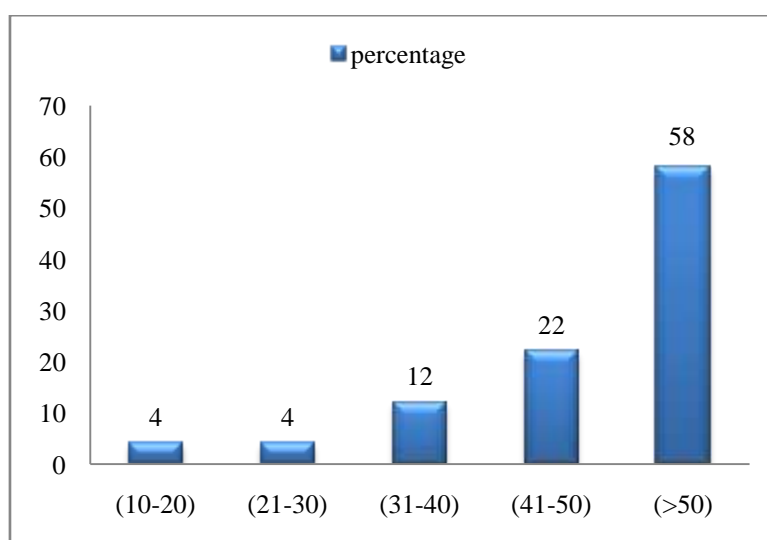


Table 2 Age Distribution

After clinical examination and investigations the cause of ulcer was found and it showed that diabetes is the most common cause of CLU(37%) out of which 89% of the patients had uncontrolled sugar levels. Venous pathology was found in 19% of the patients and arterial pathology in about 12% of the patients. 6% of the patients had trophic ulcers and 7% were non specific ulcers. 19% patients had a traumatic ulcer without any comorbid condition. (Table 3)

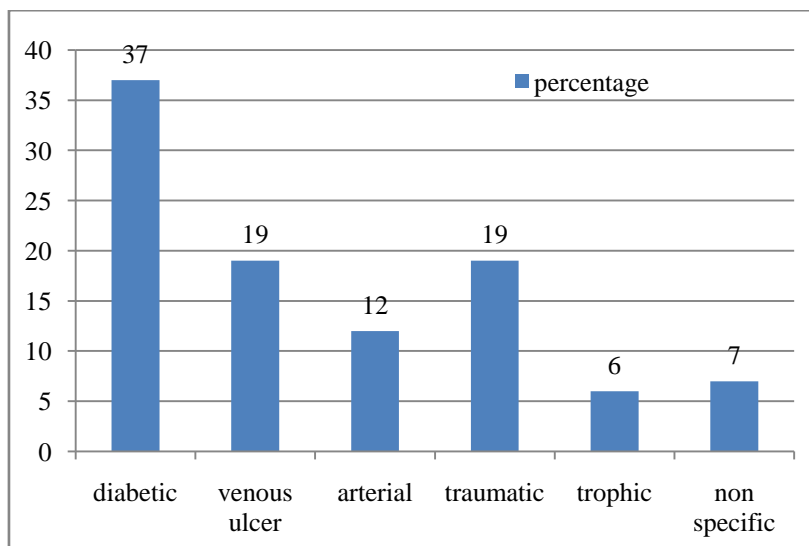


Table 3 Cause OfCLU

The type of discharge from the wound was found to purulent in about 54% of the patients while it was serous in 29% of the patients. 14% patients had a greenish discharge and 3% and pus along with bony spicules. (table4)

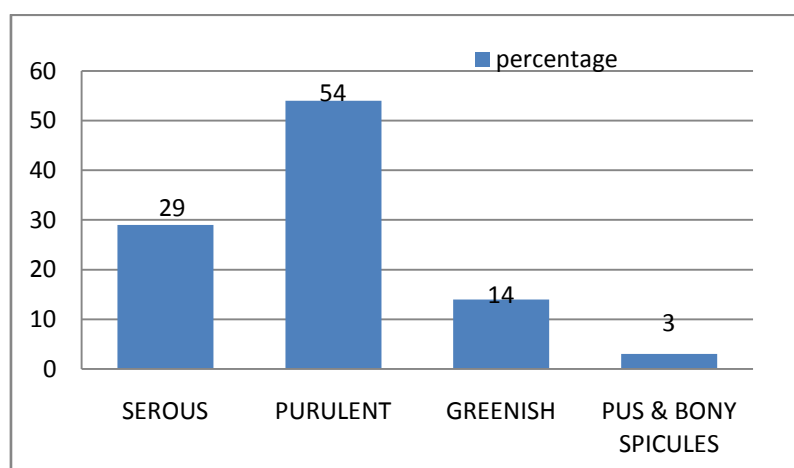


Table 4 Type Of Discharge

The culture of the discharge from the wound showed that Pseudomonas aeruginosa was the most common organism(31%) followed by Staphylococcus aureus(18%), Streptococcus pyogenes(13%), Klebsiella pneumonia(12%), Proteus mirabilis(11%) and E.coli(10%). (table 5)

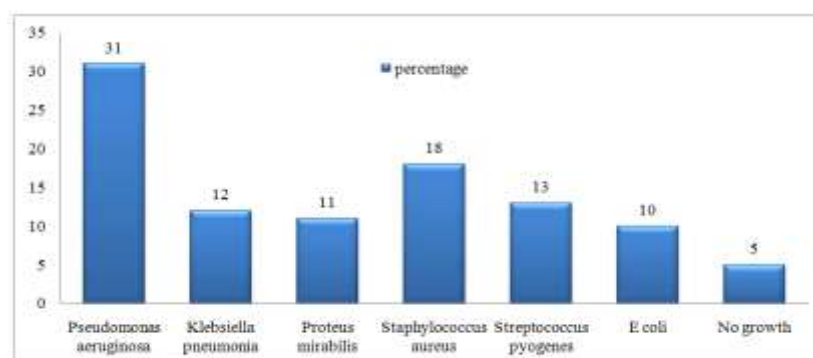


Table 5 growth from the discharge

The diabetic ulcer patients were examined for the peripheral neuropathy and was found that 35% patients had the peripheral neuropathy while 65% didn't show any signs of neuropathy.

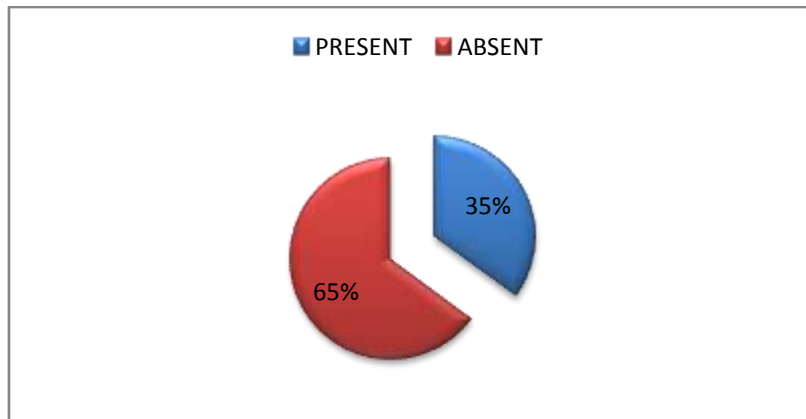


table 6 incidence of neuropathy in the affected limb with diabetic ulcers

IV. Discussion

By definition, chronic wounds are wounds that have failed to proceed through an orderly and timely reparative process to produce anatomic and functional integrity over a period of 3 months. Numerous common factors promote adverse wound healing conditions. Systemic factors, such as malnutrition, aging, tissue hypoxia, and diabetes, contribute significantly to the pathogenesis of chronic wounds. A combination of systemic and localized adverse wound factors collectively overwhelm the normal healing processes, resulting in a hostile wound healing environment.³

In our study, CLU was most commonly found in patients aging more than 50 and was common in males. Older patients are more likely to experience delayed healing and surgical wound dehiscence. The aging epidermis has fewer Langerhans cells and melanocytes and flattening of the dermalepidermal junction. Keratinocyte proliferation is reduced, and the turnover time is increased by 50%. The dermis has fewer fibroblasts, macrophages, and mast cells; reduced vascularity; and less collagen and GAGs. There is a quantitative imbalance between collagen production and degradation and a qualitative alteration of the remaining collagen, which has fewer rope-like bundles and shows greater disorganization. Skin elasticity is decreased because of altered elastin morphology. Diminished light touch and pressure reduced nociceptive receptors and dermal atrophy increase susceptibility to injury by mechanical forces. Immunosenescence (reduced Langerhans cells and fibroblast activity) impairs wound healing and increases the likelihood of chronic wounds. Microvascular disturbances predispose to ischemic ulcers. Finally, there is reduced sebum secretion and vitamin D3 production.⁴

Diabetes mellitus was the most common cause of CLU in our study. It impairs wound healing in several ways. Diabetes associated large vessel occlusion and end-organ microangiopathy each lead to tissue ischemia and infection. Diabetic sensory neuropathy leads to repeated trauma and unrelieved wound pressure. Tissue hypoxia can be demonstrated by reduced dorsal foot transcutaneous oxygen tension (TcO₂). The thickened capillary basement membrane decreases perfusion in the microenvironment, and elevated perivascular localization of albumin suggests increased capillary leak. VEGF upregulation in patients with diabetes is also impaired delaying the wound healing.⁵

Venous ulcers were next most common CLUs. Venous ulcers are due to venous stasis and hydrostatic back pressure. On the microvascular level, there is alteration and distention of the dermal capillaries with leakage of fibrinogen into the tissues; polymerization of fibrinogen into fibrin cuffs leads to perivascular cuffing that can impede oxygen exchange, thus contributing to ulceration. These same fibrin cuffs and the leakage of macromolecules such as fibrinogen and α 2-macroglobulin trap growth factors and impede wound healing.⁶

Arterial disorders were third most common cause of CLU. These wounds occur due to a lack of blood supply and are painful at presentation. They usually are associated with other symptoms of peripheral vascular disease, such as intermittent claudication, rest pain, night pain, and color or trophic changes. These wounds commonly are present at the most distal portions of the extremities such as the interdigital clefts, although more proximal locations are also encountered. On examination, there may be diminished or absent pulses with decreased ankle-brachial index and poor formation of granulation tissue. Other signs of peripheral ischemia, such as dryness of skin, hair loss, scaling, and pallor can be present. The wound itself usually is shallow with smooth margins, and a pale base and surrounding skin may be present. The management of these wounds is

two-pronged and includes revascularization and wound care.⁷ Nonhealing of these wounds is the norm unless successful revascularization is performed. After establishing adequate blood supply, most such wounds progress to heal satisfactorily.

V. Conclusion

We concluded that it is essential to educate the patients about the leg ulcers as most of them were ignorant of the condition and presented late. Also interdisciplinary approach to the systematic assessment of the individual in order to ascertain the pathogenesis, determine etiology and to formulate an appropriate management plan is essential. Successful management of leg ulcers requires a clear diagnosis, establishment of a treatment plan, accurate monitoring, and adherence to the plan as the ulcer decreases in size

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