

Original Research Article

Review of chronic leg ulcers over a period of one year in a tertiary care hospital in North India

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Abstract: Ulcer is defined as a breach in the continuity of the covering epithelium of skin or mucous membrane with molecular death of cells. The chronic ulcer is one which persists for more than six weeks or three months without any signs of healing or no complete healing even upto one year. The present study was conducted in a tertiary care hospital in the hilly state of Himachal in North India from March-2015 to feb. 2016. We have compiled and analysed the clinical data of patients with chronic lower limb ulcer, who attended General surgery Out Patient Department in the last one year. During the study period, a total of 38 patients with chronic ulcers of the lower limb presented to our surgical Out Patient Department .Of which 13 were of venous, 12 diabetic, , 8 associated with chronic ischemic ulcer(Buerger's disease) , 2 atherosclerotic, 2 were traumatic and 1 was malignant in nature. After appropriate diagnostic work up, they were successfully managed according to their aetiology either with conservative or surgical approach including some life style changes, and plastic surgery procedures. Chronic ulcer is a common condition amongst the adults and is cause of pain and social distress. This requires an appropriate diagnostic work up and timely management.

Keywords: Chronic Ulcer, atherosclerotic, Buerger's disease

INTRODUCTION

Ulcers of skin can result in complete loss of the epidermis, portions of the dermis and even subcutaneous fat. Chronicity of ulcer is known as when there is no sign of healing from 6 weeks to three months and even persist upto 12 months [1, 2]. Leg ulcers can be of full or partial thickness and generally has a slow healing tendency. This is a common condition amongst adults and causes pain and social distress. It affects 1% of the adult population and 3.6% of people older than 65 years [3, 4]. The common causes of chronic ulcers are venous, arterial diseases, and peripheral neuropathy. Other Less common causes are metabolic, haematological, and infective disorders. Chronic Leg Ulcer affects every aspect of daily life with nagging pain, disturbed sleep, restricted mobility and work capacity leading to loss of working days and financial loss [5, 6]. It is also known that social activities are restricted due to fear of injury and negative body image. Chronic leg ulcer is usually associated with significant morbidity, high cost of healthcare, loss of productivity, and reduced quality of life [7].

MATERIAL AND METHOD

The present study was conducted in the Department of General surgery of a 500 bedded tertiary care medical college and hospital. Thirty eight patients of chronic leg ulcers admitted for treatment in the department of General Surgery were included in the study and assessed as follows:

1. Clinical Examination and assessment of wound
2. Laboratory work up including Histo-pathological examination
3. Management

Patient's Clinical Assessment: Patient ulcer details were recorded as below:

Mode of onset , Duration , Pain ,Discharge ,ulcer size and shape, number, position, edge, floor , condition of the surrounding area, any other associated medical condition, if present. Laboratory work up and histo-pathological examination. A detailed laboratory work up, including complete haematology, radiology and histopathology profiles were studied for all the patients.

Inclusion criteria: All lower limb ulcers.

Exclusion criteria: Post radiotherapy / Post chemotherapy wounds

Type of ulcer	Age	Sex	No of Pts	Duration	Pain	Mode of onset	Discharge	Size	Site	Co Morbid Condition
Venous ulcer	Middle	7M/6F	13(34.2%)	6-8 Mths	+ _	Gradual	Serous	6_ 2 cm	Medial maleolus	4 pts HTN, 2 pts DM
Diabetic Ulcer	Middle Elderly	7 M/5 F	12(31.5%)	3-7 mths	- -	Spontaneous/Trauma	Foul smelling	5-3 cm	Foot/ Heel	5 pts HTN/DM In all
Buerger's disease	Young adult	7M/1 F	8(21%)	10-12 Mnth	++	Gradual	-	1-2 cm	Foot	-
Atherosclerotic ulcer	Elderly	M	2(5.2%)	8-10 mths	++	Gradual	_	1-2 cm	Toes/Foot	HTN in both
Traumatic ulcer	Young Middle	1M/1 F	2(5.2%)	1 Week	++	Sudden	Pus	4-5 cm	Leg	-
Malignant ulcer	Elderly	M	1(2.5%)	3-4 yrs	+ _	Gradual	Blood stained	2-4 cm	Lower shin	-

HTN-Hypertension

DM-Diabetes Mellitus

OBSERVATIONS AND RESULTS

This was a prospective observational study conducted in the department of General surgery between March 2015 to February 2016. During the study period, thirty eight patients of chronic leg ulcers were admitted and treated for the same. The Patient clinical data was collected and analysed in terms of age, sex, clinical presentation and aetiology. Surgical intervention carried out for management of ulcer.

Treatment

Venous ulcers

A total of 13 Patients of venous ulcers presented with gradual mode of onset. The ulcer was unilateral in all patients. Mean duration of ulcers was

8±2 months with a serious discharge in all of them. Most common site of ulcer was in the gaiter area (n=12) followed by medial side of foot (n=2). Ulcers were round to oval in shape with a mean size of 6±2 cm. Ulcers were infected in 8 patients. These patients were managed initially by wound debridement and dressings, in the other 5 patients ulcer base was made of healthy granulation tissue. In 6 patients co morbid conditions like hypertension and type-II Diabetes Mellitus was present and these patients were managed for their medical conditions accordingly. Sapheno-femoral incompetence was observed on Colour Doppler in nine patients and below knee perforators were incompetent in 6 Patients. Deep vein Thrombosis was ruled out by colour Doppler in all the patients.



Fig 1: Arterial Ulcer

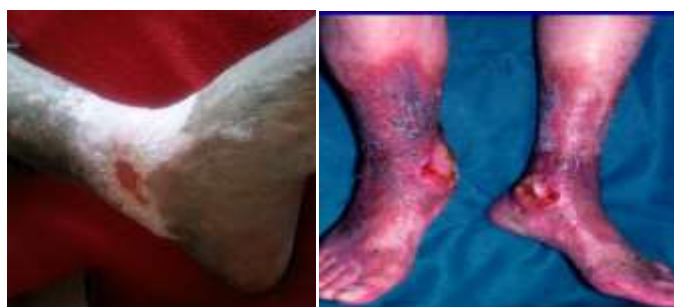


Fig 2: Venous Ulcer

Management:

Four Patients were managed conservatively with Bisguard method above knee stockings, Crepe bandage application, Leg raising exercises as their ulcers were small (2-3 cm) and SF junction and perforators were competent in them. The ulcers healed over a period of 3-4 months in two but took a longer time to heal in the other two due to long walking stretch for their livelihood. Six Patients underwent Trendelenburg procedure with sub facial ligation whereas the other 3 underwent Trendelenburg procedure and stripping. Ulcer healed in all these patients after surgical procedures with in 6 ± 2 weeks.

Diabetic ulcers

Twelve Patients of diabetic foot ulcer were admitted. Eight of them were trauma induced (neuropathic) whereas four patients had spontaneous onset. Ulcers were unilateral in all the patients .Mean ulcer duration was 4 ± 2 months. Most common Site was toes in seven patients and heels in five. All of them had a foul smelling discharge due to superadded bacterial infection. Mean ulcer Size was 5 ± 3 cm with extension into deep soft tissue and muscular planes. Stringent diabetic control, regular wound dressing & wound debridement helped in initial healing of the wound , however ,two of them required toes amputation (rays procedure), and one had Trans-metatarsal amputation .In one patient below knee amputation was done due to uncontrolled sugar levels and septicaemia.

Ischemic Ulcer (Atherosclerotic ulcers and Buerger’s disease)

Ten patients were admitted with this disease. Two of these patients had atherosclerosis related ulcer whereas the other Eight had Buerger’s disease due to high incidence of biri smoking more than 5-10 years in hilly areas. Atherosclerotic Ulcer were present in elderly males (60 + years) whereas Buerger’s disease related ulcers were observed in younger age (20-40 years) group. They were unilateral in all cases. Mean duration was 1.5 ± 0.5 years. Most common Site were toes (n= 1) and foot (n=4). Wound infection was present in 3 patients. Colour Doppler revealed involvement of major and medium size vessels (femoral and popliteal long segment stenosis) in atherosclerosis and involvement of small vessels (Anterior tibial and Dorsalis paedis) in buerger’s disease .Both patients of atherosclerotic ulcer were hypertensive. These patients were managed by daily dressings, wound debridement and life style changes including quitting smoking and control of Hypertension .In addition to these conservative treatment two patients with segmental stenosis of femoral vessel were referred for balloon dilatation of stenosed segment and in buerger’s disease two patients developed toe gangrene. In these patients toe amputation was done followed by Lumber sympathectomy in all patients of buerger’s disease. Lipid lowering agents were also advised in elderly having atherosclerosis.



Fig 3 Diabetic Ulcer

Traumatic ulcers

Two patients of traumatic ulcer were admitted. Both of these patients had sudden mode of onset with mean ulcer duration of 4 ± 1 week. The ulcer was present in lower limb after maize splinter injury and injury with

sharp cut end of plant stem during working in fields. In both cases ulcer showed signs of infection. These patients were managed by dressings, debridement. The second case treated by partial thickness skin graft.



Fig 4 Traumatic Ulcer

Malignant ulcer

One patient with the history of burn over lower limb developed unstable scar followed by ulcer, which subsequently turned into an Irregular growth diagnosed as a malignant growth on biopsy. The patient was managed by wide resection and rotation flap.

The Ulcers healed in 36 patients with different diagnosis within one year. One patient with atherosclerotic ulcer and one patient with burger's disease were still on follow up and dressing in surgical outpatient department.



Fig 5: Marjolin's Ulcer

DISCUSSION

Epidemiology

Chronic leg ulcers affect 0.6–3% population above 60 years of age with an increase to over 5% till the age of 80 years and above [8]. On an average 10% of the population develop a chronic wound, with a wound-related mortality rate of 2.5 percent [9]. Leg ulcers are more common in females than in males. There is increase in prevalence of leg ulcers in females with age. We observed that the venous ulcer (34.2%) as the most common type followed by diabetic (31.5%), buerger's (21%), traumatic (5.2%) and arterial (5.2%) and malignant type (2.5%). Our observations are in line with the recent statement by Wound Healing Society that about 15% of older adults in the US suffer from chronic wounds, of which predominantly are venous stasis ulcers, pressure ulcers (bedsores), and diabetic (neuropathic) foot ulcers [10, 11].

Aetiopathogenesis

Venous Ulcers: In 34.2 % of our patients venous insufficiency was the leading cause of the ulcer and diabetic ulcers (31.5%) was second most common cause. In the literature [12, 13] venous insufficiency constitutes 70% followed by arterial disease in 10%, and mixed in 15% as the cause of ulcers. In our study the number of female patients was comparable as the males and the mean duration of ulcer was 8 ± 2 months. Similar observations have previously been reported with the fact that they are more common in women and older persons [14, 15]. The primary risk factors are older age, obesity, previous leg injuries, deep venous thrombosis, and phlebitis. These are often recurrent, and open ulcers can persist from weeks to months and many years. Venous ulcers are more common in women and older persons. In India, etiology [16] of chronic wounds includes systemic conditions such as diabetes, atherosclerosis, tuberculosis, and leprosy. Other major causes included venous ulcers, pressure ulcers,

vasculitis, and trauma. Inappropriate treatment of acute traumatic wounds is most common cause of the chronic wound. The majority of these ulcers are seen in farmers and other agricultural workers and majority were farmers in our study.

Based on the site, leg ulcers can be divided into gaiter area ulcers and fore foot ulcers however, the aetiologies for these two sites are different. Venous ulcers are more common over the medial malleoli. We also observed the venous ulcers in our patients above the malleoli. Patients with reduced mobility or obesity may develop ulceration in the gaiter area because of retrograde blood flow and venous hypertension resulting from inadequate functioning of the calf muscle valvular incompetence. This leads to leakage of fluid out of the stretched veins into the tissues, causing deposition of brownish/red pigment in the gaiter area of the leg [17]. Severe complications can occur like cellulitis, osteomyelitis, and malignant change. Cellulitis was observed in most of our patients (80%) with venous ulcer, however it resolved with appropriate antibiotic therapy and surgical wound care. Other causative factors include multiple pregnancies, obesity, congenital vein abnormalities, and varicose veins.

Diabetic Foot Ulcer

This affects 15% of all diabetics [10] and 15–20% of these patients need an amputation. Almost 85% of the amputations are preceded by diabetic foot ulcers. Worldwide, it is estimated that a lower limb is lost every 30 seconds as a result of diabetic wound infection [18]. In our study 31.5% patients, had diabetic foot ulcers and they had other co-morbid conditions like hypertension. These patients had arterial diseases and neuropathy, therefore developed ulcers. Neuropathic ulcers occur on the sole of the foot or over pressure points whereas Arterial ulcers are common over toes or foot or occur over pressure points Hyperglycaemia is a

great risk of ulcers formation secondary to neuropathic impairment of sensory, motor, and autonomic function, typically in the hand and foot, or “stocking and glove” distributions. These ulcers showed secondary bacterial infection, which resolved after suitable antibiotics after having the sensitivity patterns from the microbiology culture reports. All the patients showed resolution of these ulcers with adequate surgical care with a mean resolution time 4±2 months. Similar observations have also been reported by O Amir *et al.*; [19] on their diabetic patients

Arterial Ulcers

Arterial or arteriolar occlusion result in ischemia of the skin and subcutaneous tissues leading to ulceration. Arterial ulcers are common over toes or foot or occur over pressure points. Peripheral vascular disease due to atherosclerosis, diabetes with microvascular or macrovascular disease, and vasculitis could lead to ischemic leg resulting in ulceration. In our study ten (26.3%) patients had arterial ulcers with shiny skin and complete loss of hair. Eight of these patients have buerger’s disease and two with atherosclerotic ulceration typically involving the toes of the left foot. The ulcers in patients with Buerger’s disease were painful, with rest pain and intermittent claudication and dry base. The exact pathogenesis of arterial ulcers is not well defined however, most acute forms of vasculitis and some subacute and chronic forms lead to leg ulceration due to tissue hypoxia and fibrin exudation [20, 21]. Possibly the buerger’s disease is segmental involvement of small vessel due to cheap tobacco smoking (Biri) leads to Thrombo angitis obliterans.

Traumatic ulcers

Trauma is the Primary aetiology in these ulcers. Ulcers are initially small which progress gradually due to uncontrolled infection. Two (5.2%) of our patients had these ulcers with super added infection .One of them was large and was managed by split skin graft after debridement. However, it is extremely important to get rid of the cause of irritation in cases chronic traumatic ulcers. In our case started after maize splinter injury and sharp cut end of maize plant stem or even thorn prick.

Malignant ulcers

This is a rare complication [22] which occurs in burn scar or long standing ulcer. In one of our patient had a history of burn followed by unstable scar and ulceration over the scar. Histopathology revealed squamous cell carcinoma after wedge biopsy following which the patient was investigated to rule out metastatic spread. However, there was no evidence of any metastatic disease and the patient was managed by wide local excision with rotation flap. Currently the patient is on regular follow up. Hence it is import to have a high

degree of suspicion in ulcers occurring on the background of old healed scars

CONCLUSIONS

The management of chronic ulcers of the lower extremities presents a great therapeutic challenge. A comprehensive diagnostic approach including vascular, metabolic, and physical aspects is essential for a successful treatment plan. The basic principles of treatment are to remove or treat precipitating cause, to promote circulation and improve venous return, to promote healing, lifestyle changes, symptom management, and to promote preventative care & health education.

Current treatments for Chronic leg ulcer include surgery, sclerotherapy, compressive therapy (conventional therapy), and adjuvant pharmacotherapy depending upon the clinical condition we are dealing with. In rural areas people have tendency first to go to quack for management. They apply local herbs and unhygienic preparation over ulcer which further aggravates infective pathology and delayed ulcer healing. These type of practices should not be propagated.

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