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Clinical and Microbiological Profile of Chronic Non-Healing Ulcers in a Tertiary Care Teaching Hospital in North India

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Abstract

Non-healing ulcers are an important cause of morbidity to the patients .Most of the patients present with chronic non healing ulcers over lower one third of the legs .However certain patients with peripheral arterial disease any have ulcer at any level below the arterial occlusion.Patients with diabetes are at greater risk for the non-healing ulcers due to peripheral neuropathy and and vascular compromise .The some times get secondarily infected which makes the condition more complicated for treatmen

Keywords: Non Healing Ulcers; Diabetes Mellitus; Vascular; Infection.

Introduction

Wound healing is a complex process that involves induction of an acute inflammatory process. The various steps responsible for healing are, regeneration of parenchymal cells, migration and proliferation of both parenchymal and connective tissue cells, synthesis of ECM proteins, remodeling of connective tissue and parenchymal components, also collagenization and acquisition of wound strength.

These phases are affected by various factors e.g.nutritional status, age, vascularity, endocrinal and neurological factors. Sometimes, the wound healing process does not proceed normally and chronic wound results.

Non-healing ulcers of foot are very common and represent a serious health problem. Foot ulcers in patients with diabetes, cause a major medical and economic problem. This is the leading cause of hospitalization for patients with diabetes mellitus[1]. As per the expectation the diabetic population is increasing so is the problem of diabetic foot ulcer. Presence of bacteria in the ulcers affects and delays the healing process. It also complicates the pathological picture of ulcers .Most of the times ulcers are generally treated empirically, but a directed therapy with a known causative organism can improve the outcome [2]. Diabetes mellitus is not the only cause of non-healing ulcers. There are some other conditions like peripheral vascular disease, peripheral neuropathy, coronary artery disease, paraplegia etc [3].

There are very few studies wherein the etiology of non-healing ulcers from non-diabetic and diabetic patients are studied.

Aim and Objective

Aim of the study was to asses the clinical and microbiological profile of the chronic non healing ulcer and the predisposing conditions in patients attending the out patient department of dermatology at govt doon medical college dehradun, India.

Material and Methods

It was a retrospective study. A total of 54 patients were enrolled from March 2015 to April 2016 who qualified for the inclusion critreria. Each patient was assessed clinically and was subjected to a structured proforma that included the history of wound ,its onset, duration, discharge any medication received by the patient etc. A detailed clinical examination of the wound was performed viz. type of wound its size, edge, floor, discharge, base and bleeding, relationship to the deeper structure, lymph nodes

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etc.All patients were assessed for pheripheral arterial and venous insufficiency.Wound swab culture was taken from the base of the ulcer and was sent for culture and sensitivity as per standard protocol.

Inclusion Criteria
Age >20 years and <60 years
Ulcers lasting more than 6 weeks
Wagner class 0,1,2

Exclusion Criteria
Trauma
Surgical interventions
Age <20 years and > 60 years
Wagner class more than 2

Results

In the present study the sex distribution was almost equal (Table 1).

So far as the duration of wound is concerned maximum patients (48%) were having duration between 7 to 11 months (Table 2). Diabetes remains the leading cause of non healing ulcers amongst males and females (Table 3). Mild anemia was noted in in more than 50% patients (Table 4) and total leucocyte count was normal in majority of patients (Table 5), seropurulent discharge was present in 57% patients (Table 6). Hypoalbuminemia was found in 48% cases with majority of the patients with normal total protein level (Table 7). All the patients were subjected to culture and sensitivity. Out of total 54 samples, growth was obtained in 46 samples (86%). Staphylococcus aureus dominated the isolated organisms, klebsiella was the least grown organism (Table 8).

Discussion

The intention of this study was find out the clinical and microbiological profile in chronic non healing ulcers. Most of the non healing ulcers were more than 6months old. Although there are studies that suggests the male preponderance [4], this was not our finding, majority of the patients were in the age range of 41-50 years. Diabetic foot infections are classified on the basis of severity by Wagner [5]. In our study total of 46 bacterial isolates were obtained. Majority of them were staphylococcus (38%) as found in other studies [6]. Among the gram negative Isolates proteous mirabilis outnumbered the other gram negative aerobic bacteria. There was no anaerobic bacteria isolated from the wound. This is because we have excluded the patients with deeper wounds. We have included only Wagner grades 0, I and II patients and not any grades above that.Study by Anandi et al [7] as well reports absence of anaerobic organisms from diabetic foot ulcers of Wagner grades 0 and I.Our results do agree with that of Anadi etal. Kavitha et al [8] have reported gram negative bacilli from 52.31% and Tiwari et al [9] have reported the same from 78% cases. In our study the incidence of gram negative infection is almost 62%.

Conclusion

From the present study we can conclude the clinico-etiology of non-healing ulcers in different patients groups. Diabetes is the most common predisposing disease and Staphylococcus aureus is the predominant causative organism.

Table 1: Showing age and sex distribution

Age & Sex Distribution				
Age	**Male**	**Female**	**Total**	**Percentage%**
20 – 30	4	3	7	12.96
31 – 40	9	7	16	29.62
41 – 50	11	9	20	37.03
51 - 60	6	5	11	20.37
Total	30	24	54	100

Table 2: Showing duration of wound

Duration of wound				
Duration(Months)	**Male**	**Female**	**Total**	**Percentage%**
2-6	3	2	5	9.25
7-11	13	13	26	48.14
12-16	7	5	12	22.22
17-21	7	4	11	20.37
Total	30	24	54	100

Table 3: Showing etiology of wound

	Etiology of Wound			
	Male	**Female**	**Total**	**Percentage%**
Diabetic	13	7	20	37.04
PVD	8	5	13	24.07
Vasculitic	5	8	13	24.07
Leprotic	4	4	8	14.81
Total	30	24	54	100

Table 4: Showing the hemoglobin levels

HB level (gm%)	**Male**	**Female**	**Total**	**Percentage%**
<9	7	5	12	22.22
09-11	15	13	28	51.85
12-15	8	6	14	25.92
Total	30	24	54	100

Table 5: Showing discharge from the wound

	Discharge of Ulcer			
	Male	**Female**	**Total**	**Percentage%**
Serous	7	12	19	35.18
seropurulent	20	11	31	57.4
serosangiuneous	3	1	4	7.4
Total	30	24	54	100

Table 6: Showing the total leucocyte count

TLC	**Male**	**Female**	**Total**	**Percentage%**
<4000	3	1	4	8
4000-11000	18	13	31	62
>11000	9	6	15	30
Total	30	20	50	100

Table 7: Showing total protien levels

	Total Protein Level			
Protein (gm %)	**Male**	**Female**	**Total**	**Percentage%**
<5.5	12	11	23	42.59
5.5-8	15	13	28	51.85
5.8	3	0	3	5.5
Albumin				
<3.5	17	9	26	48.14
3.5-5.5	11	11	22	40.74
>5.5	2	4	6	11.11
Globulin				
<2	11	9	20	37.03
2-3.5	18	9	27	50
>3.5	1	6	7	12.96

Table 8: Organisms isolated from the wound

Bacterial isolates	**Diabetic Group**	**Non-diabetic Group**
Staphylococcus aureus	**13(28%)**	**0 5 (10.8%)**
Proteus sp	7 (15%)	03(6.5%)
E.coli	5(10.8%)	02 (4.3%)
Pseudomonas aeruginosa	5(10.8%)	02(4.3%)
Klebsiella sp	03 (6.5%)	01 (2.17%)

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