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COMPARATIVE ASSESSMENT OF SALINE VERSUS OCTENIDINE DIHYDROCHLORIDE DRESSING IN DIABETIC FOOT ULCERS

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ABSTRACT Diabetic foot ulcers are a common presenting complaint in many institutions catering to rural populations. The reasons for this can be the undiagnosed diabetes and lack of knowledge regarding complications. Care of diabetic foot ulcers involves systemic as well as local interventions. Among the local care methods is regular dressings using a good antimicrobial agent. Here Octenidine Dihydrochloride has shown promise. The present study was done to assess the efficacy of Octenidine Dihydrochloride in diabetic foot ulcers. The study used a pool of 80 subjects divided in two equal groups who were randomly subjected to saline and Octenidine Dihydrochloride dressings. The study observed that the mean rate of healing and wound coverage was significantly better in Octenidine treated subjects when compared to saline group. Octenidine Dihydrochloride is a better topical agent when compared to saline in the present population sample.

KEYWORDS : Diabetic Foot Ulcers, Octenidine Dihydrochloride, Dressings,

INTRODUCTION:

Diabetes has been recognized as an epidemic in hiding in the Indian subcontinent, with the number of cases increasing in number as well as in demographics. [1] As the spread and incidence of diabetes increases among the relatively underprivileged classes especially in rural or far-flung areas, the corresponding elevation is seen in complications of diabetes among previously undiagnosed cases. It has been reported in western as well as Indian studies that the first presentation of a previously undiagnosed diabetic case has been an overt complication such as seizures, unconsciousness, or foot ulcers along with neuropathy. [1,2]

Among a few notable epidemiological studies on diabetes mellitus, it was noted that evidence has suggested a male preponderance in such cases with an incidence of foot ulcers reaching upto 8 % of total diabetes cases. [3]

Diabetic foot ulcers are particularly cumbersome in the fact that wound healing is delayed and often complicated with a infection. It also lends a load on the economics of the family as the sole earner may be incapacitated from working. [4]

The management of such chases may also prove difficult due to the long term or chronic nature of the lesion. Another compounding factor will be the formation of a biofilm over the affected region. The wound area is essentially encases in a layer which performs the dual task of reducing wound healing rate as well as supplementing the growth of any bacteria in the wound bases. This wound bio-burden or microorganism load is a deleterious factor involved in the delaying of health restoration. This is managed by performing a debridement under aseptic precautions while ensuring that the load is not re-enacted. [5]

The management protocol thus involves a combination of surgical debridement, topical antibiotics and systemic antibiotic therapy along with blood sugar control. In this scenario, a topical dressing with octenidine dihydrochloride (OCT) has been shown to be beneficial. The present study was envisaged with an objective to ascertain if there are any benefits in using OCT as compared to saline dressings.

METHODOLOGY:

The present study was a prospective, randomized cross sectional study conducted in a tertiary care institute in Udaipur Rajasthan over a period of 6 months from January 2019 to June 2019. The study involved a subject pool of 80 subjects divided equally in two groups. The first group was subjected to OCT dressing and second group was subjected to normal saline dressings. The demographics was attempted to be similar in both these groups. The subjects were all adult diabetic cases on oral hypoglycemics since a minimum of 30 days. The subjects were evaluated for any other neurological or skin diseases.

Institutional ethical clearance was obtained before commencement of the study. All the subjects were sensitized towards the need for the study and written informed consent in a language of their understanding was obtained prior to the study. They were informed that inclusion is voluntary and can be revoked at any time without it affecting their treatment.

Subjects who left midway were excluded from the study.

The data of wound parameters and patient demographics were noted in a pre-designed sheet. The data was eventually noted in a MS Excel sheet and subjected to statistical analysis.

OBSERVATIONS:

The present study was conducted with a sample pool of 80 subjects divided in two groups of 40 individuals each. The OCT group had a mean age of 56.9 years, while saline group had a mean age of 56.7 years. There was a male predominance in both the groups with males comprising 70% (n=28) and 72.5% (n=29) in OCT and saline groups respectively. Smoking was a common feature with 60 % (n=26) in Oct group and 62.5 % (n=25) in saline group being bidi or cigarrete smokers. Alcohol consumption was lower with 45 % (n=18) and 40 % (n=16) subjects in OCT and saline group respectively.

Mean Hb levels were similarly placed in both the subjects with a mean value of 11.2 mg/dl and 11.1 mg/dl in OCT and saline groups respectively. The blood sugar levels were monitored daily and were withing normal ranges in both these groups for the duration of their stay. Their HbA1C levels were found be 6.7 and 6.9 in OCT and saline groups respectively. (Table 01)

The demographics and lab variables of both the groups were comparable showing no statistically significant differences.

Table 01: Comparative Parameters of Both Groups

Parameters	OCT Group (Mean)	Saline Group (Mean)
Age (Years)	56.9	56.7
Smoking	60%	62.5%
Alcohol	45%	40%
Hb (mg/dl)	11.2	11.1
HbA1C	6.7	6.9

Table 02: Time based changes in Wound dimensions.

Time	OCT Wound Dimensions (Sq cm)	Saline Wound Dimensions (Sq cm)	p-Value
Day 0	12.5	12.0	NS
2 weeks	10.7	11.5	<0.05
4 weeks	8.2	9.5	<0.05
6 weeks	6.7	8.8	<0.05

In terms of wound parameters, the mean size of wound size was statistically indifferent showing a mean value of 12.5 Sq cm in OCT group and 12.0 Sq cm in Saline group. The dimensions were

progressively noted over a period of 6 weeks. Their changes are as depicted in table 02. It was observed that the mean change in size was faster in the Oct group as compared to the saline group in the selected study population.

DISCUSSION:

Octenidine dihydrochloride is a innovative compound but was in effect since at least past two decades. The spectrum of its anti-microbial activity is wide and varied with its effect seen in both gram positive and gram-negative microorganisms. [6] The sensitivity is high, and resistance has not been documented against its activity as of now. Studies in western populations have demonstrated that microbial growth is significantly lowered in such cases when compared to routinely used agents. [7] however the above mentioned research was specifically directed towards cases of thermal burns and not diabetic cases as in our study.

There were no discernible differences in the dimensions as depicted in patient demographics such as age, Hb, HbA1C, Habits etc. This is similar to studies by Pankaj D et al and Venkateshan J et al [8,9].

There were statistically significant differences observed in the dimensions of the foot ulcers indicating better growth in OCT group as compared to Saline group. This was evident from the second week onwards ad maintained a steady growth till 6 weeks of recording data. This is similar to studies by various authors [8-10]

The studies on diabetic foot ulcer management by eminent researchers have mentioned that the primary target of wound healing without any secondary infection can be achieved by following a proper sugar profile, and occlusive dressing. This is confirmed in the present study.

CONCLUSION:

The present study was objective in stating the among the selected study population, the use of Octenidine dihydrochloride has yielded better results when compared with saline dressings. This methodology can be further adopted in a larger scale for potentially superior outcome, thus reducing the need for surgical amputation. Further research on w wider sample size and varied demographic patients can yield a outcome which will fill the lacunae of this present study.

Conflict of Interest: Nil

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