
Comparison of Honey and Insulin Dressings in Healing of Chronic Ulcer

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Abstract

Honey and Insulin dressings were applied to chronic ulcer in two groups comprising 30 patients in each matched for age and co-morbidities. Dressings were done once daily. Patients in Honey dressing group had faster healing rate, shorter hospital stay with rapid slough and microbial clearance. Honey dressing also proved to be cost effective with decreased debridement frequency at the end of the study.

Keywords: Insulin dressing, Honey dressing, Wounds.

1. Introduction

India with population over 1 billion, to determine number of wound cases is difficult. Admissions of patients with burns are around 700,000–800,000 burn per year.[1] Wound injuries leads to loss of skin shield against micro-organism thereby increasing risk of infection. Hence these patients have increased morbidity due to infected ulcers and long hospitalization period for dressings and later deformities.

Healing of ulcers is a serious problem but preventing recurrence is a greater challenge. For this, patients stay longer duration in the hospital which is costly and financial burden for the family. But with the study intended we are looking for a better treatment and to look for the faster healing rates and thereby reduce longer stay and more cost effective with better results.[2]

2. Materials and Methods

A prospective study has been conducted at Dhiraj Hospital, Pipariya, Vadodara, India, between May 2014 and May 2015 comprising of 60 cases. Patients with chronic ulcer viz. pressure ulcer, post operative surgical wounds and diabetic ulcer were enrolled in the study and patients with age more than 70 yrs, immunodeficiency, pregnancy, osteomyelitis, varicose ulcer, burns were excluded. A detailed clinical examination was carried out. Patients

fulfilling the inclusion criteria were randomized prospectively into two groups, Group A and Group B. Group A received Insulin dressing and Group B received Honey dressing. All diabetic patients were brought under glycemic control with appropriate antidiabetic therapy. Before enrolling the patients for study, culture and sensitivity swab of all the ulcers was taken and ulcers were cleaned with normal saline. Surgical debridement of dirty wounds was done under anaesthesia. Then the ulcers were included in the study.

Time required for preparing the ulcers from the time of admission till enrolment in the study was considered as wound preparation time. While considering the hospital stay of patients this wound preparation time was not taken into account. In Group A, ulcers were cleaned with normal saline and then 5 units of human Actrapid insulin for ulcer of size 10 cm² was sprayed daily with an insulin syringe and ulcer was left to dry and then covered with sterile cotton gauzes. In Group B, ulcers were cleaned with normal saline and honey was applied and wound was covered with sterile gauzes. At admission all patients were treated with appropriate antibiotics which were later changed as per pus culture and sensitivity reports.

Even though topical Insulin is not absorbed systemically, to evaluate the safety, random blood

sugar levels (BSL) (R) were noted 15 minutes before and after insulin application in Group A patients. Ulcer size was measured once a week till 12 weeks or till the complete healing of ulcer, whichever was earlier. The end point of the study has been taken as complete wound epithelisation or healing of wound at the end of 12 weeks or whichever was earlier. Wound healing rate was determined as the size of wound on the day 1, till complete wound healing.

2.1 Statistical Analysis

Statistical values of both groups were tabulated and results was expressed as mean and standard deviation and "Z test" and "Chi-square test" was used to compare both groups and result was considered to be significant with P value < 0.05.

3. Observations and Results

The mean age of study population was 59.2 SD 6.2 in the sugar group and 58.6 SD 6.6 years. All 60 patients achieved wound closure. All the diabetic patients were taken in the study after achieving proper glycaemia control by anti-diabetic treatment. In our study, the BSL (R) values before dressing was 112.1+/-34.1 mg/dl whereas after dressing was 114+/-31.4 mg/dl in Group A which was comparable and statically not significant. No significant side effects like hypoglycaemia, headache or vertigo was observed. In our study, the mean ulcer size on day 1 was similar in Group A and Group B. Number of days required for healing was 40± 18.8days in Group A and 30.5±13days in Group B which were comparable and statistically significant [Table 1].

Table 1: Number of days required for healing

	Group A	Group B	Z Value	P Value
No. of Days	40± 18.8	30.5±13	1.16	<0.05

The mean hospital stay was 45.4 ± 19.9 days in Group A and 35.8 ± 10.4 days in Group B which were comparable and statically significant [Table 2].

Table 2: Mean Hospital Stay

	Group A	Group B	Z Value	P Value
No of Days	45.4± 19.9	35.8±10.4	1.18	>0.05

4. Discussion

Honey is one of the oldest foods and considered to be an ancient remedy for wound healing. Honey has a many of properties which helps to prevent invasion of bacteria, such as high sugar and low moisture level, gluconic acid which produces an acidic environment and hydrogen peroxide. Authors have also reported reduction of amputations

in diabetic patients by honey dressing [3]. Even before discovery of bacteria as a cause of infection Honey was used to management of infected wounds. In 50century AD, honey was described as being "good for all rotten and hollow ulcers" by Dioscorides [4]. Honey has also been reported to have inhibitory effect against many bacterial species aerobes and anaerobes, gram-positive and gram-negative and antifungal effects against some fungi such as Aspergillus, Penicillium [5] and dermatophytes [6]. Honey has been re-evaluated for wound management due to increase in antibiotic resistance [7]. Dunfard and Hanano studied the effect of honey dressing in patients with chronic wounds, and amongst the 40 patients enrolled in their study use of honey led to reduction of pain in 20 (50%) patients, 20 out of 21 patients had reduction in odour [8]. These healing effects were due to natural glucose oxidase enzyme introduced in to the honey by the bee which when comes in contact with moisture of body releases sufficient levels of hydrogen peroxide in wound against bacterial growth [9].

After the discovery of Insulin in 1921 by Banting, various use and benefits of insulin have been published [11]. Insulin was first used by French workers for dressing in 1926 [10][11]. Insulin was used for non-diabetic purposes in the early 20th century like insulin injections in rats for improving healing of bone, in horses for healing in the distal limb, and in mice with skin ulcerations[12][13]. Leyton in 1938 found increase in healing and epithelisation of wounds with Insulin dressing [10]. In 1960s Insulin was also used in to treat diabetic wounds in humans, and in recent years, insulin as spray has been used to treat diabetic ulcers, burns with good efficacy.[14] The underlying mechanism by which insulin acts has not been understood but its acts by decreasing surface level of sugar and stimulates epithelisation and thus decreasing the time taken for healing of wound.[14]

Individual studies have shown very good healing rates on wounds compared to conventional treatment. Insulin and Honey have themselves a lot of healing properties by the nature of contents they have. In this study we tried to compare the healing process between the two methods of dressings. After the initial debridement both insulin and honey dressings were applied to the wounds. The groups were comparable in terms of age, number, and co morbidity profile and wound size. There was a significantly better healing with honey dressing in terms of reduced duration of hospital stay, rapid desloughing rate, and microbial .When duration of hospital stay, number of debridements and dressings were audited for cost, honey dressing was preferable.

There was no mortality in our series. All diabetics received insulin for control of blood sugar. The application of either Insulin or honey dressing does not affect the glycemic status during our study. Other methods of dressings like Vacuum assisted closure, application of growth factors were not combined in this comparison trial. The application of Honey or insulin does not cause a significant increase in pain when both the groups were compared. However some patients with larger area of wound do experience more pain with honey within tolerable limits. As Slough removal was made easy the overall requirement of analgesics will be less as in conventional dressing. At the end of the study Honey dressing was found to be better in wound healing compared to Insulin dressing in Wounds.

5. Conclusion

Honey dressing as compared to Insulin dressing is very effective in wound healing with rapid slough and microbial clearance. The making, storage and application are simple with cost effectiveness and gratifying results.

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