COMPARATIVE STUDY OF HONEY AND BETADINE IN CHRONIC ULCER HEALING
K. N. Choudhary¹, Pradeep Soni², Raghuraj Singh³

HOW TO CITE THIS ARTICLE:

ABSTRACT: The healing of chronic ulcers with honey vs. betadine in adult subjects attending surgical OPD in CIMS, Bilaspur, C. G. was compared. 30 subjects were randomized into two groups i.e. honey and betadine dressing groups. Dressing was done on alternate day basis for a period of 2wks. The main outcome observed was improved healing at 2 wks. Wound healing was assessed at 1wk interval. 12 out of 15 subjects in the honey treated group achieved improved healing as compared to 05 out of 15 subjects in the betadine treated group. Honey dressing was found to be highly effective in achieving healing in chronic ulcer as compared to betadine.

KEYWORDS: Honey (Unprocessed honey); Betadine (Povidone-Iodine 5%); Chronic ulcer.

INTRODUCTION: A chronic wound is a wound where the orderly biological progression to healing has been disrupted and healing is delayed.¹ The prevalence of chronic wounds is high, with ~1–3% of the global population affected by a chronic leg ulcer and this prevalence is known to increase with age.²³ Of all leg ulcer cases, 70% are diagnosed with venous insufficiency as the underlying etiology.⁴ Foot ulcer is also a common complication, affecting 4%–10% persons with diabetes mellitus.⁵ It is estimated that diabetes affects 8.3% of the global population or 382 million people.⁶ This number continues to grow, making DFU a major public health problem.⁷ Tubercular ulcer is another type of chronic wound which is a type of cutaneous TB that is caused by M. tuberculosis in a majority of cases and, rarely, by M. bovis. It accounts for 0.1–0.9% of the total dermatology out-patients in India.⁸ In 2007, India ranked first in terms of total number of TB cases (2.0 million) globally which makes it a public health concern.⁹¹⁰ In various chronic illnesses, pressure ulcers is a major concern. A recent study in Norwegian hospitals found a PU prevalence of 18%, a finding equal to or higher than prevalence rates in other European countries.¹¹

Despite advances in treatments, chronic wounds can persist for months or years before healing occurs.¹² These chronic wounds cost on average 3% of total health expenditure in developed nations.¹³ They impact the economies further via indirect costs associated with lost productivity of both patients and carers. Although there is scarcity of literature regarding this in India, the impact is even more.

The topical application of honey was also a common practice for centuries¹⁴ by the Egyptians, Greeks, Romans, and Chinese.¹⁵ The early Egyptians of around 1650 BC were the first to use honey as a component in the topical treatment of wounds, as evidenced from the text of the Smith papyrus.¹⁶ With the recent increase in multi-resistant bacteria due to the overuse of antibiotics in the past few decades, the potential of honey and silver in the management of various chronic wounds such as diabetic foot ulcers, venous ulcers, and pressure ulcers has spurred new interest in the wound care community.¹⁷
Therefore, we have planned to compare the healing of chronic ulcers using honey and betadine dressings and see the efficacy of honey in wound healing.

MATERIAL AND METHODS: The study was conducted in Chhattisgarh Institute of Medical Sciences, Bilaspur, Chhattisgarh from January 2013 to December 2014 and included patients with chronic ulcers like diabetic ulcers, venous ulcers, pressure ulcers (with slough, contamination, edema and foul smell) and excluded patients with acute wounds like burns, abrasions, lacerations, clean granulated ulcers and patient with antibiotics.

A total of 30 subjects were included in the study after obtaining consent. A detailed history, general physical examination and systemic examination of the subjects were conducted. The subjects underwent routine blood and urine investigations. They were administered with Wound Assessment Scale by C William and Wilkins (1997) that assessed size, depth, skin colour, exudate, exudate amount and tissue oedema at the time of admission, 1st wk and 2nd wk. All the subjects were given antibiotic coverage, proper nutrition and a hygienic environment. All the patients were subjected to simple occlusive dressing. The subjects were divided into 2 groups – Group A including 15 subjects who received Honey dressing and Group B including 15 subjects who received Betadine dressing. In this study, honey dressing refers to gauze soaked in 15 to 30ml of unprocessed honey that was applied over the wound once a day for two weeks and Betadine dressing refers to gauze was soaked (1:10 dilution) in 15 to 30ml. of antiseptic solution which is applied over the wound once a day for two weeks.

RESULTS: The present study is a prospective randomised trial which was conducted in Chhattisgarh Institute of Medical Sciences, Bilaspur, Chhattisgarh from January 2013 to December 2014. In our study, the age of male subjects was in the range of 21-69 years and female subjects were in the range of 22-68 years. Honey dressing was done in 8 (26.66%) male patients and 7 (23.3%) female patients, whereas betadine dressing was done in 9 (30%) male patients and 6 (20%) female patients.

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Clinical diagnosis</th>
<th>No. of cases</th>
<th>Honey dressing</th>
<th>Betadine dressing</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Male</td>
<td>Female</td>
</tr>
<tr>
<td>1</td>
<td>Diabetic ulcer</td>
<td>9</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>2</td>
<td>Venous ulcer</td>
<td>5</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>3</td>
<td>Pressure ulcer (bedsore)</td>
<td>9</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>4</td>
<td>Tubercular ulcer</td>
<td>7</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>30</td>
<td>9</td>
<td>6</td>
</tr>
<tr>
<td>Mean</td>
<td></td>
<td></td>
<td>7.44±1.8</td>
<td>8.33±0.94</td>
</tr>
<tr>
<td>p value</td>
<td></td>
<td></td>
<td>0.91</td>
<td>0.41</td>
</tr>
</tbody>
</table>

Table 1: Distribution Of Cases According To The Clinical Diagnosis In The Group-A And Group-B
Table 1 shows maximum cases were of diabetic ulcer 9 cases (30%) and pressure ulcer 9 case (30%). The minimum number of cases 5(16.6%) were of venous ulcer.

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>Total No. of cases</th>
<th>Score at the time of admission</th>
<th>Score after 1 week of dressing</th>
<th>Score after 2 weeks of dressing</th>
<th>Net wound healing score after 2 weeks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diabetic ulcer</td>
<td>6</td>
<td>15.8±4.1</td>
<td>11.2±2.1</td>
<td>7.4±2.7</td>
<td>8.4±4.7</td>
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<tr>
<td>Venous ulcer</td>
<td>4</td>
<td>18.3±1.5</td>
<td>13±1</td>
<td>7.6±0.5</td>
<td>10.6±1.1</td>
</tr>
<tr>
<td>Pressure ulcer (bedsore)</td>
<td>4</td>
<td>14.5±3.3</td>
<td>11±1.6</td>
<td>8.5±3.1</td>
<td>6±5.3</td>
</tr>
<tr>
<td>Tubercular ulcer</td>
<td>1</td>
<td>16±1</td>
<td>12±1</td>
<td>6±1</td>
<td>10±0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>15</strong></td>
<td><strong>16±3.09</strong></td>
<td><strong>11.6±1.6</strong></td>
<td><strong>7.4±2.29</strong></td>
<td><strong>8.5±3.9</strong></td>
</tr>
</tbody>
</table>

Table 2: Effect of honey on mean wound score

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>Total No. of cases</th>
<th>Score at the time of admission</th>
<th>Score after 1 week of dressing</th>
<th>Score after 2 weeks of dressing</th>
<th>Net wound healing score after 2 weeks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diabetic ulcer</td>
<td>6</td>
<td>15.7±2.0</td>
<td>13±2.1</td>
<td>10.25±4.0</td>
<td>5.5±5.1</td>
</tr>
<tr>
<td>Venous ulcer</td>
<td>3</td>
<td>12.5±2.1</td>
<td>11.5±0.7</td>
<td>8±2.8</td>
<td>4.5±4.9</td>
</tr>
<tr>
<td>Pressure ulcer (bedsore)</td>
<td>5</td>
<td>14.4±2.6</td>
<td>11.2±1.7</td>
<td>8.4±2.8</td>
<td>6±3.8</td>
</tr>
<tr>
<td>Tubercular ulcer</td>
<td>1</td>
<td>17±4.7</td>
<td>14.25±3.8</td>
<td>10±3.5</td>
<td>7±4.2</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>15</strong></td>
<td><strong>15.2±3.2</strong></td>
<td><strong>12.7±2.4</strong></td>
<td><strong>9.2±3.17</strong></td>
<td><strong>5.9±4.0</strong></td>
</tr>
</tbody>
</table>

Table 3: Effect Of Betadine On Mean Wound Score

Table 3 Clinical observation according to wound size, wound depth, exudate type, exudate amount and tissue edema.

<table>
<thead>
<tr>
<th>Group</th>
<th>No. of Cases</th>
<th>Improvement on Wound</th>
<th>No Effect</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>No.</td>
<td>%</td>
</tr>
<tr>
<td>Honey dressing</td>
<td>15</td>
<td>12</td>
<td>80</td>
</tr>
<tr>
<td>Betadine dressing</td>
<td>15</td>
<td>9</td>
<td>60</td>
</tr>
<tr>
<td><strong>Mean</strong></td>
<td><strong>15</strong></td>
<td>10.5±2.1</td>
<td>4.5±2.1</td>
</tr>
</tbody>
</table>

Table 4: A Clinical Observation Of Wound According To Wound Assessment Scale After 2 Weeks Dressing
In the study, Group – A subjects showed wound was markedly improved in 12 patients (80%) who received honey dressing and 3 patients (20%) had no effect on their wound, whereas in the Group – B subjects, wound was markedly improved in 9 patients (60%) who received betadine dressing and 6 patients (40%) had no effect on their wound.

**DISCUSSION:** Clinicians have used numerous strategies to treat wound infections, including topical and systemic administration of antibiotics and various antiseptic agents like Povidone-Iodine to kill bacteria or inhibit their growth. Decisions regarding choice of wound treatment involve two basic considerations: (1) how safe is the treatment and (2) how effective is the treatment. Around 1650 BC, Egyptians were the first to use honey as a component in the topical treatment of wounds. Honey is the most ancient wound dressing known, and it has continued to be used throughout the ages. Dioscorides (c.50 AD) wrote of honey being ‘good for sunburn’ and ‘for all rotten and hollow ulcers’, and its usage has continued into present-day folk-medicine. It is used as a traditional therapy in Ghana for infected leg ulcers. It is still being used as a dressing material for burn wounds, decubitus ulcers, gunshot wounds and wound dehiscence. It enhances auto debridement by absorbing edematous fluid around the ulcer margins and promotes granulation tissue formation and epithelization.

This study was conducted over a period of one year and included 30 patients. The age group of patient, sex distribution was almost similar in the both the groups. These patients were divided into two groups, of which the first group (Group-A) dressing of chronic ulcer was done by honey and in the second group (Group-B) dressing of chronic ulcer was done by betadine. In Group-A, 80% patient (12 cases) showed improvement in their wound, while 20% patient (3 cases) did not have any significant changes in their wound. In Group-B, 60% patients (9 cases) showed improvement of their wound, while 40% patients (3 cases) did not show any significant changes. Thus, honey had significantly better wound healing effect when compared with betadine.

The findings of our study are supported by almost similar results obtained by several other studies in the past, in terms of wound healing and cost effectiveness and less pain while dressing. Shukrimi, 2008 in a single centered, randomized control trial of NIDDM patients with ulcer, comparing non-sterile pure honey (for food) with povidone iodine daily dressing improved the outcome of mean time of surgical closure or further debridement of the wound. Gulati 2014, in a single centre, 2-armed, parallel group RCT, in 45 subjects with chronic wounds of different types like venous ulcer, diabetic ulcer, pressure ulcer, traumatic ulcer compared honey dressing with povidone iodine and film dressing showed complete healing of wounds in 31% subjects in subjects with honey dressing in comparison to none in Povidone Iodine dressing subjects. Marshall 2005, in 51patients with acute surgical wounds after partial or total toe-nail avulsions, found that in the group with honey dressing there was decrease in mean time to healing when compared to the group with povidone iodine dressing daily.

In a review by Jull AB et al (2008), there is high quality evidence from two trials that honey dressings heal partial thickness burns more quickly than conventional dressings by around five days and moderate quality evidence from one trial suggesting that honey heals infected post-operative wounds more quickly than povidone iodine washes followed by gauze and is associated
with fewer adverse events. But further studies needs to be done to arrive at a proper conclusion as to effectiveness of honey as a dressing agent.

CONCLUSION: Although the chronic ulcers that are a consequence of underlying systemic disease is likely to improve with the management of the primary conditions, honey dressing was found to be highly effective in achieving healing in terms of size, depth, skin colour, exudate, exudate amount and tissue oedema, in chronic ulcer as compared to betadine.

Further studies on populations with wounds sharing common etiology, with larger population, with pre-specified outcome measures, random and concealed allocation strategies during assessment can give more conclusive evidence which can be applied to general population.

REFERENCES:
ORIGINAl ARTICLE


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