INTRODUCTION

Ayurveda the indigenous system of medicine is an integral part of Indian culture. The ancient acharyas from centuries had used polyherbal and herbo-mineral formulations for prevention and treatment of various ailments. In the present era, there is noted insurmountable demand among the consumers because of holistic approach.

Dusta vrana (chronic ulcer) is a common condition which we see in current surgical practice, which is raising problem and challenge to practicing surgeon, “Kshara” means any substance possessing the property of destroying or hurting body tissue and pacifying the lesion. It is of two kinds Pratisaraneeya kshara (internal administration) and Pratisaraneya kshara (for external application). Pratisaraneeya kshara is usually mridu kshara (mild) and thus can be used internally, where as madhyama and teekshna kshara are stronger in potency which are used for pratisaranara propose and used for external application.

Acharya Sushruta, in the chapter Dwivraneeya chikitsa, explains kshara karma as one of the shasti upakrama (sixty procedures for management of ulcer) and describes that kshara is applied in condition of chronic ulcer other way known as pratisaraneya kshara with symptoms like indurations, and itching, which are hard to clean and have raised hypertrophied granulation tissue hence, these features are very much similar to dusta vrana. Acharya Sushruta described definite process in order to access the best clinical result by adopting specifically processed kshara. The brief process of developing kshara is mentioned as below.

The Whole part of dried apamarga (Achyranthes aspera) approximately of 10 kg was taken which are incinerated into ashes, and then it was allowed to cool by itself. The whole ash (approx 1 kg) was collected and mixed with six times of water and stirred well, and later allowed to settle overnight. Then the filtrate which usually looked amber color was heated on slow controlled continuous heat till it is reduced to half (Kshara Jala). Later one hundred gram of Shukti (Ostrea edulis) heated till it becomes red colour and later mixed with 1/3 rd Kshara Jala with continuous stirring for making a homogenous mixture and allowed to be kept on hot plate (avapa stage). Meanwhile 10 gm of Citrakamula Kalka (Plumbago

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zeylanica) was added to the boiling Kshara Jala. Later is allowed to boil for a few more minutes, when the content attained consistency with minimal total dissolved solids (TLS) as described by Acharya Sushruta at a stage of not too liquid or too solid. Then it is removed from fire and transferred into separate container with lid and stored for use. pH value of the Kshara obtained was 13.5.

Aims and objectives

i. To evaluate efficacy of the Apamarga pratisaraneya kshara karma on dushta vrana for wound healing.

ii. To standardize the procedure of preparation pratisaraneya kshara.

MATERIALS AND METHODS

Prepared Kshara, a composite of many drugs, alleviates the tridosha. Being white in colour it is plain. Because of their composition with properties of pungent, hot, sharp, digestive and suppurative, it has actions like cauterizing, digesting and splitting. When used externally it has cleansing, heating, absorbent, and scraping activities and when used internally it act against worms, skin diseases, poison and obesity. The processed kshara will be having specific properties which are explained in the below table (table I).

Table I: Properties of kshara

<table>
<thead>
<tr>
<th>Rasa</th>
<th>Veerya</th>
<th>Varna</th>
<th>Doshagna</th>
<th>Karma</th>
</tr>
</thead>
<tbody>
<tr>
<td>Katu</td>
<td>Ushna</td>
<td>Shukla</td>
<td>Tridoshashhna</td>
<td>Dahana, Pachana, Darana, Vilayana, Shodhana, Ropana, Shoshana.</td>
</tr>
</tbody>
</table>

Guna: Somya, Thiksna, agneya.

Doshagna: Tridoshaghna

Karma: Dahana, Pachana, Darana, Vilayana, Shodhana, Ropana, Shoshana.

Other supporting materials used those include apamarga pratisaraneya kshara, yashtimadhu ghritha, gauze, Scissors, cotton swab, roller bandage, artery forceps, gloves, kidney tray, stop watch, measuring scale, lemon fruit juice squeezer.

Followed by the ulcer was washed with fresh Lemon fruit juice. After that dressing was done with Yashtimadhu ghritha. This procedure was followed once week for three consecutive weeks. The follow up was done one week after the treatment.

Table II: Inclusion and exclusion criteria

<table>
<thead>
<tr>
<th>Inclusion criteria</th>
<th>Exclusion criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient of age group between 20-70 years, suffering from chronic non-healing ulcer with indurate, itching, which are hard to clean and have raised hypertrophied granulation tissue.</td>
<td>Patients with uncontrolled diabetes and hypertension, Patients diagnosed with malignancy, tuberculosis and other sexually transmitted ulcers were excluded from this study.</td>
</tr>
</tbody>
</table>

Withdrawal criteria were development of severe drug reactions, profuse bleeding, or occurrence of any other serious illness.

Laboratory investigations

Hb%, TLC, DLC, ESR, CT, BT, RBS, lipid profile, HIV, HbsAg, Urine routine and microscopy.

Criteria for assessment

The subjective parameters and objective parameters were recorded on the basis of the score adopted with grading minimum to maximum (0, 1, 2 and 3) as shown in table. III and table IV respectively.

Table III: Subjective criteria for assessment

<table>
<thead>
<tr>
<th>Symptoms</th>
<th>Grades</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pain</td>
<td>0</td>
</tr>
<tr>
<td>Burning sensation</td>
<td>0</td>
</tr>
<tr>
<td>Itching</td>
<td>0</td>
</tr>
</tbody>
</table>

Five patients with presenting dushta vrana features are randomly selected from the OPD/IPD of the Department of Shalya of SKAMCH & RC Bangalore after following the inclusion and exclusion criteria. Written informed consent was taken from all patients prior to embarking on the examination and treatment. The enrolled subjects were examined and investigated as per the protocol with proper fill up of CRF. After following all sterile procedures, the wound was/were carefully examined and cleaned with sterile gauze. Apamarga pratisaraneya kshara was applied on the dushta vrana under observation of 100 matra kala which will be around 35 sec to 1 min with help of stop watch.
RESULTS

Among the five patients studied (n=5), male patients were 60% and 60% of them were found in the age group of 50-60 years. Wound size measured 3 × 3 cm in maximum number of patients (60%) along with features of non-healing with indurate, itching, raised hypertrophied granulation tissue, non edematous margin, bed covered with slight slough with unhealthy granulation tissue and having mild discharge. This study was carried on maximum number (60%) of chronic diabetic ulcers among the types of ulcer. (Table no. V, VI, VII, VIII, IX, and X)

When kshara was applied it was observed that the ulcer slowly turned into blackish blue colour with mild pain and burning sensation during kshara karma which was reduced after application of lime juice and dressing with yastimadhu gritha. Mild pain and burning sensation was also observed for the next two days after kshara karma procedure with serous discharge at the ulcer site. The areas of raised hypertrophied granulation tissue become soft, white unhealthy granulation tissue converted into blackish red colour tissue the unwanted tissues were separated from their base which was easily removable, discharges from the wound reduced remarkably, initiating the growth of healthy granulation tissue and signs of healing were noted in successive visits. Mean difference of grading between before and after treatment in subjective and objective criteria is given in graph I and graph II respectively.

Graph I: Mean difference of grading between before treatment and after treatment in subjective criteria.

Graph II: Mean difference of grading between before treatment and after treatment in objective criteria.
DISCUSSION

After reviewing classical texts, above mentioned method of preparation was found to be ideal in Pratisaraneeya Kshara treatment. Kshara karma without anesthesia on painful chronic ulcer is very challenging to perform due to pain and burning sensation which is noticed during and after kshara karma but in chronic ulcers such as diabetic ulcer, it was comparatively easy because of diabetic neuropathy. The burning sensation which is noticed at ulcer site is might be due to Ushna veerya of apamarga and kshara.

Lime juice neutralizes kshara because; the kshara is considered to have all taste expect sour, pungent is the predominant here and salt is the secondary one. When the pungent and salt taste are treated with sour, they become neutral (sweet) and devoid of sharpness. Chemically pH of kshara was found be 13.5 and pH of lime fruit juice was about 2.3. Hence, according to the Arrhenius theory of acids and base, the acids are the substance which produces hydrogen ions and base produces hydroxide ions. So, neutralisation happens because hydrogen ions and hydroxide ions react to produce water.

\[ \text{H}^+ + \text{OH}^- \rightarrow \text{H}_2\text{O} \]

Kshara has significant role in wound healing, after kshara karma there was fast epithelization, increase collagen deposition and hydroxyproline in granulation tissue, increase tensile strength of wound, hence there was reduced exudates of wound and decreased edema and kshara reduces excessive exudates, necrotic tissues, local discharge and facilitates granulation tissue formation which is necessary for wound healing. Apamarga possess properties like Katu, Tikta rasa, Ushna veerya, Tikshna Ruksha, Laghu guna and Katu vipaka hence acts as wound debridement and it’s known for antioxidant properties and antimicrobial activities. All these properties of drug and formulation help in faster healing of wounds. But its application appears to be most effective in a prepared wound bed, which essentially is provided by debridement.

Hence, it can be said that Kshara is very effective deriding agent as there was significant reduction in discharge and slough tissue of wound which was observed during clinical study. Healing after debridement by apamarga pratisaraneeya kshara karma can also be seen by significant reduction in surface area and faster unit healing time of wound.

CONCLUSION

The results obtained were found very encouraging. Hence, application of pratisaraneeya kshara can be effective intervention in the management of chronic ulcer. As the sample size was very small it needs further clinical evaluation to standardize the drug and procedure.

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