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**Published paper's title : Effect of
Kshara preparation on Necrotizing
Fasciitis : A Case Report**



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A Case Report

Effect of Kshara preparation on Necrotizing Fasciitis : A Case Report

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Declaration

The Declaration of the author for publication of Research Paper in Asian Journal of Modern and Ayurvedic Medical Science (ISSN 2279-0772) I Dr.Gaurav Singh Rathore the author of the research paper entitled Effect of Kshara preparation on Necrotizing Fasciitis : A Case Report declare that , I take the responsibility of the content and material of my paper as I myself have written it and also have read the manuscript of my paper carefully. Also, I hereby give my consent to publish our paper in ajmams , This research paper is my original work and no part of it or it's similar version is published or has been sent for publication anywhere else.I authorise the Editorial Board of the Journal to modify and edit the manuscript. I also give my consent to the publisher of ajmams to own the copyright of my research paper.

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ABSTRACT: Necrotizing fasciitis is a disease which is defined as rapidly progressing necrosis, involving subcutaneous tissues. Usually this disease is a condition which requires an immediate medico-surgical intervention otherwise the mortality rate is very high. The initial clinical presentation includes fever, pain and signs of toxemia. But mostly, the confirm diagnosis is made after surgical debridement. Usually the patients suffering from this disease came with a very foul smelling contaminated wound and with very poor general condition (may be leading towards multi organ failure). Such patients require immediate attention, means, broad spectrum intravenous antibiotic with adequate fluid support and meticulous surgical debridement with regular dressing of wound. Due to such contaminated wound and poor prognosis these patients are usually neglected and therefore, here is a scope for herbal remedies to help these patients as these are easily available, cost effective and very effective as a debriding agent initially and later on as a wound healing agents.

Considering these facts, a Kshara preparation have been selected as a local drug as a local application after every daily cleaning and dressing on a case of lower limb Necrotizing Fasciitis. Obtained results and primary observations have shown very encouraging outcomes and clearly suggest that this Kshara preparation initially works as debriding agent and after on as a healing agent.



Introduction:

Necrotizing fasciitis is a severe soft tissue infection which is usually identified by a very rapidly progressing necrosis and this which is involving the fascia and subcutaneous tissues but in some cases this necrosis can also involve muscles and skin. In this condition the infection usually starts at the site of trauma which may be of varying degree and with the initial complain of intense localized pain. Following this, within a hour of time the disease progress and issue becomes swollen along with Diarrhoea and vomiting which are also common symptoms. The signs of inflammation are not present in early stage but if the bacteria is situated superficially then these signs develop very quickly and leading to necrosis of the tissue. Along with this, the patient suffering with this life-threatening disease appears very weak, ill and also has fever of moderate to high grade. Early and proper diagnosis is key to cure such patients otherwise the mortality rates are very high. The treatment includes immediate intravenous high antibiotics with adequate fluids and proper and meticulous surgical debridement with regular cleaning and dressing of wounds.

In ancient Ayurvedic texts, there are many herbs are described which has excellent debridement and healing properties. Getting clues from these writings a Kshara preparation have been made and used in a case of Necrotizing fasciitis. The obtained results and primary observations have shown very encouraging outcomes. This Kshara preparation was made up of three herbs and they were Guggulu (Commiphoramukul), Haridra (Curcuma longa Linn.) and Apamarga (Achyranthusaspera Linn.). These herbs are also used for the preparation of Ksharasutra which is very popular for the management of Fistula in ano. And, in fact, these herbs are selected on the basis of excellent results shown by this

Ksharsutra. The trail drug was applied daily over the affected wound area with the help of a soaked gauze piece which means the drug was applied in the form of Ksharapichu. This Ksharapichu was applied along with regular surgical invention as per requirement and also along with intravenous and oral antibiotics whenever they needed to control the toxicity and spread to the disease. The antibiotics were selected after culture and sensitivity test.

Furthermore, the obtained results and primary observations, obtained from this single case of Necrotizing fasciitis, have shown very encouraging outcomes and clearly suggest that this Kshara preparation (the Ksharapichu) initially works as debriding agent and after on as a healing agent.

Presentation of case:

A 54-year-old male patient presented to our Institute hospital facility with chief complaint of swelling at right lower limb with severe pain and burning sensation. Patient was unable to move on his both legs and also have fever with occasional chills and breathing difficulty. The patient has the history of injury from a wood piece at the right lower limb at the lateral aspect two days ago. Subsequently, he started pain of mild to moderate grade at the site of injury on the very same night and this pain got more severe on next day with burning sensation and patient was now unable to move properly. On this he went to a local doctor and took some ant analgesic tablets but could not get any relief. On the very next day, the condition of patient became worse as the pain was very severe in nature with moderate to high grade fever and with spreading inflammatory swelling. On this the family members of the patient took him to us for better and proper management.

On arrival, his general condition was not good as he has high grade fever with



swollen right lower limb with a wound, which is showing some necrotic changes. The movements of the affected limb was reduced and associated with severe pain. But the rest neurological and vascular examination of the limb was satisfactory. The patient was unable to stand by his own and also having some breathing difficulty too. On this, the patient was admitted immediately and a shot of intravenous tazobactam was given and patient was also provided by intravenous fluid support. Meanwhile, the preparation for surgical debridement was started and initial and routine blood investigations were sent to the lab. These initial haematological reports clearly suggests that the patient was in septicaemia as the WBC count, Blood urea And Serum Creatinine were at very higher side, but the Blood sugar level and Hb% were in normal limits. HIV and HbsAG were negative too. The X-ray of the right lower limb did not show any bony injury or gas in the soft tissue. On the basis of these findings a diagnosis of Necrotizing fasciitis secondary to traumatic wound was made and urgent surgical debridement was done. This meticulous surgical debridement revealed around 500 ml of thick foul smelling pus from the wound. A sample of this pus was send to immediate microscopy and gram stain test but culture was unable to suggest the involvement of any specific organism. After removing all pus and maximum possible slough tissue from the affected laid open wound, it was properly irrigated with normal saline and then it was covered with sterile dressing after ensuring the proper haemostasis. After this the patient was kept in ward with IV antibiotics and fluid support which were continued for another 5 more days till the patients general condition started showing improvements as the features of toxemia and septicaemia started resolving.

Issue that was still there to be face:

Now, after all this, we have a patient with an open wound which was full of with foul smelling slough, inflammatory exudates and necrotic tissues for management. Now there was a need of proper and regular cleaning and dressing (C & D) of wound with time to time surgical debridement which was done whenever needed. For this purpose, it was decided that a Ksharapreparation will be used as a local application with the help of a gauze piece, means regular cleaning of wound with normal saline and then dressing with Ksharapichu. Along with this the progress in the condition of wound was closely observed and recorded to assess the efficacy of this Kshara preparation on such wound. Interestingly, the results were very encouraging and clearly suggest that this local medicament initially works as a debriding agent and later on helps in healing process a lot.

Method of preparation of Kshara preparation (Ksharapichu):

For preparation of this ksharapichu the Guggulu, Haridra and Apamarga were collected from the nearby village area. Then prepared and processed these raw herbs as they were for the preparation of well-known Guggulu based ApamargaKsharasutra, i.e.:

- 1- Kshara was prepared by burning of Apamarga dried plant.
- 2- Guggulu Resin was extracted in ethyl alcohol.
- 3- Haridrapowder (fine) was obtained from the rhizome of the plant.

Now, a cotton gauze piece of size 25×25 cm was taken and first of all it was dipped in Guggulu Resin and after that the Apamargakshar was sprinkled over it in the form of fine layer then this gauze was allowed to get dried up. This process was repeated for three times.

After that this layered gauze piece was again dipped in Guggulu resin and then



the single layer of Haridra powder was put on that and allow it to dried up properly. In this way the desired Ksharapichu was ready to use.

Method of application of Ksharapichu:

The wound was opened carefully and properly irrigated by continuously flowing normal saline. After this the prepared Ksharapichu was made wet with the normal saline and gently placed over the

These clinical features were noted after every 15 days on the basis of following chart:

Criteria for assessing clinical features

Pain	Scoring	Discharge	Scoring	Oedema	Scoring
No pain	0	No discharge	0	No swelling	0
Mild pain & No analgesic required	1	Serious discharge < 2 ml	1	Mild swelling < 2 cm	1
Moderate pain	2	Seropurulent discharge < 5 ml	2	Moderate swelling with tenderness	2
Severe pain Analgesic required	3	Purulent discharge > 5 ml	3	Swelling with tenderness > 5 cm	3

wound. After this the wound was covered and closed by sterile dressing material. This process was repeated regularly.

Criteria for assessment:

1. Clinical features
 - A. Pain
 - B. Discharge
 - C. Slough

2. Histopathological Study

Histopathology of the wound at subsequent interval of 28 days was carried out to evaluate the difference in the pattern of wound healing. To evaluate the effects of Ksharapichu on the healing of the wound a Punch biopsy was done after an interval of every 28 days till the end of the treatment.

3. Microscopic Angiogenesis grading System

The maintenance of vascular integrity is the main function of Proliferative phase of wound healing and known as Angiogenesis. So its status clearly reveals the pattern of wound healing process. For this purpose tissue samples were collected from the margin of the wound after every 30 days.

The Angiogenesis can be assessed by Microscopic Angiogenesis Grading System (MAGS) of Scoring, which is a quantitative technique for measuring the degree of



angiogenesis. It was based on three parameters of endothelial regeneration providing a composite rating of 0-100. These three parameters are –

- (1) Vasoproliferation (KnN)
- (2) Endothelial cell hyperplasia (KeE)
- (3) Endothelial cytology (KxX)

$$\text{MAGS} = \text{KnN} + \text{KeE} + \text{KxX}$$

Where,

$$\text{Kn} = \text{Constant of value} - 1$$

Observations:

1- Clinical Observations:

Observation of pain:

Follow up							
I	F ₁	F ₂	F ₃	F ₅	F ₆	F ₇	F ₈
3	3	3	2	2	2	1	1

In this scale, the pattern of pain is decreasing from F₂ stage and then after the F₆ stage, means after every

N = No. of vessels per high power field
 Ke = constant of value – 2
 E = No. of endothelial cells lining the cross section of capillary
 Kx = constant of value – 6
 X = histological appearance of an individual endothelial cell

subsequent interval. This simply reveals that the trail drug is having healing properties.

Observation of edema.

Follow up							
I	F ₁	F ₂	F ₃	F ₅	F ₆	F ₇	F ₈
3	2	2	2	2	1	1	1

This scale reveals that, the edema also reducing significantly from the very beginning. This indicates the anti-inflammatory properties of the applicant drug. Here it should be noted that the Guggulu is well known plant which

possess the excellent anti-inflammatory properties and this fact has also been well established in various previous researches.

Observation of discharge.

Follow up							
I	F ₁	F ₂	F ₃	F ₅	F ₆	F ₇	F ₈
3	3	3	3	2	2	1	1



The most interesting finding where seen in case of the discharge as, in initial phase to almost middle phase the level of discharge was constantly on higher side which means the drug is effective enough as a debriding agent.

2- Histopathology

The histopathology of wound at subsequent interval of 28 days was carried out to evaluate the effect of trial Ksharapichu on the pattern of wound healing. As the three Ksharapichu was prepared by herbs which are described as having wound healing and deriding properties by the ancient Ayurvedic texts. Hence, their wound healing properties should be understood and assessed by the histopathological assessment of the wound. To evaluate the effects of Ksharapichu on the healing of the wound, a Punch biopsy was taken after an interval of every 28 days till the treatment ended.

Observation

3-Statistical analysis of MAGS score in all the three groups.

Follow up						
I	F ₁	F ₂	F ₃	F ₄	F ₅	F ₆
8	15	32	44	57	28	20

This observation clearly reveals that there was a good increase of MAGS score in the mid-phase of the treatment, which clearly indicative of better and increased neo-vascularization in the wound area. This development is the resultant of the absence of the necrotic tissue and healing promoter properties of the contents of the trail drug.

Discussion and Conclusion:

In this assessment it was found that the trail Ksharapichu had shown good wound healing and deriding properties.

In the mid-phase of treatment, this again showed better results as marked reduction of inflammatory cells, neutrophils, polymorphs and micro abscesses was observed.

Not only this, wound had shown the early appearance of fibro collagenous tissues, early collagen laying and early marked vascular proliferation. There was also earlier presence of healthy granulation tissues also again indicates the better wound healing properties of ingredients of this Ksharapichu. These healthy granulation tissues help in the early healing of the wound.

In this way, this analysis clearly indicates towards the better wound healing properties of the herbs used in the preparation of this Ksharapichu which contains Guggulu, Apamarga and Haridra.

No doubts, that the Necrotizing fasciitis is a challenging disease to deal with as it is a very fast progressive and having bright chances to cause mortality if did not get timely proper, pinpointed and adequate medico-surgical attention. Not only this, the patients usually neglected also as their wounds are full of very contaminated foul smelling pus and also most of the patients are poor enough who are unable to bear the costly treatment.

Therefore, here is a scope for alternative system of treatment. As they are cost



effective and the desired herbs are usually available in surroundings. The ancient Ayurvedic texts are full of such type of medicaments. Getting clues from these writings a kshara preparation (Kharapichu- a gauze piece containing three types of herbs) have been prepared and put on for clinical trial in a case of notorious Necrotizing fasciitis as a local dressing agent. In this study, very simple criteria were adopted to get preliminary observations about the efficacy of this Ksharapichu.

Interestingly, in this study, it was observed that the Ksharapichu has very good wound debriding properties as the pain and edema lowered down but the amount of discharge goes higher when the Ksharapichu was put on application. Perhaps this is due to the presence of ApamargaKshara which is alkaline by nature, so having protolytic properties. Likewise in histopathological study the trail drugs have shown good wound healing abilities. This fact can also be gauged by the analysis MAGS scoring, in which this score increases a lot in mid-phase of treatment. This fact suggests the wound healing property of the ingredient herbs especially of the Guggulu. On the other hand, the Haridra have anti-microbial properties, it is a well-established fact. Therefore the bacterial load reduces a lot and it provides a good environment for the better and faster healing, this fact is clearly established by the histopathological observation.

In this way, it is now clear that the Ksharapichu (prepared from Guggulu, Apamarga and Haridra) is very effective in the infected wound management. Therefore, it can also be used in the patients suffering from Necrotizing fasciitis as a local dressing material. As it has good, overall, wound healing properties, also having no side effects and cost effective too.

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