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A COMPARATIVE STUDY ON THE EFFECT OF PRATISARNIYA KSHARA WITH 'EDINBURGH UNIVERSITY SOLUTION OF LIME' IN THE MANAGEMENT OF DUSHTA VRANA

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ABSTRACT

From the ages infection of wound has been remained a dreadful obstacle in path of wound healing. So here comes the need of Debridement. *Ayurvedic* literature is full of importance, indications, methods and drugs of *Vrana-shodhana* and *ropana*. One of such drugs is *Pratisarniya Kshara* . *Acharya Sushruta* in *Sutra Sthana 11*, considering its scope in *Shalyatantra* due to its actions like *Chedana*, *Bhedana*, *Lekhana* etc., has described *Kshara* as an *Anushastra*, *Upyantra*,*Agropaharaniya* and one of the *Upakrama* of *Vrana*[1]. After trial of *Pratisarniya kshara* it was found equally effective as EUSOL solution which is a standard solution for debridement. Unpaired t Test was used to compare effect of *Pratisarniya kshara* with EUSOL.

Key Words: *Vrana-shodhana, Kshara, Vrana,* EUSOL **(**Edinburgh University Solution of Lime)

INTRODUCTION

Acharya Sushruta has described various *dravya*, *yoga*, *kashaya* etc. for *vrana shodhana* and *ropana*. One of the drugs described is *Pratisarniya Kshara*. It has both *Vrana shodhana* and *ropana property*. Here efficacy of *Pratisarniya kshara* with EUSOL for *shodhana* was compared i.e. debridement.

AIMS AND OBJECTIVES –

- To evaluate the role of *Pratisarniya kshara* in management of *Dushta vrana* (Infected wound).
- To explore literature in *Ayurveda* for the description of *Pratisarniya Kshara*.
- To review the literature related to *Dushta vrana.*
- To compare the efficacy of *Pratisarniya Kshara* with Edinburgh University Solution of Lime (EUSOL).

MATERIAL AND METHODS:

Selection of the patients: After obtaining

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approval (No.29/2012) from Institutional Ethical Committee, 30 patients of either sex with cardinal features of inclusion criteria were selected from the OPD & IPD of R.G.G.P.G.Ayu. Hospital, Paprola, Himachal Pradesh.

Inclusion criteria

a. Patients willing for trial and ready to give informed consent.
b. Patients of age group 16-60 years of either sex.
c. Non-specific infected wound.
d. Patients having wound with minimum chronicity of 7 days.

Exclusion criteria

a. Patients not willing for trial or not ready to give informed consent.
b. Specific infected wound/ specific wound.
c. Chronic medical disorder.
d. Malignancy.
e. Vascular lesions.
f. Haemorrhagic disorder.
g. Oestomyelitis.
h. Pregnancy.
i. Deficiency disorders.
j. HIV positive patients

PROTOCOL OF THE STUDY: Written and informed consent was taken from all the patients prior to embarking on the examination and treatment. The diagnosis was made on the basis of its clinical, Laboratory investigations and x-rays were done only to exclude the above said disorders . Findings were recorded in properly designed Performa. 25 Selected patients were studied into two groups and observed their records before and after treatment. Duration of trial was 21 days with 2 Follow up.

PREPARARTION OF *PRATISARNIYA KSHARA*-

***MOOLA DRAVYA*-**

Serial number	Name of Drug	Botanical name	Part used
1	*Apamarga*	*Achyranthes aspera* Linn	*Panchanga*
2	*Tilnaal*	*Sesamum indicum* DC	*Panchanga without moola*

***PRAKSHEPA DRAVYA*-**

Serial number	Name of Drug	Common English name	Original formed by	Quantity
1	*Shankhnabhi*	Core of conch shell	Cut front portion of this *Shankha*	338 gram
2	*Ksheerpaka(Jalshukti)*	Pearl mother/ oyster	-	338 gram
3	*Kat-sarkara*	Unburnt lime	*Adaghdha sudhapashana*	338 gram
4	*BhasmaSarkara*	burnt lime/caustic lime or calcium oxide)	*Ksharadravaya saha dagdha dughdhapashana*	338 gram

METHOD OF PREPARATION OF DRUG – Dry *panchanga* of *Apamarga* was burnt with sesame stalks and pebbles of lime stone.

Formed 12 kg of ash was dissolved in 6 times of water and filtered 21 times by wide cloth.Then it was treated on fire in a big pan while it was slowly stirred by a ladle. It was Re-filtered until it became clean, red and slimy. It was again placed on the fire. 280 gram of this alkaline water was kept separate in an iron vessel. Burnt lime, unburnt lime, conch of shell and *jalshukti* each 338 gram were made red hot and dipped in an iron vessel containing alkaline water. A paste of all these material was made. Paste was mixed with remaining alkaline water and further treated on fire and stirred.

This was how Moderate variety of *Pratisarniya kshara was made.*

METHODOLOGY: Patients willing for trial, having classical symptoms of infected wound/ non-healing ulcers and those fulfilling the criteria were selected and randomly divided into following two groups.

Group I: Patients were treated with *Pratisarniya kshara*- Patients of this group were first laid down. Thorough irrigation of the wound with normal saline was done. After wiping and making the wound dry, a gauze piece soaked with *kshara* dissolved in distilled water with the concentration of 0.5 gm per ml, was applied in the wound and then wound was covered with sterile gauze and closed with use of adhesive tape. Next day condition of the wound was assessed, recorded and same method was applied until it become healthy.

***Group II*: Patients of this group were treated with Edinburgh University Solution of Lime (EUSOL)**: After preliminary normal saline wash, sterile gauze piece soaked with a freshly prepared *EUSOL* solution was kept over the wound. It was then covered with sterile dry gauze. Same methods of recording the data were applied. Once the wound became healthy dressing only by normal saline was done in both the groups.

CRITERIA FOR ASSESSMENT

1. Varna 2. Appearance, 3.Tala (wound bed), 4. Surrounding skin 5. *Srava* (type of exudate, amount of discharge, *gandha)* 6.*Vedna*

Grade 0 - No relief in symptoms (0-25%) Grade 1 - Mild relief in symptoms (26-50%) Grade 2- Moderate relief in symptoms (51-75%), Grade 3-Marked improvement in symptoms (76-99%) ,Grade 4 - Cured (Complete remission of symptoms)(100%) with complete healing within 21 days.

1. Effect on *Varna:* Mean score of *varna* in Trial group was 3.00 B.T. which reduced to 0.73 i.e. percentage relief was 75.66%. This was statistically highly significant *(p <0.001)* while in Standard group Mean score of *varna* was 2.86 B.T. which reduced to 0.286 i.e. percentage relief was 89.86%. This was statistically highly significant *(p <0.001).*However intergroup comparison showed statistically non-significant result (p<0.001).

2. Effect on Appearance: Mean score of appearance in Trial group was 3.00 B.T. which reduced 0.73 after treatment i.e. %age relief was 75.66%. This was statistically highly significant *(p <0.001)* while in Standard Group Mean score of *appearance* was 2.86 B.T. which reduced to 0.43 i.e. %age relief was 84.95%. This was statistically highly significant *(p <0.001).* Inter-

group comparison showed statistically non-significant result (p<0.001).

3. Effect on Wound bed: Mean score of *wound bed* in Trial group was 2.90 B.T. which reduced to 0.45. Total %age relief was 84.48%. This was statistically highly significant *(p <0.001).* In Standard Group Mean score of *wound bed* was 2.29 B.T. which reduced to 0.22 i.e. total %age relief was 90.39%. This was statistically highly significant *(p <0.001).* While intergroup comparison showed statistically non-significant result(p<0.001).

4. Effect on Surrounding Skin: Mean score of *surrounding skin* in Trial group was 4.09 B.T which was reduced to 0.55 i.e. 86.55% relief after treatment. This was statistically highly significant *(p <0.001).*While in Standard Group mean score of *surrounding skin* was 3.64 B.T. which reduced to 0.36 i.e. 90 % relief after treatment. This was statistically highly significant *(p <0.001).*Intergroup comparison showed statistically non-significant result(p<0.001).

5. Effect On Type Of Discharge: In Trial group mean score of *type of discharge* was 2.27 B.T. which reduced to 0.55 i.e. total %age relief was 75.77%. This was statistically highly significant *(p <0.001).* In Standard Group mean score of *type of discharge* was 1.86 B.T. which reduced to 0.21 i.e. total %age relief was 88.8%. This was statistically highly significant *(p <0.001).* However Intergroup comparison showed statistically non-significant result(p<0.001).

6. Effect on Amount of Discharge: Mean score of *amount of discharge* in Trial Group was 3.45 B.T. which reduced to 0.63 i.e. 81.74% relief .This was statistically highly significant *(p <0.001)* While in Standard Group mean score of *amount of discharge* was 2.43 B.T. which reduced to 0.29 i.e. 88.1% relief .This was statistically highly significant *(p<0.001).* Intergroup comparison showed statistically non-significant result(p<0.001).

7. Effect on Pain: Mean score of *pain* in Trial Group was 1.27 B.T. which reduced to 0.00 i.e. total %age relief was 100%. This was statistically highly significant *(p <0.001).* In Standard Group mean score of *pain* was 1.29 B.T. which reduced to 0.071 i.e. total %age relief was 92.2. This was statistically highly significant *(p <0.001).* Intergroup comparison showed statistically non-significant result (p<0.001).

8. Effect on Odour: Mean score of *odour* in Trial group was 0.27 B.T. which reduced to 0.00 i.e. percent relief was 100%. This was statistically non- significant *(p >0.05).* In Standard Group mean score of *odour* was 0.43 B.T. which reduced to 0.071 i.e. percent relief was 76.74%. This was statistically non- significant *(p >0.05).* Intergroup comparison showed statistically highly-significant results(p>0.05).

Table 1- Effect of therapy in Trial Group

Sr. No.	Name of the feature	n	Mean		M.D.	+ SD	+ SE	't'	'P'	%age
			BT	AT						
1.	Varna	11	3	0.73	2.27	0.647	0.195	11.656	<0.001	75.66

2.	Appearance of vrana	11	3	0.73	2.27	0.647	0.195	11.656	<0.001	75.66
3.	Wound bed	11	2.90	0.45	2.45	0.820	0.247	9.925	<0.001	84.48
4.	Surrounding skin	11	4.09	0.55	3.54	0.934	0.281	12.587	<0.001	86.55
5.	Type of discharge	11	2.27	0.55	1.73	1.01	0.304	5.677	<0.001	75.77
6.	Amount of Discharge	11	3.45	0.63	2.82	0.981	0.295	9.522	<0.001	81.74
7.	Pain	11	1.27	0.00	1.27	0.786	0.237	5.37	<0.001	100
8.	Odour	11	0.27	0.00	0.27	0.467	0.141	1.94	>.005	100

Table no. 2- Effect of therapy in Standard group

Sr No.	Name of the feature	n	Mean		M.D.	+ SD	+SE	't'	'P'	%age
			BT	AT						
1	Varna	14	2.86	0.29	2.57	0.513	0.14	18.735	<0.001	89.86
2	Appearance of vrana	14	2.86	0.43	2.43	0.513	0.14	17.694	<0.001	84.96
3.	Wound bed	14	2.29	0.22	2.07	0.83	0.22	9.352	<0.001	90.39
4.	Surrounding skin	14	3.64	0.36	3.28	1.33	0.35	9.272	<0.001	90
5.	Type of discharge	14	1.86	0.21	1.64	1.08	0.29	5.682	<0.001	88.79
6.	Amount of Discharge	14	2.43	0.29	2.14	1.09	0.29	7.293	<0.001	88.1
7.	Pain	14	1.29	0.1	1.21	0.43	0.11	10.670	<0.001	92.2
8.	Odour	14	0.43	0.1	0.43	0.51	0.14	3.122	>.005	76.74

DISCUSSION

Discussion on conceptual study-*"Vrana Gatra Vichurnane"*[2] can be better understood in terms of discontinuity of skin / mucous membrane. It can be established in the form of Nija Vrana or Ulcer and *Agantuja Vrana* or Wound on the basis of mode of onset, pathogenesis and characteristic features. The characteristic features of *Dushta Vrana* described in the classics indicate towards infected wound/ Non-healing ulcers as-

1. *Vivarnasch*[3], *Krishnaraktapeetashukladeenamvarnanaamnyatamvarnobhairav*[4]- unhealthy granulation tissue or necrotic tissue, fierce looking, excessively elevated or depressed granulation tissue. Excessively elevated or depressed.
2. *Tatra atisamvritoativivrato*[5] -excessively narrow or excessively wide mouth.
3. *Raagkandusophapidikopdrutotyatartham*[6] -Red, oedematous and complicated with vesicles all around, discoloration of surrounding skin.
4. *Atikathino-atimridu*[7]-excessively indurated or soft ulcer.
5. *Dustashonitasraavi,Putipuyasraavi*[8],*Bahusraava*[9]-

excessive discharge, Putrefying pus, Purulent profuse blood stained discharge.

6. *Gandhoatyartham*[10] Unpleasant smell, *Putigandhaan*[11] -foul smelling.
7. *Vednavaan, daaha*[12] ,*Maharuja*[13] - Severe pain, burning
8. *Atiseeto-atiushna*[14] -Very hot or very cold
9. *Deerghakaalanubandhi*[15] -Chronicity present

The clinical features of *Shuddha Vrana* in the texts indicate towards a healthy or healing wound. A *Shuddha Vrana* possesses following features:

1. *Tribhidoshanukranta*[16], *Na cha atiruka*[17], *Niraasravo*[18], *vigata vedana*[19]. All this versions show that a healthy or healing wound should not have any discharge, swelling, odour, pain, etc. and free from any of vitiated dosha.
2. *Syavaostha kinchit Krishnapandu prashad shonitatwat*[20],*Na ati rakto na ati pandu na ati syavo*[21], *Jivhya varna syava varna*[22,23] - Bluish white zone in periphery which is due to thin growing epithelium with fibrosis of scar.
3. *Pidhki vranoshthe*[24]- Show healthy granulation tissue.
4. *Sama*[25] ,*Na chotsanno na cha utsangi*[26],*Samaustha madhyata kinchida unnat madhyata*[27]-The floor as well as base of the wound shows even surface.
5. *Avedano*[28], *Na cha atiruka*[29] – Suggest mild to moderate pain.
6. *Anupdrava*[30]-Without any complications, is the prime feature of a *Shuddha Vrana.*

Discussion on Treatment Modality-

- *Kshara* improves *Varna* and granulation tissue, shape and size by- *Shodhana*[31], *Ropana*[32] property.
- It lessens or ceases the *Srava* (discharge) by its *Stambhan*[33] and *Shoshana*[34] property.
- *Kshara* is *Tridoshaghna*[35], so by virtue of decreasing *Vata dosha* also, it lessens *Vedna*.
- *Krimyadi Uphrinta*[36]- by virtue of this it decrease further bacterial or fungal infection and proliferation.
- By virtue of having *Pachana*[37] property, it decreases *Vranashotha* i.e. oedema or inflammation.
- Seed and pentads of *Apamarga* contain potassium salts. External application of this has anti – inflammatory, analgesic and antiseptic property.

CONCLUSION

Effect of Pratisarniya Kshara in Trial Group:

In this group, there was 100% relief in pain and odour. There was 75.66% relief in Varna and Appearance. 86.55%, 84.48%, 81.74% relief in Surrounding skin, wound bed and amount of discharge respectively. In type of discharge, there was 75.77% relief.

The statistical data reveals that highly significant result was achieved in Varna Appearance, Surrounding skin, wound bed and amount of discharge and in type of discharge($p<0.001$) and not significant in odour ($p>0.05$).

Effect of EUSOL in Standard Group: In this group, 89.86%, 84.96%, 90.39% and 90% relief in Varna, Appearance, Wound bed and surrounding skin respectively. In type and amount of discharge there was 88.79%, 88.1% relief respectively. There

was 92.2 % relief in pain and 76.74% relief in odour.

The statistical data reveals that highly significant result was achieved in Varna, Appearance, Wound bed, Surrounding skin, Pain and in type and amount of discharge ($p<0.001$) but not significant in odour ($p>0.05$) because not much patients were presented with this complain.

Intergroup comparison of both groups showed that all the parameters except odour were statistically non-significant while odour was highly significant.

OVERALL RESULT OF THERAPY (GROUP WISE):

In Trial group 9% patients were cured completely while 27.27% patients had moderate improvement in their symptoms and signs and 63.64% patients had marked improvement. In comparison to this, in Standard group 21.42% were completely cured, 21.42 % had moderate improvement in their signs and symptoms, while 57.14% patients had marked improvement.

INFERENCE –Both the drugs had almost equal effects on assessment parameters and intergroup results showed statistically non-significant result but 1st and 2nd follow ups revealed that healing was somewhat delayed in standard group.

During trial period, 1 patient of Trial group and 3 patients of Standard group were cured. Rest 7 patients of trial group and 4 patients of standard group were completely cured till 1st follow-up. Till 2nd follow up rest wounds of remaining patients were also healed.

There was severe burning 2-3 minutes after application of *Kshara*. Besides it there were no adverse or side effects of trial drug.

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