



ANTI INFLAMMATORY EFFECT OF LEECH THERAPY IN THE PATIENTS OF PSORIASIS (EK KUSTHA)

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ABSTRACT

Ek kustha is a type of kshudra kustha described in different Ayurvedic classics. It is a vata-kaphaj disorder. The clinical symptom of Ek kustha described in Ayurveda resembles with the clinical symptom of Psoriasis. The clinical feature of Ek kustha described by Kashyap represents remission, relapse and seasonal variation, which are present in Psoriasis. In modern medicine there is no definite treatment for this disease. The medicines, which are available to treat the disease, are not very effective and cannot be used for long-term management because of their local and systemic side effect as well as toxicity. Medicines, which are used in Ayurveda, are safe and being practiced since thousands of year. A large number of drugs and measures are described in Ayurveda for the treatment of Kustha. This study was designed to access the anti-inflammatory activity of Leech Therapy in the treatment psoriasis (Ek kustha). The study was randomized open phase clinical trial.

The patients of age group 18 to 60 were selected on the basis of Ayurvedic signs and symptoms of Ek kustha. Observations were recorded for sharply defined erythemo-squamous lesions varying in size; presence of erythema, scaling and induration in the lesions; surface consists of non-coherent scales; positive Auspitz sign – (Bleeding occurs after scratching of scales); positive onion peeling sign/candle grease sign (after scratching the scales fall like peels of onion). Since the assessment criteria was Quantitative, paired 't' test was applied. In the current study the treatment was found significantly effective in treating psoriasis. So, we can conclude that leech therapy is effective in the treatment of psoriasis.

KEY WORDS: Psoriasis, Analgesic, Anti-inflammatory, Leech therapy

INTRODUCTION

Ek Kustha is a type of Kshudra kustha^{1,2} described in different Ayurvedic classics. It is a vata-kaphaj disorder. The clinical symptom of Ek Kustha described in Ayurveda resembles with the clinical symptom of Psoriasis. The clinical feature of Ek Kustha described by Kashyap represents remission, relapse and seasonal variation which are present in Psoriasis. It is one of the common dermatological problems in the world.

Psoriasis is a papulosquamous dermatosis of unknown etiology³ with spontaneous remission, relapse and seasonal variation. It clinically presents with lesions of varying size and configuration, distributed all over the body with silvery scales, covering loops of dilated superficial capillaries underneath which are presented as tiny bleeding points on removal of scales (Auspitz's sign). It affects about 2% of world population. Various races and communities differ in the susceptibility to this disease. In India it affects about 1.5% of population including both the gender. It appears to be common in Europeans than in Orientals.

Psoriasis like other skin disorders is challenge to the medical sciences. In modern medicine there is no definite treatment for this disease. The medicines, which are available to treat the disease, are not very effective and cannot be used for long-term management because of their local and systemic side effect as well as toxicity. Medicines, which are used in Ayurveda, are safe and being practiced since thousands of year. Ayurveda propounds a very distinct principal of biopurification because of the complex nature of its aetiopatogenesis. Panchakarma is a very unique therapeutic procedure, because of its preventive, promotive, prophylactic and rejuvenative properties as well as providing the radical cure. Rakta Mokshan (blood letting) is one of the best therapies mentioned in Ayurvedic classics for skin disorders⁴. Jalaukavcharan is the best measure for Rakta mokshan. During Rakta-mokshan, Doshas (especially pitta and rakta) are eliminated because rakta and pitta are integrally associated with each other⁵. Thus, Rakta mokshan had been selected for the treatment of Ek Kustha in the present study.

MATERIALS AND METHOD

Plan of the Basal Study

The patients fulfilling the diagnostic criteria were selected for the study and interviewed thoroughly along with their family members and/or relative to obtain detailed information about the patient as well as the disease and collected in different data viz-

1. Demographic profile
2. Clinical profile

Duration of treatment

The total duration of treatment was fixed for six weeks with the regular weekly follow-ups. The patients registered for clinical sty were advised to not to take any other drug during the trial period both internally and externally.

Criteria for diagnosis of Ek kustha (Psoriasis)

1. Sharply defined erythemo-squamous lesions varying in size.
2. Presence of erythema, scaling and induration in the lesions.
3. Surface consists of non-coherent scales.
4. Positive Auspitz sign – (Bleeding occurs after scratching of scales).
5. Positive onion peeling sign/candle grease sign (after scratching the scales fall like peels of onion).

Inclusion Criteria

1. The patients were clinically diagnosed according to Ayurvedic signs and symptoms.
2. Age-18 to 60 yrs.
3. Sex- Either
4. Marital status- Either
5. Socioeconomic status- All classes.

Exclusion criteria

1. Patients having age less than 12 yrs. and more than 60 yrs.
2. Patients having inconclusive diagnosis.
3. Patients of psoriatic arthropathy and psoriatic erythroderma.
4. Patients having cardiac disease, renal disease and endocrine disorders were excluded in the study to avoid overlapping of symptomatology.

PROCEDURE FOR LEECH THERAPY (JALAUKACHARAN)

Selection of Leech (*Hirudo medicinalis*)

Out of twelve, only six varieties of nonpoisonous leeches are used for medicinal purpose. Sankumukhi type of leech is preferably used for medicinal purposes due to its rapid blood sucking capacity. As per classical description of Ayurveda, Leeches used for the therapy were obtained from fresh water pond of medium size (4-6gms weight). Leeches were applied once in every week for three months duration.

Storage and maintenance of Leech

Leech should be stored in well labeled container having multiple pores on the top for proper aeration. Temperature should be maintained around 15-27° C. The water of container should be de-chlorinated and should be replaced after 5 to 6 day. About 50 leeches can be kept in one gallon (4 liter) of water. If it is not possible to get the de-chlorinated water then keep the container of chlorinated water open in the air for a period of time and then use it for storage of leech. It is better to avoid direct exposure of sun light to the leeches.

Preparation: To activate the Leeches as well as to make the skin of leeches antiseptic they were put in a bowl containing a solution of Haridra and water for a period of 15 minutes. Later on Leeches were cleaned by keeping them in another bowl of pure water for 15 minutes.

Position: The patients were advised to sit down in position of spreading both legs forward and some times in prone position when leeches were applied on affected areas.

Procedure: The posterior sucker of leech was held in one hand and anterior sucker was placed at site of application (maximum tenderness), where the leech was expected to be fixed. Thereafter, the posterior sucker was released from the hand & attached to the surrounding skin surface of the joint. Thereafter, the leeches were covered with wetted gauge piece. To keep it moist few drops of water were poured on & often. As soon as the leeches showed the sign of elevated head & pumping action of the anterior sucker region the time was noted, when the leeches got detached spontaneously or otherwise, the time was once again noted. After leeches get detached, the site of application was properly cleaned, thereafter, sprinkling of Madhuyasti powder was done followed by tight bandaging of the wound.

Precaution: With the onset of symptoms like burning, itching, pain etc., the leeches were removed by sprinkling Haridra powder or Saindhav.

Contra indication of leech therapy

1. Blood clotting disorders

2. Severe anemia
3. Allergic reaction to active substances of the leech like hirudin, calin, hyaluronidase, egline, kollagenage, apyrase, destabilase, piyavit etc.
4. Human with weak constitution.
5. Pregnancy.

Scoring (PASI Score)

The four main anatomical sites are assessed. The head (h), upper extremities (u), trunk (t) and lower extremities (l) roughly corresponding to 10, 20, 30 and 40% of body surface area (BSA), respectively. The PASI Score is calculated as follows⁶ –

$$\text{PASI} = 0.1 (E_h + S_h + I_h) A_h + 0.2 (E_u + S_u + I_u) A_u + 0.3 (E_t + S_t + I_t) A_t + 0.4 (E_l + S_l + I_l) A_l$$

Where E = Erythema, S=Scaling, I=Induration and A=Area E, S and I are assessed according to a '4' point scale where

- 0 = No symptoms
- 1 = Slight
- 2 = Moderate
- 3 = Marked
- 4 = Very marked

'A' is assigned a numerical value based on the extent of lesion in a given anatomic site:

- 1 (<10%)
- 2 (10-29%)
- 3 (30-49%)
- 4 (50-69%)
- 5 (70-89%)
- 6 (90-100)

Scoring criteria for other symptoms

- Score 0-No symptom
- Score 1-Mild
- Score 2-Moderate
- Score 3-Severe

Parameters of Assessment

1. Estimation of Psoriasis area severity index (PASI Score).
2. Patients report as his own observations.
3. General assessment of the doctor (researcher).
4. Photographs taken at regular intervals.
5. Side / toxic effects of the drug, if any

OBSERVATION AND RESULTS

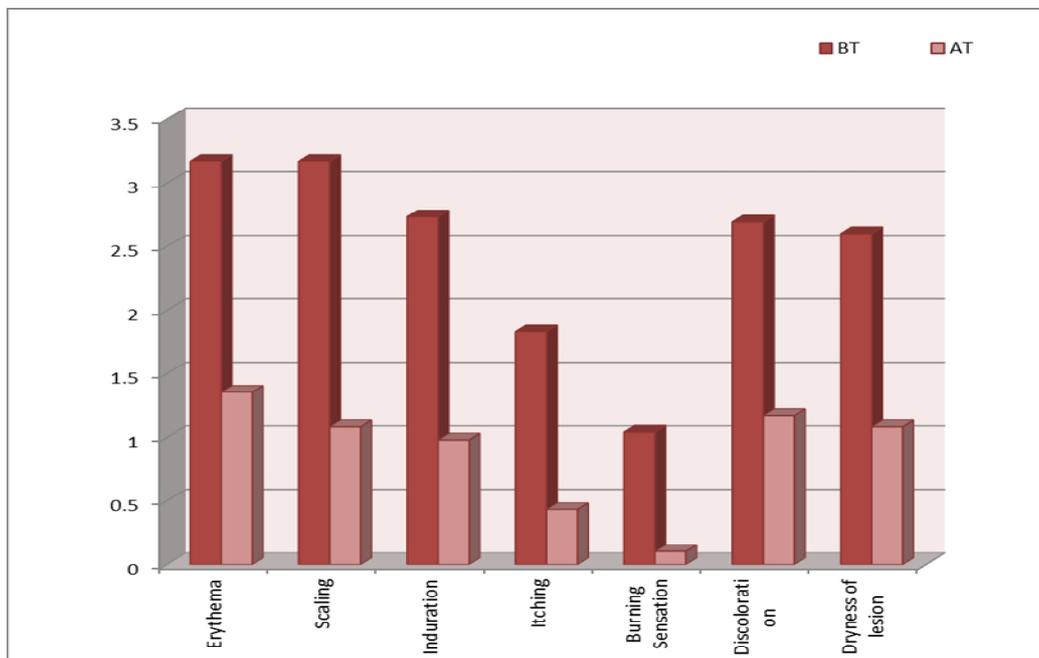
All statistical analysis is done by student unpaired t-test 'p' value <0.001 were considered to be statistically highly significant. The 'p' value >0.05 were considered to be non-significant.

All the observations in reduction of symptoms and statistical analysis are given in table.

Table 1: Showing the effect of therapy in patients of Ek kustha (Psoriasis)

Symptoms	Mean ± SD		Paired t-test BT-AT
	BT	AT	
Erythema	3.17±0.76	1.35±0.59	1.83±0.76 (t=17.34, p<0.001)
Scaling	3.17±0.76	1.08±0.62	2.09±0.72 (t=20.96, p<0.001)
Induration	2.73±0.49	0.98±0.54	1.75±0.76 (t=16.52, p<0.001)
Itching	1.83±1.20	0.43±0.63	1.42±1.13 (t=9.11, p<0.001)
Burning Sensation	1.04±1.22	0.10 ±0.30	0.94±1.11(t=6.12, p<0.001)
Discoloration	2.69 ±0.47	1.17 ±0.38	1.52±0.54 (t=20.21, p<0.001)
Dryness of lesion	2.60 ±0.50	1.08 ±0.27	1.52±0.54 (t=20.21, p<0.001)
PASI Score	24.49±7.88	19.00±6.19	5.49±3.66 (t=10.81, p<0.001)

BT- Before treatment, AT- After treatment



Graph 1: Showing the effect of therapy in patients of Ek kustha (Psoriasis)

DISCUSSION

The medicinal Leech is a beautiful symbol of give-and-take and is sustainable resource management. *Hirudo medicinalis* is one of the oldest surviving animals on earth. The first documented accounts of the use of Leeches for medicinal purpose is from the time of extreme antiquity, more than 2500 years before in Ayurvedic texts, then long later during the period of Hippocrates. Dhanwantari, the Indian God of Ayurveda holds a leech in one of his hands. This simply suggests the importance of leeches in medical field by ancient Indian sciences. Leeches have and will always be thought of as the "wonder doctors" of science.

Psoriasis is a papulosquamous dermatosis of unknown etiology³ with spontaneous remission, relapse and seasonal variation. It clinically presents with lesions of varying size and configuration, distributed all over the body with silvery scales, covering loops of dilated superficial capillaries underneath which are presented as tiny bleeding points on removal of scales (Auspitz's sign). It affects about 2% of world population. Various races and communities differ in the susceptibility to this disease. In India it affects about 1.5% of population including both the gender. It appears to be common in Europeans than in Orientals.

Leech therapy may be more effective than topical analgesics and anti-inflammatory agents in the treatment of psoriasis⁷. Although leeches may not be safe for people with diseases that impair blood clotting or for those with compromised immune function, it is believed to be safe for most other people. Its immediate effect on pain, inflammation, lasting effects on stiffness and dysfunction; high degree of safety suggest that this therapy has great potential in the management of inflammatory disorders. Patients with psoriasis, who were treated with leech therapy, experienced clinically significant improvements in self-perceptions of pain and other symptoms for a limited period.

The saliva of leeches contains a variety of substances such as Hirudin, hyaluronidase, histamine like vasodilators, collagenase, destabilase⁸, inhibitors of kallikrein, superoxide production and poorly characterized anesthetics and analgesic compounds⁹. These substances might reach deeper tissue zones and possibly the joint spaces. Various bioactive substances in leech saliva may also be

as pharmacologically potent as hirudin and thus exert substantial effects in periarticular tissue and adjacent structures¹⁰. It has been proved through Laser Doppler Flowmetry that there is a significant increase in superficial skin perfusion following leech application, especially 16 mm around the biting zone¹¹. Therefore, a regional analgesic and antiphlogistic effect by these substances enforced by hyaluronidase, as well as counter-irritation might be the possible reason of improvement by treatment with leeches. Leech therapy could induce pain relief through antinociceptive effects and counter-irritation. However, it is not known to what extent leech bites may induce such mechanisms. The jaws of the leech pierce the skin so that these potent biologically active substances can penetrate into the deeper tissues. Hyaluronidase (spreading factor), an enzyme in leech saliva, further facilitates the penetration and diffusion of these pharmacologically active substances into the tissues. With the additive effect of hyaluronidase, it is highly probable that the antiphlogistic substances in leech saliva can penetrate deep enough to exert significant effects on periarticular myofascial structures and perhaps even on intra-articular structures.

Venous congestion is another important complication that threatens the viability of the affected areas. It can be best treated with the application of leeches. Leech therapy has two phases, active bloodletting and passive bleeding from the leech wound after detachment, which can last for several hours. The small blood volumes removed by medicinal leeches and the augment blood removal during the passive-bleeding phase of leech therapy results remarkably decrease in venous congestion in the joints. In addition to this, a broad number of anticoagulant agents decrease venous congestion such as the thrombin inhibitor hirudin, apyrase as well as collagenase, hyaluronidase, Factor Xa inhibitor and fibrinase I and II^{12,13,14}.

In summary, traditional leech therapy seems to be an effective in treatment for psoriasis. The effectiveness and safety of this treatment, especially when applied repeatedly, should be further evaluated in larger randomized studies. In addition, the active compounds in leech saliva and their local release deserve further study. Currently, no pharmacologic agent has similar lasting

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effects after a single local administration. Further research into the anti-inflammatory compounds of leech saliva could lead to the

CONCLUSION

In the current study the treatment was found significantly effective in treating psoriasis. The effect of treatment was $t=17.34$

development of new effective substances for treating psoriasis.

for erythema, $t=20.96$ for scaling, $t=16.52$ for induration, $t=9.11$ for itching, $t=6.12$ burning sensation, $t=20.21$ for discoloration, $t=20.21$ for dryness of lesion and $t=10.81$ for PASI Score.

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