

CONCEPTUAL STUDY OF EFFICACY OF *JALAUKAVACHARANA* IN *NETRAROGA*

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Article Received on 23/01/2021

Article Revised on 13/02/2021

Article Accepted on 03/03/2021

ABSTRACT

Raktamokshana (Bloodletting) is one of the para surgical, detoxification method of *panchkarma* which helps to eliminate vitiated *dosha* that accumulate in the body.

Jalaukavacharana i.e. Leech therapy is the form of *Raktamokshana*, in which vitiated *Pitta* and *Rakta doshas* get let out from the body, practiced since ancient times to treat *netrarogas*. *Netra* is *pitta sthana*. *Jalauka* is recommended by *Acharya Sushruta* in *Piitaj* and *Raktaj vikara*. *Jalaukavacharana* has the property to subside immediately the pain, swelling, burning sensation and redness. Now a day environment is being highly polluted, due to which there is increase chances of infection in the eyes. there are many side effects of modern medicine. *Jalaukavacharana* is free of side effects, cheaper, easier, convenient method, prevent the recurrence of disease, minimal painful, can be done in children and delicate personalities. It has minimal chances of complication as well as leaves no scar after use and has a significant effect in relieving the symptoms of the patients.

So, it is need to spread awareness about *Jalaukavacharana* and its efficacy.

KEYWORDS: *Raktamokshana*, *Jalaukavacharana*, *Netraroga*.

INTRODUCTION

Lord *Dhanavantari* with leech in his hand indicates the importance of leech therapy in *Ayurveda*. The word leech is derived from 'laece' which means physician. Leeches are given the name *Jalauka* because of their nutrition is *Jala*. It resides in water, hence being *sita* in nature pacifies *pitta dosha*. It was used to treat a wide range of ophthalmic diseases. It was practiced prophylactically as well as therapeutically.

Classification of leeches

Raktamokshana is included in *Panchkarma* by *Acharya Sushruta*.

Mainly 2 types of *Raktamokshana* i.e. *Ashastrakruta* and *Shastrakruta*. *Jalaukavacharana* is the type of *Ashastrakruta Raktamokshana*.

In *Sushruta samhita*, 12 types of leeches are mentioned and classified them into two categories i.e. *Nirvisha jalauka* (Non-poisonous leeches) and *Savisha jalauka* (poisonous leeches).

Poisonous leeches include *Krushna*, *Karbura*, *Alagarda*, *Indrayudha*, *Samudrika* and *Gochandana*.

Nonpoisonous leeches include *Kapila*, *Pingala*, *Shankhumukhi*, *Mushika*, *Pundarikmukhi* and *Savarika*.

Scientific classification of leech

Kingdom : Animalia
Phylum : Annelida
Class : Clitellata
Order : Hirudinida
Family : Hirudinidae
Genus : Hirudo
Species : Medicinalis

Geographical distribution

According to *Sushruta*, the leeches are found in *yavana*, *pandya*, *sahya*, *pautana* etc. regions.

Sites of raktamokshana in netraroga:

Upnasika : Near nasal bridge.
Lalat : Forehead of affected side.
Apanga : Near lateral canthus.

These areas are mainly supplied by branches of superficial temporal artery, branch of the external carotid artery and superficial temporal vein, branch of external jugular vein. These superficial temporal artery and vein anastomose with supraorbital artery and supraorbital vein branch of ophthalmic artery and vein. The ophthalmic artery and vein supply various parts of eyeball and orbit. On application of leech in these areas, the biological active substances of leech saliva easily reach in vicinity

parts of eyes and perform their action in addition to benefits of *Raktamokshana*.

Collection of leeches

According to *Sushruta Samhita*, leeches should be collected from ponds or lake with the help of piece of wet leather. According to *Acharya Dalhana*, best time for collection of leeches is autumn season. According to *Charaka Samhita*, in autumn water becomes hot during day time due to exposure to sun, cools in the night and is well detoxified. A popular method is collecting leeches in certain regions is by using a large tin can. The top of can is crushed leaving the mouth opening of an inch on top or on two sides.

Storage of leeches

According to *Sushruta Samhita*, collected leeches should be stored in a new big wide earthen pot containing clean water and mud from tanks or ponds. Powder of moss, dried meat should be given for feeding, straw and aquatic plants should be provided for making their bed. Water should be changed every 3 days or pot should be changed weekly.

Purification of leeches for application

According to *Sushruta Samhita*, a paste prepared with mustard, turmeric and water should be applied on the body of the leech. They should be then kept in a vessel of water for about 48 minute (*Muhurta*) till they get rid of their exhaustion. According to *Acharya Vagbhata*, in addition to turmeric water, *jalauka* can also be dipped in *kanji* or *takra*, then put into fresh water and applied on patient.

Precise time for *Raktamokshana*

Pitta dosha get provoked and vitiate *rakta* in the *sharad* (autumn) season, so the autumn is best for *raktamokshana*. *Sushruta* has further specified that blood letting should be performed on a patient not in an extremely hot or cold seasons.

Conditional timings for *Raktamokshana*-

- In rainy season, but in clear sky.
- In summer season, but in cool time.
- In winter season, but in the noon.

Procedure of *Jalaukavacharana*

On the basis of *Ayurvedic* text this procedure can be divided as *Purva*, *Pradhan* and *Paschatkarma*.

Purvakarma

The first step is to examine the patient for *jalaukavacharana*, making him/her lie down in supine position. The patient should be subjected to *snehana* (oleation) and *swedana* (fomentation), to enhance the movements of *doshas*. Before the application of leech, it should be kept in *haridra* and mustard mixed water for a *muhurta* and apply to the patient when it becomes active. Then the site of application is cleaned with sterile gauze and that place is done wet with clean water.

Pradhankarma

Acharya Sushruta has indicated to grab the leech with wet gauze. In case of nonattachment; *kshirbindu* or *raktabindu* is applied or the part is pricked with a needle or another leech should be taken as per *sushruta Samhita*.

The leeches should be hold at its neck and should be applied directly to the desired part. The leech when starts sucking the blood, elevates its neck assuming the shape of horse shoe. Once leeches start sucking the blood, they should be covered with wet gauze and cold water should be poured on them from above time to time, so as to make the leeches comfortable during sucking. It sucks only impure blood first. If the patient notices pain at the time of sucking the blood by leech, it should be noted that the leech is sucking pure blood. It should be removed instantaneously by pouring *saindhava lavana* or *haridra churna* on its mouth.

Jalaukavacharana pramana

Rakta is a *dhatu* and *dosha* both, when vitiated, it should be drained within physiological limits. According to *Acharya dalhana*, the quantity of blood in *jalaukavacharana* depends on *purusha bala pramana*, *dosha bala pramana* and *vyadhi bala pramana*. The maximum amount of drainage of blood is 1 *Prastha* (54 tola / 600 ml).

Paschatkarma

After falling off, the leeches should be made to vomit as described in classic texts. This is carried out by applying turmeric powder at their mouths or dusted over with rice powder and their mouth should be lubricated with oil and salt. Then they should be caught by the tail end with thumb and the forefinger of left hand and their backs should be gently rubbed with same fingers of the right hand from tail upward to the mouth with a view to make then eject the full quantity of blood. If the leech is active when placed in water, it indicates that the vomiting is proper. If there is no complete ejection, they would be lying dull and it gives rise to an incurable disease particularly known as '*Indramada*' or '*Raktamad*'.

The used leeches are kept in separate jars/pots labelled with details of the patient (name, OPD/IPD number, date of application etc.). the leech should be applied once in a week and one leech should be reserved for a particular patient to avoid cross infection.

As soon as the leech is removed from the body, treatment for the wound is given according to *samyaka yoga* or *ayoga* basis as mentioned in *ayurvedic* texts.

i.e. in case of *samyak raktasruti* use of *shatadhauta ghrita* as *abhyanga* (massage) or *pichu* dipped in *shatadhauta ghrita* is to be applied on wound.

In *hinayoga* (scanty bleeding) *madhu* should be rubbed. Whereas in *atiyoga* (copious bleeding) *parishechan* is to be done with cold water.

If there is *mithyayoga* (improper) then wound should be covered with paste of *Kashaya* (astringent), *madhura* (soothing), *snigdha* (smooth), and *sheeta* (cold) *pradeha*.

Benefits of *jalaukavacharana*:

Sr.no	Components	Properties
1	Hirudin, Calin, Destabilase, Hirustatin	Anticoagulant, hence increase blood circulation locally and alleviate inflammation and revitalize cell at local site.
2	Bacteriostatic and anesthetic substance	Inhibit growth of bacteria, anesthetic substances which reduces pain on site.
3	Bdelins, Eglins	Anti-inflammatory.
4	Hyaluronidase	increase perfusion in tissues and circulation of blood at local site.
5	Histamine	Vasodilatation.
6	Tryptase inhibitor	Inhibit proteolytic enzyme of host mast cells.

Probable mode of action

The probable mode of action of *jalauka* is purification of body by removing deeply seated toxins and pacifying vitiated *dosha*. Biologically active substances in leech saliva help the cells to absorb necessary nutrition and eliminate toxins. This modality falls under purificatory therapies, which cleanse the body and helps in maintenance of health.

Importance of *jalaukavacharana* in *netraroga*

As a swan can separate the water from a mixture of milk and water; likewise, a *jalauka* can separate impure blood from the pure blood and it sucks impure blood only.

Netraroga samprapti

Prakupit tridoshas vitiated by *hetusevana* go through *urdwagami sira* of *netra* and produces *darun netraroga*. *Netra* is the site of *Aalochak pitta*. The properties of *pitta* and *rakta* are same as they have *aashrayashrayi bhava*. In such condition, *jalaukavacharana* is very useful in *netraroga* produced by *raktadushti* and *pittadushti*. *Raktadhatu* is very important for its *jeevaniya karma*.

Indications

- *Doshas* are situated in deeper tissues.
- *Pitta* predominance.
- *Abhishyanda* (conjunctivitis)
- *Adhimantha* (glaucoma)
- *Siraharsha* (inflammation)
- *Sirotpat* (hyperemia)
- *Puyalasa* (dacrocystitis)

- *Vatparyaya* (ocular pain)
- *Anyatovata* (ocular pain)
- *Sashof Akshipaka* (purulent conjunctivitis)
- *Ashof Akshipaka* (conjunctivitis)
- *Arjuna* (subconjunctival hemorrhage)
- *Savarna shukla* (corneal ulcer)
- *Pittaj timira*
- *Kaphaj timira*
- *Pothaki* (Trachoma)
- *Vartma utklishta -Pittotklishta & Raktotklishta*
- *Kukunak* (ophthalmia neonatorum)
- *Pakshmashat* (madarosis)
- *Nayanabhighata*
- *Ajakajat* (iris prolapse)
- *Dhoomdarshi*
- *Amlavidagdha drushti* (vernal kerato conjunctivitis)
- *Ushnavidagdha drushti* (night blindness)
- Complications of *Linganasha shastrakarma*

Contraindications

According to Ayurveda, *Jalaukavacharana* should not be performed in patients suffering from generalized anasarca (*Sarwanga shopha*) generated with *amla bhojana*, *Kshina* (emaciated), *Shopha* (swelling), *Pandu* (Anemia), *Udara* (Ascites), and also in *Garbhini* (pregnancy).

Conjunctivitis

Inflammation of conjunctiva with discharge caused by infective organisms like bacteria, viruses and allergy. The saliva of leeches also contains anesthetic substances which deaden pain on the site and also bacteria inhibiting substance which inhibit the growth of bacteria. Bdelins are anti-inflammatory agents in the leech's saliva act by inhibiting trypsin as well as plasmin, it also inhibits the action of the acrosin. Eglins are another anti-inflammatory agents.

Glaucoma

Multifactorial aetiology increases in intraocular pressure which leads to damage of optic nerve. *Jalaukavacharana* facilitates drainage of aqueous humor through trabecular meshwork. Leech suck peripheral blood, reduces inflammation and congestion locally and facilitates drainage.

Subconjunctival hemorrhage

Hirudin acts as anticoagulant by binding itself to thrombin, thus effectively inhibiting coagulation of blood locally. Another compound is Calin, works as an anticoagulant by prohibiting the Von Willebrand factor to bind itself to collagen and it is also an effective inhibitor of platelet aggregation caused by collagen.

Periorbital Hematoma

Jalaukavacharana extracts pooled blood and it also have an anti-edematous effect, which is especially helpful as a conservative measure to evacuate pooled interstitial fluids as in the case of a periorbital hematoma. Hirudin, binds itself to thrombin and thus effectively inhibiting

blood coagulation. The saliva of the leeches also contains factor Xa inhibitor which also blocks the action of coagulation factor Xa.

Episcleritis

It is the an auto immune disease in which impure blood accumulates in episcleral vessels causing tortuosity of vessels which leads to symptoms like pricking sensation, burning and redness. As it is caused by autoimmune phenomenon, nonspecific inflammations are reduced by raktamokshana. According to *Sushruta* in *Sirajal* there is formation of *kathin*, *bruhat*, *sarakta jalikavat sira* over *shuklamandala*. It is similar to simple episcleritis which is characterized by sectoral inflammation of episclera. *Jalaukavacharana* reduces inflammation, tortuosity of vessels and retains blood vessels in normal condition thus help in minimizing foreign body sensation and reduce congestion. By removing impure blood, it also reduces local temperature.

Crvo

Central retinal vein occlusion is a retinal venous disease that causes the vein to leak blood and excess fluid into retina. This fluid often collects in the area of the retina responsible for central vision called the macula. When macula is affected, central vision becomes blurry due to oedema, exudates and haemorrhages. It presents with sudden, unilateral blurred vision to a moderate-severe degree. In Ayurveda CRVO is caused due to *Raktavaha sroto dushti*. Hence treatment is based on *Raktapitta shamana*.

DISCUSSION

When leeches are applied over the desired site they inject biologically active substance through saliva which has the properties like anti-inflammatory that helps in arresting the inflammation, vasodilators increases the blood flow at the affected area that reduce the stagnation of inflammatory substances, anesthetic substance reduce pain during sucking of blood and hyaluronidase facilitates the penetration and diffusion of pharmacological active substances into deeper tissue and enhance supply of immune substances into affected tissue.

Jalaukavacharana is having an important role in treating *raktaja vyadhis* by doing *raktashodhana*. Among all the *raktamokshana* procedures, the commonest is being *jalaukavacharana* due to its easy applicability, painlessness and devoid of complications. Our acharyas were very clear about those facts regarding *jalaukavacharana*, where they have advocated judiciously the usage of it in such a delicate organ eye.

CONCLUSION

Hirudo therapy is called a positive response of the body to the action of secretions of leeches' salivary gland. The benefits of leech are based on the combination of multiple effects as saliva contains several bioactive substances thus *jalaukavacharana* offer a safe and

effective ways of relieving congestion and there by relieving other signs and symptoms, particularly in delicate areas.

Jalaukavacharana has the great potential to manage ischemic, inflammatory and infective disease by removing the impure blood from deep-seated regions. When a leech is applied to biologically active areas of the human body, the bite itself gives a positive effect. According to modern science, leech's saliva contains Hirudin, Hyaluronidase enzyme which acts as vasodilator, Antithrombotic and analgesic effect. In addition to this, blood loss from tissue gives call for emergency help to body and as a result rush of immune substances to the affected site occur to deal with inflammation. Hence more efforts should be taken to encourage utilization of this effective mode of treatment.

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