A REVIEW ARTICLE ON ROLE OF JALAUKAVACHARANA AS ADJUVANT THERAPY IN OPEN ANGLE GLAUCOM

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ABSTRACT
Raktamokshana is a type of Panchakarma. It is the process of elimination of vitiated Dosha that accumulate in the body. Siravedha and Jalaokavacharana are types of Raktamokshana. These procedures are described in the management of all systemic diseases including diseases of Karna, Nasa, Mukha, Netra and Shira. According to Ayurveda, the diseases of eyes were caused by vitiation of Doshas (toxins) from body. Jalaokavacharana is an effective blood purification therapy, in which carefully controlled removal of small quantity of blood is conducted to neutralize accumulated vitiated Pitta and Rakta Dosha of many blood borne diseases. This is because of decreased quantum of enhanced Pitta and Rakta Dosha, thus diseases caused by Pitta and Rakta Dosha are also relieved. Open Angle Glaucoma is an eye disease that is characterized by wide and open angle with an unstable or a sustained increase in intraocular pressure which the eye cannot withstand damage to its structure and impairment of its function. In Open Angle Glaucoma, Jalaokavacharana will facilitate drainage of aqueous humor through the trabecular meshwork by creating negative pressure in the vein present locally.

KEYWORDS: Raktamokshana, Jalaokavacharana, Pitta Dosha, Rakta Dosha, Open Angle Glaucoma.

INTRODUCTION
Raktamokshana is one of the Panchakarma Ayurvedic treatment of detoxification. It is made of two words- Rakta i.e. blood and Mokshana i.e. to leave and combining both these words make Raktamokshana means to let out blood. A detailed description on Raktamokshana is available in Ayurvedic Text. There are two main types of Raktamokshana.[1]

1. Shastra Vistravana- by using metal instruments.

Two types
1. Pracchana - bloodletting through multiple incisions.
2. Siravedha - bloodletting through venepuncture.

2. Anushastra Vistravana- without use of metal instruments.

Three types
1. Jalaokavacharana- application of leeches- indicated for vitiated Pitta Doshas
2. Shrungavacharana- sucking through cow’s horn- indicated for vitiated Vata Doshas.
3. Alabu- vacuum extraction by Alabul Bottle Guard- indicated for vitiated Kapha Doshas.

In Ayurveda surgery text, Raktamokshana is considered as the partial or complete treatment in itself.[2]

Jalaokavacharana
The word leech is derived from laece which means physician. Jala is derived from Sankrita word due to their site of dwelling and nutrition source is Jala.[3] Leeches are segmented worms belong to the phylum Annelida. Jalaokavacharana is known as Leech Therapy and Hirudo-Therapy.

Acharya Sushruta described Yantra in Sutra Sthana along with Upyantra and Anushastra. Agni, Kshara and Raktamokshana by Jaluka are described under Upyantra as well as Anushastra.[4]

AIM AND OBJECTIVES
To reveal the role of Jalaokavacharana in Open angle glaucoma.
To reveal the importance of Jalaokavacharana as parasurgical procedure in Netraroga.

MATERIAL AND METHODS
Types of leeches[5]
In Sushruta Samhita 12 types of leeches are mentioned. These are classified into two main categories – Nirvisha Jaluka and Savisha Jaluka.

Nirvisha Jaluka (Non-poisonous)- Kapila, Pingala, Shankhamukhi, Mushika, Punderikamukhi and Savarika.
Savisha Jalauka (Poisonous)- Krushna, Karbara, Alagarda, Indrayudha, Samudrika and Gochandana.

Collection of leeches
As described in Sushruta Samhita, leeches should be collected from ponds and lakes with the help of piece of wet leather.[6] As described in Charak Samhita, Sharad Ratu (autumn season) is best for leech collection. In autumn, water is detoxified by exposure to hot climate in day time and cold climate in night time. The popular method of collecting leeches is by using large tin can with small pores at the top of can.

Selection of leeches
Leeches who are bulky (Maha sharira) stout (Balavatya), glutonous (Mahashana) fast blood suckers (Shighrapavinyo) which moves quickly live in fresh water and of non-poisonous varities are suitable for leech application.[7]

Storage of leeches
As mentioned in Sushruta Samhita, leeches should be stored in a new big wide pot containing clean water and mud from tanks or ponds. Powder of moss, dried meat and aquatic tubers should be given for feeding. Straw and aquatic plants should be provided for making their bed. After three days water should be changed weekly.[8] Nowadays the leeches are kept in glass bottles or jars with a lid which prevents leeches from coming out. Small holes should be made in the lid to let in fresh air. It is better to fill the jar with water from their natural habitat. Aquatics plants or grass is put into the jar. The water in the container is changed once a week. The leeches are not fed in order to make them hungry, and it is believed that this would enhance the sucking ability by leeches.

Purification of leeches for application[9]
According to Ayurveda, medicinal leeches should be carefully identified and properly purified before using in Jalaukavacharana. According to Sushruta Samhita, a paste prepared with mustard, turmeric and water should be applied on the body of leech. They should be then kept in a vessel of water for about 48 minutes (Muhurta) till they get rid of their exhaustion.

According to Ashtanga Hrudaya, leeches should be purified by keeping them in medicated water. This may be prepared by mixing turmeric powder, uncooked rice water, buttermilk (Takra) for a short time. After purification, leeches should be kept in pure water.

Netra-roga Samprapti
Prakrupita Tridoshas vitiated by Hetusevana goes through Urdhwgami Sira of Netra and produces Darun Netraroga.[10]

Netra is the site of Alochaka pitta.[11] The properties of Pitta and Rakta are same as they have Ashrayashravyi Bhaav.[12] In such condition, Jalaukavacharana is useful in Netraroga produced by Raktadushti and Pittadushti. Raktadhatu is very important for its Jeevniya Karma.[13]

INDICATIONS
Following eye diseases are treated with Raktamokshana[14]
1. Abhishyanda of all types (Conjunctivities),
2. Adhimantha of all types (Glaucoma),
3. Siraharsha (inflammation),
4. Sirotpat (Hyperemia),
5. Puyalasa (Acute Dacryocystitis),
6. Vataparyaya (Ocular pain),
7. Anyatovata (Ocular Pain),
8. Sashof Akshipaka (Purulent conjunctivitis),
9. Ashof Akshipaka (conjunctivitis),
10. Complicated condition of Arma(PTerygium)
11. Savrana Shukla (corneal ulcer)
12. Pittaja Timira (painless loss of vision)
13. Kaphaja Timira (painless loss of vision)

Contraindications[15]
1. Very young, old, emaciated, exhausted
2. Suffering from high fever, convulsions or unconscious patients
3. General swelling of body
4. Wasting due to unhealthy diet
5. Anemia
6. Piles
7. Pregnant women

Best time for Jalaukavacharana[16]
- Cloudless day in rainy season (Varsha Ritu)
- Cool day in summer (Grishma Ritu)
- Noon in winter(Sharad Ritu)

Site of Jalaukavacharana[17]
- Lalat (Frontal area)
- Apanga Sandhi (Outer canthus)
- Upnasya(Inner canthus)

Jalaukavacharana Procedure[18]
Purvavkarma
Purification of leech by pouring the leech in Haridra (turmeric Powder) and water
Part preparation- Site should be cleaned with the help of turmeric water.

Pradhana Karma
1. Application of honey or blood or butter or by Prachchan (making scar) at the site.
2. Application of leech through its front end i.e. mouth.
3. Cover the leech by wet cotton
4. Removal of leech by dusting Haridra Churna (turmeric powder) after completion of bloodletting.

Paschata Karma
Induction of emesis to leech by dusting of Haridra Churna on its mouth or sometimes pressing the leech from caudal to front end is required for proper emesis. Leech should be freed in fresh water, where it swims
swiftly and then settles down. Replace the leech in a clean jar or aquarium. Dusting of Lodhra Churna and bandaging over the bite site.

Glaucoma [19]
An eye disease that is characterized by an unstable or a sustained increase in intraocular pressure which the eye cannot withstand damage to its structure and impairment of its function. Glaucoma is a group of eye diseases result in damage to optic nerve and vision loss. It has multifactorial etiology and characterized by progressive optic neuropathy resulting in a characteristic appearance of optic disc and specific pattern of irreversible visual field defect that are associated frequently but not with invariably with raised intraocular pressure.

There are several types of glaucoma. The two main types are open angle and angle closure. These are marked by an increase of intraocular pressure inside the eye.

Open Angle Glaucoma
It is the most common form of glaucoma. It is caused by slow clogging canals resulting in increased eye pressure. It had wide open angle between the iris and cornea.

Pathophysiology
The underlying cause of open angle glaucoma remains unclear. However the major risk factor for most of glaucoma and focus of treatment is increased intraocular pressure. Intraocular is function of production of liquid aqueous humor by ciliary processes of eye and its drainage through trabecular meshwork via scleral venous sinus (schlemm’s canal) into scleral plexus and general body circulation. Whenever there is block in drainage process due to degeneration and obstruction of trabecular meshwork, intraocular pressure increases causing damage to optic nerve.

DISCUSSION
Jalaukavacharana removes not only blood from the body but also injects biologically active substances which help to manage various disorders. Leech therapy facilitates drainage of aqueous humor through the trabecular meshwork. As the leech suck peripheral blood it creates negative pressure in the vein present locally and facilitates drainage. Number of setting may be required depending upon the improvement of patient. Hirudin also helps in reducing the blood thickness, thereby promoting optimum blood flow and preventing the risks associated with sluggish blood flow. The patients who suffer from pain and inflammation will feel relief from the anti-inflammatory and anaesthetic effects of the leech’s saliva. [20]

According to Ayurveda, diseases are occurred by vitiation of Dosha. The vitiated Dosha can get accumulated in Strotas which causes blockages and may lead to diseases. Many diseases could be treated with leech application.

Probable mode of action of Jalaukavacharana
The probable mode of action of Jalauka is purification of body by removing deeply seated toxins and pacifying vitiated Dosha. A healthy cell gets sick; it is deprived of needed oxygen and nutrition and is unable to remove toxins accumulated during metabolism. 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.

CONCLUSION
Jalaukavacharana is described under RaktaMokshana of Panchakarma of Ayurveda. It is one of the very effective treatment modality for treating various Netra-roga as well as in many systemic diseases. It is also helpful as adjuvant therapy in Glaucoma. When 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, Hyluronidase enzyme which acts as anticoagulant, local anaesthetic, anti-inflammatory vaddilator, anti-thrombotic, hypotensive and analgesic effect. Hence, more efforts should be undertaken to optimize this utilization. More clinical trials are required to assess leech efficacy and safety in the treatment of Glaucoma.

It is easy to learn and apply the para surgical procedure like Jalaukavacharana in the management of different surgical conditions where surgery is not possible to treat the condition or there is great chance of recurrence of disease as in Glaucoma. This process provides lot of options for the surgeon as it is easy to perform, less chance of recurrence, controlled bleeding, no need of suture, less post-operative haemorrhage and minimal pain. Therefore it is helpful as adjuvant therapy in Open Angle Glaucoma.

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