

Pain relief effect of *Jalaukavacharana* (leech therapy) in ulcerative squamous cell carcinoma - a case study

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Abstract:

Carcinoma is one among the dreadful disorders where human beings are constantly struggling for the survival. A bio active agent in leech saliva has been reported that metastatic inhibitory activity with rapid reduction of severe pain related to advanced stage of cancer successfully. The main objective of this study was to evaluate the efficacy of leech therapy on pain management of ulcerative carcinoma in oral cavity. The study was conducted at SriSundera Lal hospital, Banaras Hindu University, Varanasi, India. Clinically diagnosed case of well differentiated squamous cell carcinoma with painful persistent ulcer in right side of the oral cavity was enrolled in the study. After physical examination, haematological and biochemical investigations, patient was recommended *jalaukavacharana* (Leech application) with two medicinal leeches (*Hirodomesticinalis*) in six sittings at the interval of every week for consequent 42 days. Pain was assessed before and after the treatment using numeric pain rating scale (NPRS). At the end of the treatment period it was observed that pain was reduced 90% by the leech application itself. It can be concluded that Leech therapy subside pain significantly in painful carcinomatous ulcer.

Key words: Bio active agents, *Jalaukavacharana*, Leech, Ulcerative squamous cell carcinoma,

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Introduction

Oral squamous cell carcinoma is the eighth most common cancer worldwide and the third most common cancer in developing countries^[1-2]. The global burden of cancer will increase to 21.4 million per year with death rates are expected to increase up to 13.2 million by the year 2030.^[3]

Jalaukavacharana (Leech therapy) is described under *Raktamokshana* (bloodletting) in Ayurveda authentic texts and is commonly practicing in traditional healing procedures in Asia. Through centuries, leeches have been attracted the attention of therapy for a wide range of ailments relates with vitiated blood including wounds and ulcers^[4-5]. The leech saliva contains antithrombin, antiplatelets, analgesic, anti-inflammatory, antibacterial and vasodilator agents^[6] which can expand blood vessels, increase blood flow, management of pain, swelling and counteract with the toxic effects of free radicals in the human body. Leech therapy has been found to be effective treatment as a complementary medicine for rapid reduction of severe pain in advanced stage of cancer as per previous research trails^[7].

Further, it has been found to be metastatic inhibitory activity of some anticoagulant such as warfarin and heparin and protease inhibitors with other components in leech saliva. So the study has been planned to evaluate the efficacy of leech therapy in the management of pain in carcinoma ulcer.

Case Study:

A 56 years old male patient presented (OPD No: 8432) with six months history of well differentiated squamous cell carcinoma with painful ulcer in right buccal mucosa confirmed by histopathological reports. Patient was advised to undergo a surgery and chemotherapy by the oncologists at Sri sundara Lal hospital, Institute of Medical sciences, Banaras Hindu University (BHU), Varanasi, India. Due to the given date of surgery was extended up to six months and unbearable continuous pain in the mouth which was not subside by taking opioids and anti-inflammatory drugs, the patient came to the Ayurveda outpatient department (OPD) in the department of Kayachikitsa, Sri Sundar Lal Hospital, Banaras Hindu University, Varanasi India.

Methodology:

Diagnosis was confirmed by the histopathological report. All the vital parameters were within normal limits. Patient was hemodynamically stable. Previous history of the drug administered and other medical history were recorded in detailed manner in a prepared special proforma. Fasting blood sugar 97mg/dl, Bleeding Time-7min⁻¹, Clotting Time-4 min⁻¹, Hb -13 g/dl, X Ray at Right Mandible bone - (Anteroposterior/Lateral/Oblique view) - No bony involvement, Hepatitis B and AIDS were not detected.

Material used:

Kidney trays, Saline, Powder of *Haridra*(*Curcuma longa*Linn.) and *Maduyasti* (*Glycyrrhiza glabra*L) Decoction of *Triphala*{*Terminalia bellirica*(Gaertn.) *Roxb.*}, [*Terminalia chebula*, (Gaertn.) Retz.],[*Emblica officinalis*L.) Two medicinal leeches of 9.2cm and 10.1 cm in length (*Hirudomedicinalis*)and cotton pads.

Poorva karma (Preprocedure): During the study, the patient was advised to stop all the prescribed medicine seven days before the leech application. Leeches were maintained starve. The medicinal leeches belong to the *Hirudomedicinalis*were selected to the study (Fig-1). Length of 9.2cm and 10.1 cm leeches having suckers, pigmentation of green gram on dorsal surface with two pair of black longitudinal lines with black parainterrupted lines, orange on ventral side of the body with yellow longitudinal line on the side border of the body were the main signs for detection of *Hirudomedicinalis* species for the therapy. Wound was washed with normal saline. Leeches were kept in *Haridra* [*Curcuma longa*(Fig-2)]water for activation and rinsed with clean water.

Pradhan Karma (Main procedure): Applied two medium sized leeches on the lesion in right buccal mucosa and covered with wetted cotton pads(Fig- 3-4).

Paschat Karma (Post procedure): When leeches are left from bite site by their own, after sucking blood for approximately 30 minutes. Bleeding from the wound was

arrested within 3-4 minutes during entire treatment regimen. wound had been cleaned with decoction of *Triphala* {[*Terminalia bellirica* (Gaertn.) *Roxb.*], [*Terminalia chebula*, (Gaertn.) Retz.], [*Emblica officinalis* L.) *Triphala* {[*Terminalia bellirica* (Gaertn.) *Roxb.*], [*Terminalia chebula*, (Gaertn.) Retz.], [*Emblica officinalis* L.) powder was applied on the top of the bite site and rapped with bandage. The leeches had been vomited 16.5 ml of blood by squeezing their body from posterior to the anterior sucker(Fig-5). Then leeches were rinsed with fresh water (Fig- 6) and kept them in a clean water filled jar for next sittings. Further, water in the jar changed and filled with fresh water Every day. The patient was recommended for six sittings of *jalaukavacharana*(Leech application)at the interval of every week. After the 3rd and last sitting new medicinal leeches were replaced (9.5cm, 9.7cm and 10.3cm, 8.9cm) and patient was investigated for Hb% value. It was observed that the patient's Hb value was within normal limits before and after the leech therapy. Total duration of treatment was 42 days.

Criteria for assessment:Improvement has been assessed by the reduction of pain adopting numeric pain rating scale (NPRS)^[10]. Intensity of pain was recorded from the first day, before the treatment followed by interval of every week for consequent 42 days.

Images of leech application in ulcerative squamous carcinoma:



Fig-1: Fresh leeches



Fig-2: leeches in *Curcuma longa* mixed water



Fig-3: Sucking blood from the ulcer



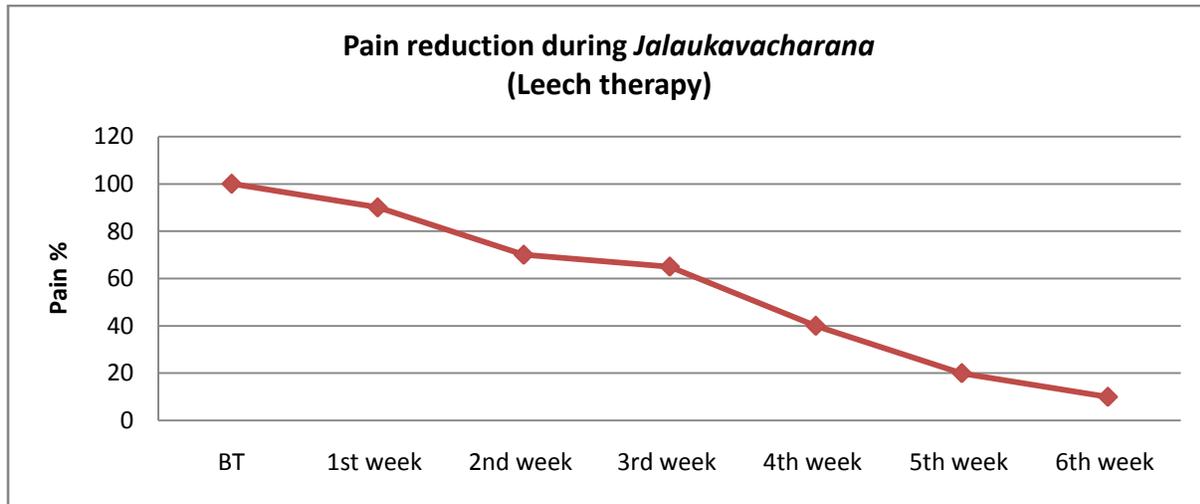
Fig-4: Sucking blood from the ulcer



Fig-5: Squeezing the blood from the leeches



Fig-6: After procedure leeches



Graph 01: Pain reduction during leech therapy

Result and Discussion:

Results revealed that pain has been reduced 10% after 1st sitting of leech application. During the treatment, pain was reduced 30%, 35%, 60%, 80% and 90% in 2nd, 3rd, 4th, 5th and final sittings respectively (Graph-1). Leech application improves blood circulation and reduced congestion due to the presence of carboxypeptidase A inhibitors, Histamine like substances and acetylcholine. [6] It has peripheral vasodilator effect due to presence of vasodilator constituents in the leech saliva. Further it has anti-inflammatory action due to Bdelins and Eglines. It also provides analgesic activity. [7] Pain relief could be due to the bio active agents of leech saliva or substances released from the human body during the sucking. It has been observed that, pus and mucous discharge have reduced after leech application; which may be due to antimicrobial and mucolytic properties.

Conclusion:

Leech therapy subside pain significantly in ulcerative carcinoma within 42 days. Hence, findings of this case report need to be validated by well-designed studies to utilize and assess leech efficacy and safety in the management of painful ulcerative carcinoma.

Suggestions and Recommendation:

Further, evaluation is required to be done by taking a large sample size to prove clinical significance of *Jalaukavacharana* in treating painful ulcerative carcinoma.

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