

Leech application: An effective pain management option in osteoarthritis of knee joint- A case report

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Abstract:

Sandhigataavata is one such condition that occurs when provoked *vata* enters the *santhi* owing to *gatavata* pathology. Pain typically presents on joint movement with features like swelling, stiffness, crepitus etc. It can be co-related with osteoarthritis of knee joint. A 68 years old male came with complains of right knee joint pain, swelling, stiffness and decreased range of movement. X-ray of right knee joint showed moderate osteoarthritis changes. Leech application was done every 15 days for 1 month and patient got complete relief symptomatically.

Keywords: *Jalauka*, Leech, Osteoarthritis, *Sandhigataavata*.

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Introduction:

The stresses of weight bearing mainly involve the medial compartment of the knee, and it is in this area that primary osteoarthritis usually first occurs. This is an exceedingly common condition, arising without any obvious previous pathology in the joint. Overweight, the degenerative changes accompanying old age, and overwork are common factors. In osteoarthritis the cartilage undergoes progressive changes, flaking off into the joint and thereby producing the narrowing that is a striking feature of radiographs of this condition. The subarticular bone may become eburnated, often small marginal osteophytes and cysts are formed. Exposure of bone and free nerve ending gives rise to pain and crepitus on the movement. Distortion of the joint surfaces is one cause of progressive loss of movement and flexion deformities. Treatments generally conservatives, quadriceps exercise, short wave diathermy, analgesics and weight reduction. Surgery includes knee joint replacement and osteotomy and arthrodesis. Worldwide estimation reported over 100 million people globally suffer from OA, which is one of the most common causes of disability.^[1] The prevalence of symptomatic knee osteoarthritis increases with each decade of life, with the annual incidence of knee OA being highest between age 55 and 64 years old.^[2]

Medical science has enormous springs in terms of diagnosis and treatment yet there is renewed interest in leech therapy among modern as well as traditional practitioner. There are so many studies on leech therapy are found for pain reduction and plastic surgery. *Sandhigatavata* (osteoarthritis of knee joint) is *Yapya* (manageable) in nature, so repetitive use of therapy is needed. Leech therapy is safe and effective in the management of *Sandhigatavata*.

Case report:

A 68 years old male came to outdoor patient department with complains of pricking intermittent pain and swelling in knee joint with stiffness of the right knee joint for 2 years. Pain increased during walking, climbing stairs and on squatting and relived on rest. Stiffness present for 5-10 minutes at morning and 2-3 minutes after activities. Swelling was present at anterior site of right knee for whole day. No any history of trauma and injury to right knee joint were found.

On local examinations minimal swelling, genu varum deformity, pain (VAS) grade III, Crepitus grade II, and restricted flexion and extension of right knee joint were present. Anterior-posterior and lateral view of right knee joint showed moderate joint space decreased, osteophytes formation, soft tissue swelling present (Fig 3,4). Blood investigations were done before leech application. Hemoglobin 14.1 gram%, ESR 12 mm/hr, bleeding time 1 min 30 sec. and clotting time 3 min 35 sec, RBS 110 mg/dl, serum uric acid 4.0 mg/dl, RA factor 7.8 mg/dl. HIV, HBsAg and HCV were found negative.

Preparation of patient: Before leech application, light semi-solid diet was given. Patient was laid in supine position with semi flex knee.

Preparation of Leech: Fresh Leech from the tank was chosen and dropped in a kidney tray filled with clean water. Fine turmeric was mixed in it. It was observed that an inactive Leech became active and runs all around the tray. After that, the active Leeches were transferred in another tray having clean water.

Leech application: The desired site (most tender part of right knee joint) was cleaned with wet gauze. Skin pricked with sterile needle and the Leech is held at its neck with fingers and applied directly to the skin, 3 Leeches were applied at a time [Fig 1, 2]. Once Leeches starts sucking the blood, they are covered with wet cotton gauze and cold

water is poured on them time to time. The Leech once starts sucking the blood, elevates its neck, and fixes its head to skin. A wave like movement was observed indicating sucking of blood. Leech left off the skin spontaneously, if not in such a case, a little turmeric powder was placed on the sucking point of the Leech it immediately left the skin.

Post procedure patient's care: The site was cleaned with normal saline, followed by dressing with turmeric powder. Patient was allowed to sit for 20 minutes before leaving the place to check bleeding.

Post procedure leech care: After application, used Leeches were kept in an empty tray. Turmeric powder was placed on its mouth which induces vomiting of dark red colored blood. After that Leech was again washed in clean water. In the end Leeches were transferred in the jar.

Duration of treatment and Follow up: Total duration of treatment was 1 month. Leeches were applied two times every 15 days interval.



Fig-1. Leech application at knee joint



Fig-2. Post leech application marks



Fig-3. Anterior-posterior view of Right knee joint



Fig-4. Lateral view of Right knee joint

Table-1: Improvement in subjective and objective parameters

Parameters		Before treatment	After 15 days	After 30 days	Follow up
Pain		5	3	0	0
Crepitus		1	1	1	1
Stiffness		2	1	0	0
Swelling	middle point of patella	37cm	37cm	36.5cm	36.5cm
	2 inches above patella	39cm	39cm	38.5cm	38.5cm
	2 inches below patella	36cm	36cm	35.5cm	35.5cm
ROM	flexion	140°	140°	130°	130°
	extension	-5°	-5°	-5°	-5°

Result and Discussion:

Pain (visual analogue scale), crepitus, stiffness, swelling (middle point of patella) flexion and extension of knee joint were assessed before, after treatment and follow up done after 1 month of completion of treatment. Swelling was measured with measure tape and range of movement of knee joint measures with goniometer.

Charaka Samhita mentions that if a disease does not respond to the application of opposite principles like *Shita-Ushna* (cold-hot) or *Snigdha- Ruksha* (unctuous- dry), vitiation of *Rakta Dhatu* must be considered.^[3] In such conditions *Raktamokshana* is one of the recommendations. Acharya Sushruta narrated blood -letting should be carried out to reduce pain in inflammatory condition. It could be done with leech application.^[4]

Complete pain and stiffness relief in this patient was achieved within 30 days after 2 sitting of leech application. Normal range of movement is between 10° hyperextension and 130° of flexion.^[5] Painful and restricted movement of knee joint converted into painless movement with reduction of soft tissue inflammation. Flexion angle of knee joint was 140° before the treatment which was increased to 130° [Table-1]. Extension of the knee was painful before the treatment with normal range it was converted into painless movement. No any change noted in joint space reduction, thereby changes in crepitus was not expected. It is very difficult to assess swelling before and after treatment because after treatment there was no such different in measurement but shininess of skin was disappeared and creases/ wrinkles was observed on knee joint and there is no obvious swelling in patients of OA.

There are a number of substances and compounds in its saliva that help to reduce inflammation in a join. The leech's saliva assists in the treatment of arthritis. Some of these bdelins and aglins compounds are acting

as anti- inflammatory.^[6] Other than anti-inflammatory components, superoxide production and poorly characterized anesthetic that alleviate the pain felt in the joint and also contains a histamine and acetylcholine like substance that acts as a vasodilator.^[7, 8] By ingesting excess blood, leeches reduce tissue swelling and promote healing. This are important for the treatment of arthritis because as the vasodilation, in increased the blood flow, thus removing inflammatory compounds from the local site, ultimately patients get relief in pain, swelling, stiffness thereby improve range of movement of knee joint. After leech application there is no any changes were noticed in knee joint X- ray as compare to before treatment X- ray (figure 4).

Conclusion:

This single case highlighted that painful condition of osteoarthritis of knee joint can be successfully treated using leech application. This method of leech application can be used in more number of cases for further scientific data.

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