



Case Study

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EFFECT OF LEECH THERAPY IN MANAGEMENT OF QUADRICEPS FEMORIS TENOSYNOVITIS: A CASE STUDY

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ABSTRACT

Tenosynovitis is the inflammatory and very painful condition. Sometimes it also restricts the movements badly. The available treatments are NSAIDS (Non steroidal anti-inflammatory drugs), local injections of corticosteroids and surgery to remove the inflammation surrounding the tendon which have some adverse effect and not so cost effective. Sushrut described inflammation as 'shotha' in Chapter 17/3 and the treatment of shotha as *vistravan* i.e. bloodletting in 1/28, 29 to reduce the pain and inflammation and to avoid complication like suppuration. Bloodletting includes *Siravedha* (Venesection), *Shrung* application (application of cow horn), *Alabu* application (*Lagnaria vulgaris*) and *Jalaukavacharan* (leech therapy). Since ancient times leeches are used to treat many illnesses and diseases. It is indicated in the local pathology rather than the generalized one. The patient came to OPD diagnosed as tenosynovitis of quadriceps femoris and he has already taken NSAIDS and local corticosteroids but didn't get relief. As it is a local inflammatory pathology hence the leech therapy is selected in the management of tenosynovitis of the quadriceps femoris and local leech application done at the left thigh for 7days daily at the same time. Observations were made every 24hourly on the Numerical Rating score scale. The pain at 0 day was 10 on the NRS and after leech application it was 1 at the end of the 7th day. The mobility of the hip and knee joint also improved and also there was no local tenderness.

Keywords: Jalaukavacharan, leech therapy, tenosynovitis, shotha, inflammation.

INTRODUCTION

Sushruta described shotha in sutrasthana in "Amapakwaishnium adhyay" as swelling which may appear in any part of the body and is round, elevated, even or uneven in its surface¹. Sushruta also described the treatment of shotha i.e. Bloodletting should be resorted in a case of newly formed swelling for its resolution and for alleviating the pain². Tenosynovitis is the inflammation of the synovial lining of the tendon sheath as distinct from its outer fibrous sheath like bursitis³. The cause of the inflammation may be unknown, or it may be result from the diseases that cause inflammation, infection, injury, overuse (mechanical irritation) or strain⁴. The symptoms are pain and swelling at the affected area, pain when moving a joint, difficulty in moving a joint⁴. On physical examination swelling and tenderness over the involved tendon and after stretching the tendon and moving the muscle where it is attached patient experiences the pain. Because of severe pain and inflammation there may be the restricted movements of the affected joint⁴. The goal of the treatment was to relieve pain and inflammation. The treatment mentioned in modern science is use of splint or a removable brace to keep the tendons still. NSAIDS (Non steroidal anti-inflammatory drugs) have also been used in this condition. Sometimes local injection of corticosteroid in the affected area is used to reduce the inflammation. Some patients also need surgery to remove the inflammation surrounding the tendon, but this is not common. Antibiotics are used to treat the tenosynovitis caused by infection. Sometimes surgery may be required to release the pus around the tendon⁴. Complications of the disease are 1) tendon may be

permanently restricted or it may tear 2) the affected joint can become stiff 3) infection in the tendon may spread to other places in the body which could be serious and threaten the affected limb⁴. All the quadriceps is powerful extensors of the knee joint. They are crucial in walking, running, jumping and squatting. Rectus femoris attaches to the ilium, so it is also a flexor of the hip. This action is also crucial to walking or running as it swings the leg forward into the ensuing step. The quadriceps, specifically the vastus medialis plays the important role of stabilizing the patella and the knee joint during gait⁵. Since ancient times, leeches were used to treat many illnesses and diseases through bloodletting, a method where blood was drawn out in the hope that removing impure blood would heal the body⁶. Leech therapy is sometimes the best alternative in treating illnesses and even surpasses pharmacological treatments⁶. There are more than 100 species of leeches that have been identified but only 15 of the species are used medically. They are classified as *Hirudo medicinalis* or medicinal leeches⁶. Leech therapy has been used to treat many inflammatory processes such as arthritis, hepatitis, pancreatitis etc. Bdelins is a compound in the leech's saliva that acts as an anti-inflammatory agent by inhibiting trypsin as well as plasmin⁶. It also inhibits the action of the acrosin. Another anti-inflammatory agent is the eglins⁶.

Case History

The male patient of 39yrs. came to the surgery OPD on 15/02/13. He was well before 8 months thereafter he was suffering from pain at left hip joint and thigh. He had taken treatment from private clinic but didn't get relief

hence he came to surgery OPD. He has no history of trauma or sprain. He was working as a courier delivery man. He presents with complaints of pain and swelling at left hip joint, left thigh and left knee joint. On examination swelling and tenderness were present at the left hip joint, thigh and knee region. Passive straight leg rise test (SLRT) of right leg was 90° and left leg was 30° and he was unable to flex the left hip joint and knee joint. So he was admitted on 26/02/13 for further treatment. As Sushruta described bloodletting in early stage of shotha² and tenosynovitis is a disease having local pathology of inflammation. So leech therapy was selected for the treatment.

Numerical rating score scale

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|----|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|----|

Table 1: Assessment of pain

| Day | Date | Pain score by NRS |
|-----|----------|-------------------|
| 0 | 27/02/13 | 10(severe pain) |
| 1 | 28/02/13 | 8(severe pain) |
| 2 | 01/03/13 | 6(moderate pain) |
| 3 | 02/03/13 | 4(moderate pain) |
| 4 | 03/03/13 | 3(mild pain) |
| 5 | 04/03/13 | 2(mild pain) |
| 6 | 05/03/13 | 1(mild pain) |

OBSERVATIONS AND RESULTS

Observations and results indicated in Table 1, which shows pain reduces in 7days with leech therapy. On local examination there was no tenderness at the left hip joint, knee joint and thigh. SLRT of left leg was 90 and the flexion of left hip joint and knee joint was positive.

DISCUSSION

Since ancient time Jalaukavacharan (leech therapy) were used to treat many inflammatory conditions. Sushruta indicated leech therapy in the early stage of shotha (inflammation) to reduce pain and inflammation and to avoid further complications like suppuration². Tenosynovitis is the inflammation of the synovial lining of the tendon sheath and leech therapy has been used to treat many inflammatory processes such as arthritis, hepatitis, pancreatitis⁶ etc. hence it is used in the present case study. The observations in Table 1 indicate the reduction of pain in the tenosynovitis. The signs like inflammation, redness came to the normal. Due to the reduction of inflammation and pain the improvement was found in mobility of joints which is the goal of the treatment of the tenosynovitis. In the present study, the treatment effect can be due to the saliva of leeches containing a variety of substances such as hirudin, hyaluronidase, histamine-like vasodilators, collagenase, inhibitors of kallikrein and superoxide production, anesthetic and analgesic compounds. The local analgesic and antiphlogistic effect by these substances enforced by hyaluronidase and counter-irritation may be helpful to reduce the sign and symptoms⁸⁻¹⁰. Bdelins is a compound

MATERIALS AND METHODS

Hirudo Medicinalis leeches which are indicated for the medicinal use are applied locally⁶ i.e. at the left thigh region from 27/02/13 to 05/03/13 daily i.e. (7days) at the same time. Pain rating is done at zero days and then daily by Numerical Rating Score 24hourly as follows

Day regime: 7days daily

Follow up: 24hourly

Amount of blood: 10ml daily

Grade

- No pain
- 1-3- Mild pain
- 4-7- Moderate pain
- 8-10- Severe pain

in the leech's saliva that acts as an anti-inflammatory agent by inhibiting trypsin as well as plasmin. It also inhibits the action of the acrosin. Another anti-inflammatory agent is the eglins⁶. Michalsen A *et al* reported in his study rapid reduction of pain with a single trial of 4 leeches (*Hirudo medicinalis*) applied topically at painful periarticular sites of the knee joint.⁷

CONCLUSION

Leech therapy is the best alternative therapy which can be used to treat tenosynovitis that surpasses the pharmacological treatment of tenosynovitis i.e. NSAIDS or corticosteroids.

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