INTRODUCTION

The day-to-day advancement in each and every aspect has made life very fast, hectic and full of stress. In such an outfit, in order to adjust themselves every person is compelled to make the life fast and mechanical even shifted their food habits to fast food, altered their social structure and life style, having various negative impacts on the body. Occurrence of arthritis on large scale is one of the outcomes of this modification. It is commonest among acute as well as chronic inflammatory joint disease in which joint become painful, swollen and stiff. This study was designed to access the analgesic and anti-inflammatory activity of Leech Therapy in the treatment Arthritis. The study was randomized open phase clinical trial. Jalauka used for the therapy were obtained from fresh water pond of Madhyam Akara (4-6gms weight). Jalaukas were applied once in every week for six weeks duration.

The patients of age group 18 to 60 were selected on the basis of Ayurvedic signs and symptoms of Sandhigata Vata. Observations were recorded for Pain, Swelling, Stiffness, Score of ACR, RA index, ARA joint count, Tenderness. The laboratory values of ESR, CRP and S.uric Acid were also recorded before and after the treatment. Since the assessment criteria was Quantitative, paired 't' test was applied. In the current Study the treatment was found significantly effective in treating arthritis. The effect of treatment was 44% patients were of Uttam Upashya in relieving Pain, 40% in swelling, 28% in stiffness, 32% in restricted movement, 16% score of ACR, RA index, ARA joint count, Tenderness. The l

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KEYWORDS: Analgesic, Anti-inflammatory, Leech therapy, Arthritis,
per classical description of Ayurveda, Leeches used for the therapy were obtained from fresh water pond of medium size (4-6gms weight). Leeches were applied once in every week for three months duration.

**Storage and maintenance of Leech**

Leech should be stored in well labeled container having multiple pores on the top for proper aeration. Temperature should be maintained around 15-27°C. The water of container should be de-chlorinated and should be replaced after 5 to 6 day. About 50 leeches can be kept in one gallon (4 liter) of water. If it is not possible to get the de-chlorinated water then keep the container of chlorinated water open in the air for a period of time and then use it for storage of leech. It is better to avoid direct exposure of sun light to the leeches.

**Preparation:** To activate the Leeches as well as to make the skin of leeches antiseptic they were put in a bowl containing a solution of Haridra and water for a period of 15 minutes. Later on Leeches were cleaned by keeping them in another bowl of pure water for 15 minutes.

**Position:** The patients were advised to sit down in position of spreading both legs forward and sometimes in prone position when leeches were applied on affected joints.

**Procedure:** The posterior sucker of leech was held in one hand and anterior sucker was placed at site of application (maximum tenderness), where the leech was expected to be fixed. Thereafter, the posterior sucker was released from the hand & attached to the surrounding skin surface of the joint. Thereafter, the leeches were covered with wetted gauge piece. To keep it moist few drops of water were poured on & often. As soon as the leeches showed the sign of elevated head & pumping action of the anterior sucker region the time was noted, when the leeches got detached spontaneously or otherwise, the time was once again noted. After leeches get detached, the site of application was properly cleaned, thereafter, sprinkling of Madhuyasti powder was done followed by tight bandaging of the wound.

**Precaution:** With the onset of symptoms like burning, itching, pain etc., the leeches were removed by sprinkling Haridra powder or Saindhav.

**Contra indication of leech therapy**

1. Blood clotting disorder
2. Severe anemia
3. Allergic reaction to active substances of the leech like hirudin, calin, hyaluronidase, egline, kollagenage, apyrase, destabilase, piyavit etc.
4. Human with weak constitution.
5. Pregnancy.

**Criteria for the assessment of result**

To assess the efficacy of the therapy objectively, all the signs and symptoms were given score depending upon their severity. Gradation of signs and symptoms were as following:

**Pain**

- Gradation of pain by visual analogue scale
  - 0-1: No pain
  - 2-3: Mild
  - 4-5: Uncomfortable
  - 6-7: Distressing
  - 8-9: Intense
  - 10: Worst possible

**Swelling**

- 0: Nil
- 1: Mild tenderness, causing patient to wince on digital pressure.
- 2: Moderate tenderness, causing patient to wince and withdraw on digital pressure.
- 3: Severe tenderness; patient does not allow to touch.

**Stiffness**

- 0: Nil.
- 1: Mild.
- 2: Moderate.
- 3: Severe – All movements of leg impossible.

**Richie Articular index**: Each joint is evaluated on a score of 0-3, where zero indicates non-tender, 1 indicates tender, 2 indicates tender and winced and 3 indicates tender, winced and withdrawn.

**ARA joint count**: The number of clinically active joints is determined on the basis of tenderness on pressure or pain on passive movement. Following joints to be examined – Elbow, Wrist, Hip, Knee, Ankles, Tarsals, Temporomandibular, Joints of cervical spine, Sternalclavicular, Metatarsophalyngeal, interphalyngeal of great toe.

**Restriction of Movement**

- 0 - Absence of movement restriction
- 1 - <25% restriction of movement
- 2 - 25-50% restriction of movement
- 3 - > 50% restriction of movement.

Technique to be applied
1. Sign and symptoms on rating scale.
2. Hematological studies.

**Statistical Analysis:** Since the assessment criteria was Quantitative, paired ‘t’ test was applied.

**RESULT**

All statistical analysis is done by student unpaired t-test ‘p’ value <0.001 were considered to be statistically highly significant. The ‘p’ value >0.50 were considered to be non-significant.

**Table: Showing effect of leech therapy in Patients of arthritis**

<table>
<thead>
<tr>
<th>Symptoms</th>
<th>Mean±SD Before leech therapy</th>
<th>Mean±SD After leech therapy</th>
<th>Paired t-Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pain</td>
<td>6.47±0.93</td>
<td>2.14±0.66</td>
<td>t=23.67, p&lt;0.001</td>
</tr>
<tr>
<td>Swelling</td>
<td>2.15±0.56</td>
<td>0.65±0.60</td>
<td>t=17.23, p&lt;0.001</td>
</tr>
<tr>
<td>Stiffness</td>
<td>1.68±0.68</td>
<td>0.15±0.36</td>
<td>t=12.62, p&lt;0.001</td>
</tr>
<tr>
<td>RA Index</td>
<td>2.26±0.45</td>
<td>0.56±0.50</td>
<td>t=12.62, p&lt;0.001</td>
</tr>
<tr>
<td>ARA joint count</td>
<td>3.19±0.78</td>
<td>1.44±0.56</td>
<td>t=12.99, p&lt;0.001</td>
</tr>
<tr>
<td>Restriction of movement</td>
<td>2.21±0.41</td>
<td>0.56±0.50</td>
<td>t=13.90, p&lt;0.001</td>
</tr>
</tbody>
</table>

Upashaya: Result of Jalaukavcharan has been accessed on certain parameters like Pain, Swelling, Stiffness, RA index, ARA Joint Count and restriction of movement. Mean before and after the leech therapy can be graphically presented as-
DISCUSSION

The medicinal Leech is a beautiful symbol of give-and-take and is sustainable resource management. Hirudo medicinalis is one of the oldest surviving animals on earth. The first documented accounts of the use of Leeches for medicinal purpose is from the time of extreme antiquity, more than 2500 years before in Ayurvedic texts, then long later during the period of Hippocrates. Dhanvantari, the Indian God of Ayurveda holds a leech in one of his hands. This simply suggests the importance of leeches in medical field by ancient Indian sciences. Leeches have and will always be thought of as the "wonder doctors" of science.

Arthritis, also called degenerative joint disease. Gout is one of the type of arthritis, which is characterized by progressive loss of cartilage in the joints due to the deposition MSU crystals and is associated with symptoms such as pain, tenderness, stiffness and reduced mobility. Treatment often includes the use of non-steroidal anti-inflammatory drugs (NSAIDs) and topical analgesics. This approach provides symptom relief but does not change the course of the disease.

Leech therapy may be more effective than topical analgesics and anti-inflammatory agents in the treatment of arthritis. Although leeches may not be safe for people with diseases that impair blood clotting or for those with compromised immune function, it is believed to be safe for most other people. Its immediate effect on pain, inflammation, lasting effects on stiffness and dysfunction; high degree of safety suggest that this therapy has great potential in the management of gouty arthritis. Patients with gouty arthritis, who were treated with leech therapy, experienced clinically significant improvements in self-perceptions of pain for a limited period. Moreover, a single application of leeches improved functional ability and joint stiffness for at least 3 months.

The saliva of leeches contains a variety of substances such as Hirudin, hyaluronidase, histamine like vasodilators, collagensen, destabilase 14, inhibitors of kallikrein, superoxide production and poorly characterized anesthetics and analgesic compounds. These substances might reach deeper tissue zones and possibly the joint spaces.Various bioactive substances in leech saliva may also be as pharmacologically potent as hirudin and thus exert substantial effects in periarticular tissue and adjacent structures. It has been proved through Laser Doppler Flowmetry that there is a significant increase in superficial skin perfusion following leech application, especially 16 mm around the biting zone. Therefore, a regional analgesic and anti-inflammatory effect by these substances enforced by hyaluronidase, as well as counter-irritation might be the possible reason of improvement by treatment with leeches. Leech therapy could induce pain relief through antinociceptive effects and counter-irritation. However, it is not known to what extent leech bites may induce such mechanisms. The jaws of the leech pierce the skin so that these potent biologically active substances can penetrate into the deeper tissues. Hyaluronidase (spreading factor), an enzyme in leech saliva, further facilitates the penetration and diffusion of these pharmacologically active substances into the tissues. Its effect is similar to the topical application of diclofenac gel to the knees of patients with knee joint effusions; the drug could be detected in the deep periarticular tissues and body compartments. With the additive effect of hyaluronidase, it is highly probable that the antiinflammatiolic substances in leech saliva can penetrate deep enough to exert significant effects on periarticular myofascial structures and perhaps even on intra-articular structures. A recent study showed that periarticular myofascial structures play an important role in the development of chronic joint pain and regional pain syndromes in patients with arthritis.

Venous congestion is another important complication that threatens the viability of the affected joints following crystal orthopaties like gout. It can be best treated with the application of leeches. Leech therapy has two phases, active bloodletting and passive bleeding from the leech wound after detachment, which can last for several hours. The small blood volumes removed by medicinal leeches and the augment blood removal during the passive-bleeding phase of leech therapy results remarkably decrease in venous congestion in the joints. In addition to this, a broad number of anticoagulant agents decrease venous congestion such as the thrombin inhibitor hirudin, apyrase as well as collagenase, hyaluronidase, Factor Xa inhibitor and fibrinase I and II.12,13

In summary, traditional leech therapy seems to be an effective in treatment for gouty arthritis. The effectiveness and safety of this treatment, especially when applied repeatedly, should be further evaluated in larger randomized studies. In addition, the active compounds in leech saliva and their local release (that is, in the synovial fluid) deserve further study. Currently, no pharmacologic agent has similar lasting effects after a single local administration. Further research into the anti-inflammatory compounds of leech saliva could lead to the development of new effective substances for treating gouty arthritis.

CONCLUSION

In the current Study the treatment was found significantly effective in treating Gout. The effect of treatment was 44% patients were of Uuttam Upashaya in relieving Pain, 40% in swelling, 28% in stiffness, 32% in restricted movement, 16% in deformity. So, we can conclude that leech therapy is effective in treatment for gouty arthritis.

REFERENCES


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