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RESEARCH ARTICLE

A Comparative Clinical Evaluation of Leech Therapy and Vasti Karma in Osteo-Arthritis

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ABSTRACT

Sandhigata Vata is the commonest form of articular disorder. It is a type of *Vata-vyadhi* which mainly occurs in *Vriddhavastha* due to *Dhatukshaya,* which limits everyday activities such as walking, dressing, bathing etc. thus making patient disabled / handicapped. It being a *Vatavyadhi*, located in *Marmasthisandhi* and its occurrence in old age makes it *Kashtasadhya. Vata Dosha* plays main role in the disease. *Shula Pradhana Vedana* is the cardinal feature of the disease associated with *Sandhishotha* with *Vata Purna Druti Sparsha*, lack of movements of the joints or painful movement of the joints. In this study total 49 patients having the complaints of Osteoarthritis were randomly divided into 2 groups. In Group A, patients were treated with *Panchatikta Ksheer Basti* along with Jalaukavacharan and in group B patients were treated with only Panch Tikta Ksheer Basti. The data shows that *Panchatikta Ksheer Basti* along with Jalaukavacharan i.e. group A has provided better relief in the disease *Sandhigata Vata*.

KEYWORDS

Sanadhigata vata, Osteoarthritis, *Panchtikta Ksheer Basti, Abhyanga, Jalaukavacharan*

INTRODUCTION

A joint is where two bones come together. Their surfaces are covered with a layer of smooth, rubbery, blue-white tissue called cartilage. A fluid-filled capsule made up of a tough, fibrous tissue called ligaments surrounds these bones and cartilage. Thanks to this liquid and the cartilage that covers then end of these bones, the bones within the joint normally glide smoothly past one another. If anything goes wrong with any of these parts of a joint, arthritis can result. The swelling and deformity that takes place in arthritic joints can result from the thickening of the membrane, the fluid, enlargement of the bones, or some combination of these factors.

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Osteoarthritis is caused when the cartilage that lines the surface of the joints wears away. And you're left with worn surfaces. As a result the joints become stiff and painful. The joints make popping, clinking and banging noises**.** In *Vriddhavastha,* all *Dhatus* undergo *Kshaya,* thus leading to *Vata prakopa* and making individual prone to many diseases. Among them *Sandhigata Vata* stands top in the list. The incidence of osteoarthritis in India is as high as 12%. It is estimated that approximately four out of 100 people are affected by it. Osteoarthritis is the most common articular disorder begins asymptomatically in the 2nd & 3rd decades and is extremely common by age 70. Almost all persons by age 40 have some pathologic change in weight bearing joint, 25% females & 16% males have symptomatic osteoarthritis. Allopathic treatment has its own limitation in

managing this disease. It can provide either conservative or surgical treatment and is highly symptomatic and with troublesome side effects. Whereas such type of conditions can be better treatable by the management and procedures mentioned in *Ayurvedic* classics.

We have designed present research work to evaluate the efficacy of Tikta Ksheer Basti and Jalaukavacharana in comparison to Basti Karm alone in reducing pain, stiffness etc. In this research work, patients were randomly selected and the whole work has been categorized into two groups viz. A & B. In group A -15 patients were treated only with Basti Karm & in group B-15 patients were treated with Panch Tikta Ksheer Basti & Jalaukavacharana both.

In ayurvedic classics Raktamokshan therapy is indicated for several disorders. Acharya Sushruta describes the Raktamokshan therapy in several Vatavyadhies (Su. Sh.8). Jalaukavacharan (Leech Therapy) is also a method of Raktamokshan. This is the mildest of all the methods used for bloodletting. For this reason it is called the best (Param sukumar upaya; Su. S. 13/3) method of Raktamokshan. Osteoarthritis causes pain & disability; but conventional therapies offer limited relief for many patients. Therapeutic effect of leeches in osteoarthritis may be due to salivary secretion of analgesic agents; such as inhibitors of Kallikerin as well as anti-inflammatory agents' including protease inhibitors. So, we have selected this therapy for clinical trial.

Aims and Objectives

The study was oriented-

- To evaluate the role of Panch Tikta-ksheer vasti in Sandhigata vata.
- To evaluate the synergistic effect of Panch Tikta-ksheer vasti & Jalaukavacharan in Sandhigata vata vis-a vis Osteoarthritis.

MATERIALS AND METHOD

Selection of the Patients

A series of 30 patients suffering from Sandhigata Vata vis-à-vis Osteoarthritis were randomly selected from O.P.D. and I.P.D of Kayachikitsa; S. S Hospital, I.M.S, B.H.U, Varanasi, for the purpose of clinical trials of present study. The patients were randomly selected regardless their age, sex, socio-economic status, marital status etc. but they were fully gratifying the criteria of diagnosis of Osteoarthritis in modern medicine as well as clinical features of Sandhigata Vata as in Ayurvedic literatures. Out of 30 patients, only 28 patients could complete their full follow-up i.e. 3 months. 4 patients had left against their medical advice.

Criteria for Inclusion

- Patients aged between 50 - 65 years.
- According to Ayurveda classic, to follow the literary symptomatology viz. Vatapurnadritisparsha sopha (air filled bag like swelling), Prasaranaakunchanyoh Pravrittischa Savedana (painful flexion and extension movements), Shoola (pain), Stambha (joint stiffness), Sankocha (muscular spasm) etc.
- Persistent Osteoarthritic symptoms for at least 6 months.
- To follow the diagnostic criteria of Osteoarthritis.
- Cases of primary Osteoarthritis only.
- Patients without any anatomical deformity.
- Patients with involvement of knee joint.

Criteria for Exclusion

- Patients age less than 50 & more than 65 years.
- Intra articular injections or systemic application of corticosteroids during three preceding months.
- Patients without knee joint involvement.
- Patients with secondary Osteoarthritis.
- Patients having past traumatic history.
- History of systemic diseases viz. Diabetes mellitus, liver diseases, renal diseases, cardiac diseases and endocrinal diseases etc.

- Patients having past history of RA, Gout, Psoriasis etc.
- Anticoagulant treatment or history of Haemophilia.

Diagnostic Criteria of Osteoarthritis of Knee

American Rheumatism Association (ARA) has developed criteria for diagnosis of idiopathic Osteoarthritis of Knee as Table no 1.

Basal Study

The selected patients were interviewed along with their family members and relatives to obtain detailed information about the patients as well as the disease and collected in different data for the study.

All the patients were subjected to thorough physical examination, certain laboratory tests (TLC, DLC, ESR, Hb%, blood sugar, serum uric acid, serum calcium and phosphate, Rheumatoid factor, CRP, HIV, HBs Ag, BT, CT, LFT, etc.) and radiological investigations (plain X-ray).

Therapeutic Study

Selection of the Trial Therapies/ Drugs

The selected drugs/therapies selected for the present study was –

1. Pancha-tikta Ksheera Vasti
2. Jalaukavacharan

Form of Trial Drug

The selected trial drugs, Panchtikta & Jalauka were supplied by B.H.U. Ayurvedic pharmacy & villagers of Varanasi from their fresh ponds. Panchtiktas are provided in the form of yava kuta. All the individual components of Panchtikta were properly identified under the personal supervision of the investigator.

Table 1: *American Rheumatism Association (ARA)* has developed criteria for diagnosis of idiopathic Osteoarthritis of Knee

Clinical Criteria	Clinical & Laboratory	Clinical & X-Ray
Knee pain + atleast 3 of 6	Knee pain + atleast 5 of 9	Knee pain + atleast 1 of 3
• Age > 50 years • Stiffness < 30 minutes • Crepitus • Bony tenderness • Bony enlargement • No palpable warmth	• Age > 50 years • Stiffness < 30 minutes • Crepitus • Bony tenderness • Bony enlargement • No palpable warmth • ESR < 40 mm/Hr • RF < 1:40 • Synovial fluid OA- clear/ viscous/ WBCs <2000/ mm3	• Age > 50 years • Stiffness < 30 minutes • Crepitus + • Osteophytes

Table 2: Details of the Groups

Groups	No. of patients Registered	No. of patients	Therapy given	Therapy durations
A	15	12	Tikta-ksheer Vasti	8 Days in a month for 3 months
B	15	14	Vasti + Jalaukavacharan	Vasti for 8 days & Leech Once in 7 days for 3 consecutive months.

RESULTS

Effect of Treatment on Clinical Profile

It can be concluded from this table that in group A initial mean ± S.D. was 2.90±.99 which decrease to 1.50±0.53 after complete follow-up, it was statistically highly significant result (t=4.58, p < 0.01) & % relief in pain of group A patients is 48.27%. In group B initial mean 2.55±1.04 was decreased to .64±.67, it was also statistically highly significant result (t=9.04, p< .001) & % relief in pain is 74.50%. And it is indicating that the patient of Group B had responded well with treatment as compared to Group A, this can be proved by highest mean difference (BT – FU3) i.e. 1.90 which show better improvement in group B.

It can be concluded from this table that in group A initial mean ± S.D. was 2.50±1.08 which decrease to 1.20±0.63 after complete follow-up, it was statistically highly significant result (t= 6.09, p < 0.001) & % relief in stiffness of group A patients was 52%. In group B initial mean 2.09±1.14 was decreased to .55±.52, it was also statistically highly significant result (t=6.25, p< .001) & % relief in stiffness was 73.68%. And it is indicating that the patients of Group B had responded well with treatment as compared to Group A , this can be proved by highest mean difference (BT – FU3) i.e. 1.545 which show better improvement in group B.

The above table shows that in group A initial mean ± S.D. was 3.00±1.25 which decrease to 1.40±0.70 after complete follow-up, it was statistically highly significant result (t= 6.00, p < 0.001) & % relief in disability of group A patients was 53.33%. In group B initial mean 2.91±1.14 was decreased to .64±.50, it was also statistically highly significant result (t=9.59, p< .001) & % relief in disability was 78%. And it is indicating that the patients of Group B had responded well with treatment as compared to Group A, this can be proved by highest mean difference (BT – FU3) i.e. 2.27 which show better improvement in group B.

The above table shows that in group A initial mean ± S.D. was 2.10±.99 which decrease to 1.10±0.74 after complete follow-up, it was statistically highly significant result (t=6.71, p < 0.001) & % relief in swelling of group A patients was 47.61%.In group B initial mean 1.75±.97 was decreased to .58±.51, it was also statistically highly significant result (t=7.00, p<.001) & % relief in swelling was 66.28%. The difference in means was greater in group B than group A. Thus the efficacy of treatment given to both groups was in this order B>A.

The above table shows that in group A initial mean ± S.D. was 1.90±0.99 which decrease to1.10±0.74 after complete follow-up, it was statistically highly significant result (t= 4.00, p < 0.01) & %relief of group A patients was 42.10%.In group B initial mean 1.82±.98 was decreased to .73±.79, it was also statistically highly significant result (t=4.35, p<.01) & % relief in tenderness was 59.89%. The difference in means was greater in group B than group A. Thus the efficacy of treatment given to both groups was in this order B>A.

It can be concluded from this table that in group an initial mean ± S.D. was 1.70±.95 which decrease to 1.10±0.74 after complete follow-up, it was statistically significant result (t= 2.71, p < 0.05) & %relief of group A patients was 35.29%. In group B initial mean 1.91±1.04 was decreased to .91±.83, it was also statistically highly significant result (t=3.71, p< .01) & % relief was 52.35%. And it is indicating that the patient of Group B had responded well with treatment as compared to Group A , this can be proved by highest mean difference (BT – FU3) i.e. 1.00 which show better improvement in group B.

It can be concluded from this table that in group B mean was decreased from 6.84±0.59 to 2.84±0.43 showing highly significant result statistically (t = 6.92, p < 0.001) & % relief was 58.47%. In group B initial mean 6.92±0.51 was decreased to 1.25±0.56, it was also statistically highly significant result (t=9.79, p< .001) & % relief was 81.93%. And it is indicating that the patients of Group B had responded well with treatment as compared to Group A, this can be proved by highest mean difference (BT – AT)

Table 3: Effect of treatment on pain

Groups	Pain Mean ± SD				Within the group comparison, Paired 't' test, (BT - FU3)	% Relief
	BT	FU1	FU2	FU3		
Group A (n=12)	2.90± .99	2.30±.82	1.60±.97	1.50±.53	1.40±.96 t=4.58 p<.01	48.27%
Group B (n= 14)	2.55±1.04	1.73±.90	1.27±.90	.64±.67	1.90±.701 t=9.04 p<.001	74.50%

Table 4: Effect of treatment on Stiffness

Groups	Stiffness Mean ± SD				Within the group comparison, Paired 't' test, (BT - FU3)	% Relief
	BT	FU1	FU2	FU3		
Group A (n=12)	2.50±1.08	2.10±.74	1.30±.67	1.20±.63	1.30±.675 t=6.09 p<.001	52%
Group B (n= 14)	2.09±1.14	1.64±.92	1.18±.87	.55±.52	1.54±.820 t=6.25 p<.001	73.68%

Table 5: Effect of treatment on Disability

Groups	Stiffness Mean ±SD				Within the group comparison, Paired 't' test, (BT - FU3)	% Relief
	BT	FU1	FU2	FU3		
Group A (n=12)	3.00±1.25	2.40±.97	1.70±.67	1.40±.70	1.60±.843 t=6.00 p<.001	53.33%
Group B (n= 14)	2.91±1.14	2.27±.79	1.45±.69	.64±.50	2.27±.786 t=9.59 p<.001	78.00%

Table 6: Effect of treatment on swelling

Groups	Swelling Mean ±SD				Within the group comparison, Paired 't' test, (BT - FU3)	% Relief
	BT	FU1	FU2	FU3		
Group A (n=12)	2.10±.99	2.00±.94	1.20±.63	1.10±.74	1.00±.471 t=6.71 p<.001	47.61%
Group B (n= 14)	1.75±.97	1.58±.79	1.08±.79	.58±.51	1.16±.57 t=7.00 p<.001	66.28%

Table 7: Effect of treatment on tenderness

Groups	Tenderness Mean ± SD				Within the group comparison, Paired 't' test, (BT - FU3)	% Relief
	BT	FU1	FU2	FU3		
Group A (n=12)	1.90±.99	1.70±.95	1.60±.97	1.10±.74	.800±.632 t=4.00 p<.01	42.10%
Group B (n= 14)	1.82±.98	1.64±.81	1.00±.63	.73±.79	1.09±.831 t=4.35 p=.001	59.89%

Table 8: Effect of treatment on Crepitus

Groups	Mean ± SD				Within the group comparison, Paired 't' test, (BT - FU3)	% Relief
	BT	FU1	FU2	FU3		
Group A (n=12)	1.70±.95	1.60±.84	1.40±.70	1.10±.74	.600±.699 t=2.71 p<.05	35.29%
Group B (n= 14)	1.91±1.04	1.64±.81	1.36±.81	.91±.83	1.00±.894 t=3.71 p<.01	52.35%

Table 9: Effect of treatment on VAS scale for pain

Groups	Mean ± SD		Within the group comparison, Paired 't' test, (BT – AT)	% Relief
	BT	AT		
Group A (n=12)	6.84±0.59	2.84±0.43	4.00±2.08 t=6.92 p<.001	58.47%
Group B (n= 14)	6.92±0.51	1.25±0.56	5.67±.63 t=5.75 p<.001	81.93%

Table 10: Effect of therapies on symptoms & signs in different groups

Symptoms & Signs	Group A (In %)	Group B (In %)
Pain	48.27	**74.50**
Swelling	47.61	**666.28**
Tenderness	42.10	**59.89**
Crepitus	35.29	**52.35**
Restriction of Movement	53.33	**78.00**
Joint Stiffness	52.00	**73.69**
Vas Scale	**58.47**	**81.93**

Table 11: Total effect of therapies in different groups

Results	Group- A	%	Group –B	%
Complete Improvement	0	0	0	0
Marked Improvement	5	41.66	7	50.00
Moderate Improvement	4	33.33	5	35.71
Mild Improvement	3	25.00	2	14.28
Unchanged	0	0	0	0

i.e. 5.75 which show better improvement in group B.

In the reference of therapies in different groups, different datas are presented here for their effects in symptoms & signs (pain, stiffness disability etc). These shows relevancy in therapies as described in above mentioned table.

Effect of Therapies

Effect of therapies in severity of pain was observed maximum in Group-B i.e. 74.50 %, whereas, it was 48.27% in Group-A. In severity of swelling, maximum improvement was observed in Group B i.e. 66.28 %, whereas, it was 47.61 % in group-A. Effect of therapy in severity of tenderness was found to be maximum in Group-B (59.89%),whereas, it was 42.10 in group A. Effect of therapies in severity of crepitation was observed maximum in Group-B i.e. 52.35 %, whereas, it was 35.29 % in Group-A. In severity of restriction of movement, maximum improvement was observed in Group-B i.e. 78.00 %, whereas, it was 53.33 % in Group-A. Effect of therapy in severity of stiffness was found to be maximum in Group-B (73.69 %), followed by Group-A (52%). On VAS for pain, maximum improvement was observed in Group-B i.e. 81.93 %, whereas, it was 58.47% in Group-A. In present study, combined therapy was found to be more effective in reducing the severity of different sign & symptoms of Sandhigata Vat in comparison to the individual therapy but Statistical data shows that effect of therapies was highly significant in both the Groups.

Total Effect of Therapies in Groups

After full observation of therapies, it was found that in **Group-A,** no. of patient unchanged was 0, whereas, observed mild improvement was found in 3 patients (25.00 %), moderate improvement was observed in 4 patients (33.33 %), marked improvement was observed in 5 patients (41.66 %). In **Group-B,** no. of patient unchanged was 0, whereas, mild improvement observed was 2 (14.28 %), moderate improvement was 5 (35.71 %) and marked improvement was in 7 patients (50 %).

Probable Mode of Action of Panchatikta Ksheer Vasti

Medicine is as old as mankind and the science of medicine like any other form of knowledge is better appreciated from the records of its evolution. In this present study, Panchatikta Ksheer vasti contains ingredients which have various types of actions in the body. Most of these ingredients are having got Tikta Rasa, Ushna Virya and Madhura and Katu Vipaka. Virya is the most important part of Rasapanchaka. It is the potency by which the drug acts in the body. Any drug usually acts on the way such as –

1. Disintegration of drugs
2. Dissolution of drugs
3. Absorption
4. Metabolism

Panchatikta contains Tikta Rasa which increases the Dhatvagni (metabolic stage). As Dhatvagni

increases, nutrition of all the Dhatus is increased. As a result Asthi Dhatu, Majja Dhatu may get stable and Asthi Dhatu and Majja Dhatu Kshaya will be decreased. So degeneration in the Asthi Dhatu may not occur rapidly. It can be said, it slows down the degeneration processes. Sandhigata Vata is Madhyama Roga Margagata Vatika disorders in which vitiated Vata gets lodged in Sandhi. Hence to treat Sandhigata Vata drugs acting on both Vata and Asthi should be selected. According to Charak, in Asthi Dhatu Dushti the treatment should be given Tikta Dravya Ghrita and Kshira. In Panchatikta ksheer vasti predominance of Tikta Rasa is there. Tikta Rasa has got Deepana, Pachana and Rochana properties. So it helps in the improvement of the general condition of health and thus strengthens the whole body as well as joints. Tikta Rasa possess Lekhana property, so it helps in the weight reduction of the patients and helps in the management of Osteoarthritis. Tikta Rasa is also have Jwaraghna and Daha Prashamana properties that it may acts as anti-inflammatory agent and can reduce the pain and swelling of the joints. Tikta Rasa has Vayu and Akasha Mahabhuta in dominance. Hence it has affinity towards the body elements like Asthi having Vayu and Akasha Mahabhuta in dominance.Though, Tikta Rasa aggravates Vayu which may enhance the pathogenic process of Sandhigata Vata but, the main principle of Ayurvedic treatment is "Sthanam Jayate Purvam". The main site of Sandhigata Vata is Sandhi which is the site of Sleshaka Kapha. So, by decreasing the Kapha Dosha Tikta Rasa fulfils the principle. Tikta dravyas may have the properties of blood purifier, detoxification, analgesia and antibacterial as well as it may fascilitate the poshaka tatvas to the asthivaha and majjavaha srotas due to its vata and akash guna predominance. Ksheera Vasti is a good nutritive measure in degenerative disorders. Hence, a combination of theses in trial therapy "panchtikta Ksheera Vasti" may provide good results in pacifying the disease. It may produce reduction in pain, swelling, restriction of movement, stiffness and a little bit in crepitations, whereas Vasti therapy may improve the health and may cause the slowing of degenerative process of the body.

Though any clear notion regarding the mode of action of Vasti is not mentioned in classics, however, a collation of information about Guda Sharira, its relations, its physiology etc. gives compendious information about it.

Medicines are administered in Pakvashaya, which is comprised of Prasada part of Rakta and Kapha in association with Vata, and Pitta (Su.Sha. 4/26) and Mansa (A. S. Sha 5/47). Guda is one of the Pranayatana and a Mansa Marma of Sadyapranahara type (Su. Sha. 6/9). Being a Marma it has roots of all four types of Sira embedded in it viz. Vatavaha, Pittavaha, Kaphavaha and Shonitavaha (Su. Sha. 6/18). Due to its Sadyapranahara nature, Guda is highly sensitive. Even a mild stimulation to it by Vasti drugs and procedure may sensitize the whole body by vigorous action of Vayu through all the Siras present in the body. This physiology confirms immediate and all pervasive action of Vasti drugs.

Vasti drugs in Pakvashaya act on whole body in a same way that of sun, who though placed in the sky, causes evaporation of water from the earth. The Veerya of Vasti drugs is first taken up by Apana Vayu, i.e. it acts or influences the Gunas of Apana Vayu with which it comes in contact first. Consequently the Samana Vayu is also affected followed by Vyana, Prana and Udana Vayu. By the Gunas of Vasti Dravya, the vitiated Vayu regain their normal state and supports the body. They also bring vitiated Pitta and Kapha in their normal state, and the five types of Vayu nourish their respective Sharira-Bhuta Guna.

The Veerya of Dravya are propogated by the Vyana in Tiryak or lateral direction, by the Apana in downward direction and in upward direction by Prana, just as water pipes carry water to the different parts of the field similarly the "Harini" (Channels) carry the Gunas of the Vasti Dravya to every part the body, hence a Vasti which is appropriate will with the help of Vata, Pitta and Kapha through the Sira will

spread in all body and cures even the most difficult disease (A. S. Ka. 5/24).

Pakvashaya is the site where Poshaka originates and provides the nutrition to all Vayus. As Vasti is administered in its Udbhavasthana, it has capacity to control all the five Vayus. However, it acts more on Samana and Apana because it has direct contact with their places. Reaction sequel is produced by Vasti, which passes over all cell-to-cell, to the every part of the body and owing to the specific affinity to the Pakvashaya; the waste products are thrown in to it.

Vasti may be absorbed by diffusion, filtration, osmosis, or by adsorption. The medicines may have specific affinity to a particular tissue, whether absorbed or causing reactionary changes without absorption, by their chemo-tactic action the results are brought to every cell of the body. They probably give energy, strength and quality to the Dhatus and eliminate the excreta from Pakvashaya. Production of Thiamin, which is necessary for nerve conduction and which is produced in large intestine, may be controlled by Vasti (Sadanand et al.1961).

Vasti mainly acts on ascending colon, descending colon, rectum, anus and their nerves. Use of unwholesome diet, with the length of time, leads to clogging of the micro channels present in GIT that absorb Rasa Dhatu. Furthermore due to stagnation this Mala (intestinal toxins) get reabsorbed in the body. These reabsorbed Mala produce various ailments. Vasti radically removes these entire Mala factor from the intestines and thus cures the diseases (Ek Ayurvediya, 1940). Vasti may acts through the nervous system or through the enteric receptors. It may increase the secretion of local enzyme or neurotransmitters. Vasti may influence the normal bacterial flora thus it increases the endogenous synthesis of Vitamin B12, Vitamin K etc. Vasti makes the whole metabolism normal. (Shah et al. 2006).

According to modern medical science, as per *Vasti* /Enema concerned, in Trans rectal route, the rectum has a rich blood and lymph supply and drug can cross the rectal mucosa like other lipid membrane. Thus by entering in general circulation, *Vasti* drugs acts on whole the body.

Vasti may act through the nervous system or through the enteric receptors. It may increase the secretion of local enzyme or neurotransmitters. *Vasti* influences the normal bacterial flora, thus it increases the endogenous synthesis of vitamin $B_{12,}$ vitamin K etc.

Probable Action of Leech Therapy

Osteoarthritis, also called degenerative joint disease, is characterized by progressive loss of cartilage in the joints and is associated with symptoms such as pain, 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. Studies have found that glucosamine sulfate can slow cartilage loss and promote the] formation of new cartilage in arthritic joints, and its use in the management of osteoarthritis has become more widespread in recent years. Leech therapy may be more effective than topical analgesics and anti-inflammatory agents in the treatment of osteoarthritis. 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, lasting effects on stiffness and dysfunction, and high degree of safety suggest that this therapy has great potential in the management of osteoarthritis. (Maureen Williams, ND, University of Pennsylvania)

Patients with osteoarthritis of the knee 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, collagenase, inhibitors of kallikrein and superoxide production & poorly characterised anaesthetics and analgesic compounds.

Therefore, a regional analgesic and antiphlogistic effect by these substances enforced by hyaluronidase as well as counter – irritation might be possible treatment with leeches reduced pain significantly after three days to four weeks. (Karl & Veronika carstens foundation Germany).

Different mechanisms may explain the observed effects. First, various pharmacologically active substances besides the thrombin-inhibitor hirudin have been found in leech saliva, such as histamin-like vasodilators, kallikrein and tryptase inhibitors, various other proteinase inhibitors, and anesthetics. Through the concomitant activity of a further leech saliva component, hyaluronidase, these substances might reach deeper tissue zones and possibly the joint space. However, it is not clear whether pain-relieving therapy in osteoarthritis needs to affect the cartilage and subchondral bone directly. The 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.

Second, nociceptive activation contributes to chronic pain. Leech therapy could induce pain relief through antinociceptive effects and counterirritation. However, it is not known to what extent leech bites may induce such mechanisms, and it seems unlikely that reduction of nociceptive input on a single occasion would result in the observed lasting effect, such as improved joint function.

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.. After 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 antiphlogistic 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 peri-articular myofascial structures play an important role in the development of chronic joint pain and regional pain syndromes in patients with osteoarthritis.

In summary, traditional leech therapy seems to be an effective symptomatic treatment for osteoarthritis of the knee. 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 osteoarthritis.

CONCLUSION

On the basis of above mentioned literary review, clinical study and discussion, the final conclusions of the present work are-

- Sandhigata Vata vis-à-vis Osteoarthritis is multi-factorial, non-inflammatory degenerative joint disorders.
- There was no apparent change observed in X-ray before and after treatment.
- According to the literary profile, this disease is Asadhya or incurable in nature, this is also supported by the recurrence of same type of complaint in the patient included in the present clinical study. The medication can give only symptomatic relief for certain period.
- Effect of Panchtikta Ksheera Vasti (Samsodhana/purificatory measures) for Sandhigata Vata (OA) is undoubtful due to its systemic effect on dhatukshaya and vitiated Vata, whereas, Jalaukavacharan has proved its efficiency by providing better relief in different complaints of patients by

exerting the analgesic& antiinflammatory effect. These therapies had been proved their significance individually as well as overall effect of combination therapy (Vasti + Jalaukavacharan) is found to be superior than individual therapy which is also proved by observing the better result symptomatically as well as statistically in group-B.

- Thus the resent study, though a time bounded investigation, has been conducted entirely from a new angle. It has yielded much newer information, which may open newer vistas for further study.
- Since sample size was very small, so it is very difficult to give a definite conclusion, but this work would undoubtedly provide the strong base for further studies.

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