



## Research Article

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### LEECH ON THE DEGENERATIVE KNEE

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#### ABSTRACT

A common form of arthritis in the elderly, being a major cause of localised pain and functional disability is Sandhigata Vata. This osteoarticular disorder when confined to the knee is termed as Janusandhigata vata. The clinical manifestations of Sandhigata Vata simulate the condition of degenerative joint disorder. The reported prevalence of Osteoarthritis from a study in rural India is 5.78%. Leech therapy has been practiced successfully in musculoskeletal diseases in Ayurveda and other systems of medicine like Unani. It has also become the area of curiosity and interest in the research world. This study was intended to find out the effect of Jaloukavacharana in Janusandhigata Vata. Screening of patients suffering from Janusandhigata Vata was done at arthritis camps and finally 30 patients who fulfilled all necessary criteria and gave a written consent for the clinical trial were enrolled for the trial as study volunteers. It was a single centre, Repeated Measures study design with single sitting of Jaloukavacharana followed up for a period of 4 weeks (1<sup>st</sup> day, 7<sup>th</sup> day, 14<sup>th</sup> day and 28<sup>th</sup> day). Concurrent analgesics/NSAIDs and steroids in any form were not allowed. Lifestyle and/or dietary restrictions were not imposed. Pain, crepitus and modified WOMAC were the primary efficacy variables. Pain and WOMAC showed significant improvement (P<0.001, ANOVA) after treatment. Crepitus remained unchanged after treatment. The study showed remarkable improvement in symptoms like pain, stiffness and functional ability of knee joint /joints.

**Keywords:** Janusandhigata Vata, Jaloukavacharana, Raktamokshana, WOMAC

#### INTRODUCTION

Sandhigata Vata a vedana pradhana Vata Vyadhi is a joint disorder clinically characterized by features like pain which is aggravated on movements, swelling in the affected joint, joint stiffness<sup>1</sup> and joint crepitus<sup>2</sup>. The clinical manifestations of Sandhigata Vata simulate the condition of degenerative joint disorder, which is described as a pain predominant disabling form of Arthritis with a strong association with ageing.

According to World Health Organisation osteoarthritis is considered to be the second commonest musculoskeletal problem in the world population (30%). There is a steady rise in the prevalence of osteoarthritis from age 30 such that by 65, 80% of the population have radiological evidence, though only 25-30% is symptomatic<sup>3</sup>. The reported prevalence of osteoarthritis from a study in rural India is 5.78%. Indians are said to have increased knee osteoarthritis (OA), especially amongst women. The major risk factors associated with knee OA seen in a population study were: age, female sex, obesity, occupational knee bending, physical labour and chondrocalcinosis<sup>4</sup>. The therapeutic approach in conventional medicine ranges from oral/parental non steroidal anti inflammatory drugs, intra articular steroids at one end, to the more technical joint replacement therapies at the other end. But every intervention has a limitation like that of adverse drug effects, expensiveness of the procedure or invasive complications. Therefore there is a need to develop a suitable treatment to control the problem preferably by non pharmacological measures. Hence it was planned to conduct a clinical study to evaluate the efficacy of Jaloukavacharana in Janusandhigata Vata.

#### MATERIALS AND METHODS

##### Key material for study

Jalouka- Procured from a specimen collector and were confirmed to be non poisonous. They were preserved in clean containers with water, by changing the water at regular intervals.

##### Method of study

Screening of patients suffering from Janusandhigata Vata was done at arthritis camps and finally 30 patients who fulfilled all necessary criteria and gave a written consent for the clinical trial were enrolled for the trial as study volunteers. The selection was done at random, but irrespective of gender, occupation, educational status, socio economical status considerations. They were subjected to a Repeated Measures clinical study. Blinding was not possible, as the clinical trial involved a procedure which was to be explained to the volunteer before conducting the trial and the volunteer would be eye witnessing the same when the treatment was done. Study was carried out as per the Ethical clearance number: SDMCAU/ ACA15/ EC11/ 09-10

##### Study duration

Intervention was done for one sitting. Clinical assessment was done at baseline, immediate after treatment, 7<sup>th</sup>, 14<sup>th</sup>, and 28<sup>th</sup> days of treatment. Total study duration was 4 weeks.

##### Diagnostic criteria

- Pain in knee joint with/without other features like stiffness, swelling and joint crepitus
- Evidence of radiological changes of osteoarthritis of knee

**Inclusion criteria**

- Patients fulfilling the diagnostic criteria
- Patients of either sex with age 80 years and below
- Both fresh and already treated cases (with no treatment response of earlier treatment)
- Patients who agreed to sign the informed consent form and follow up the protocol

**Exclusion criteria**

- Patients suffering from other forms of arthritis
- Janusandhigata Vata as a consequence of Abhigata and Bhagna
- Patients suffering from systemic illness which would decline the general condition of the patient and interfere with the clinical trial
- Patients unfit for Raktmokshana
- Vulnerable group like lactating mothers, pregnant and mentally challenged persons

**Specific investigations**

- X-ray knee antero posterior view and lateral view before treatment to know the extent of radiological changes before commencing the intervention.
- Clotting time and bleeding time before commencing the intervention.

**Intervention (Method of Jaloukavacharana)**

**Preparation phase**

**Preparation of Jalouka:** The jaloukas were removed from the preservation container and put in turmeric water until they became active. They were then transferred to a steel bowl containing clean water and were ready for use.

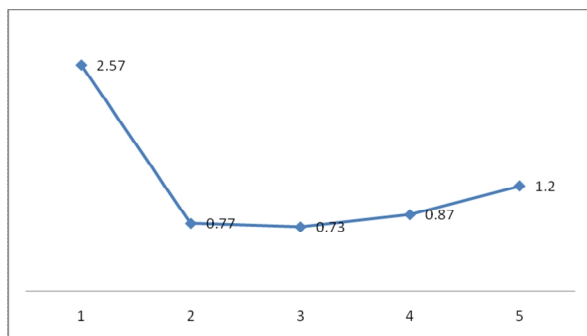
**Preparation of patient:** The patient was clearly explained about the procedure and the treatment was started only after he/she was convinced about the treatment and gave a written consent. Above mentioned specific investigations were done apart from the routine investigations.

**Table 1: Demographic profile of 30 patients**

Demographic character	Number of patients	Percentage
Age in years		
41-50	04	13.33%
51-60	11	36.67%
61-70	11	36.67%
71 -80	04	13.33%
Gender		
Male	07	23.33%
Female	23	76.67%
Nature of work		
Sedentary work	07	23.33%
Physical work	14	46.67%
Household activities	09	30%

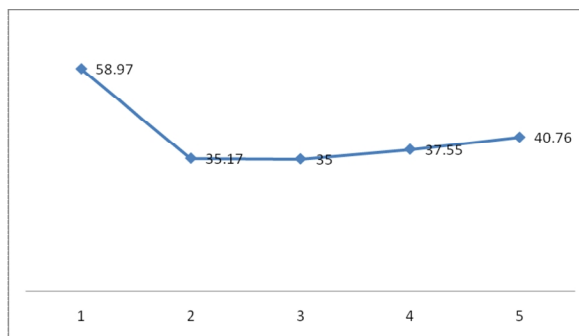
**Table 2: Comparison of Efficacy Measures at 1<sup>st</sup> day, 7<sup>th</sup> day, 14<sup>th</sup> day and 28<sup>th</sup> day of treatment from baseline (Mean difference and Standard Error)**

Variable	1 <sup>st</sup> day after treatment		7 <sup>th</sup> day after treatment		14 <sup>th</sup> day after treatment		28 <sup>th</sup> day after treatment	
	MD+SE	P value	MD+SE	P value	MD+SE	P value	MD+SE	P value
Pain	1.80+.10	<0.001	1.83+.08	<0.001	1.70+.09	<0.001	1.37+.13	<0.001
WOMAC Pain	5.40+.28	<0.001	5.47+.29	<0.001	4.87+.31	<0.001	4.00+.42	<0.001
WOMAC Stiffness	1.90+.15	<0.001	2.07+.14	<0.001	1.70+.21	<0.001	1.43+.23	<0.001
WOMAC Difficulty	17.00+.53	<0.001	17.03+.77	<0.001	15.53+1.12	<0.001	12.93+1.17	<0.001
WOMAC Combined	23.79+.64	<0.001	23.97+1.00	<0.001	21.41+1.59	<0.001	18.21+1.74	<0.001



1=baseline, 2= 1<sup>st</sup> day after treatment, 3= 7<sup>th</sup> day after treatment, 4= 14<sup>th</sup> day after treatment, 5=28<sup>th</sup> day after treatment.

**Graph 1: Mean pain over 4 weeks**



1= baseline, 2 = 1<sup>st</sup> day after treatment, 3 = 7<sup>th</sup> day after treatment, 4 = 14<sup>th</sup> day after treatment, 5 = 28<sup>th</sup> day after treatment.

**Graph 2: Mean WOMAC total score over 4 weeks**

### Main procedure

A single sitting of Jaloukavacharana using two leeches per knee joint, one on medial aspect and one on lateral aspect of index knee joint/joints were carried out. When the leech got attached to the skin surface of the knee and started to suck the blood, a piece of cotton dipped in water was applied over the leech. The leech was allowed to suck from the area as long as it sucked and was allowed to get detached on its own.

### After procedure

**In Patient:** The area of bite was dusted with turmeric powder and the oozing blood was mopped off with sterile gauze. When the bleeding was reduced, a loose bandage was tied around the knee to absorb the blood flowing out, so as to avoid inconvenience to the patient by the oozing blood.

**In Jalouka:** The leeches were immediately induced emesis by applying salt at their mouth end and then squeezing them from lower end to upper end, so that the blood sucked was expelled out. Later the leeches were washed in fresh water and transferred into clean patient name labelled containers containing fresh water.

### Assessment criteria

Clinical evaluation was done at each visit to assess the efficacy variables pain (knee function assessment chart of the British Orthopaedic Association Research subcommittee) and crepitus (Criteria of Altman for the diagnosis of idiopathic Osteo Arthritis of Knee using clinical & X-Ray data). Patients completed the WOMAC<sup>5</sup> [Western Ontario Mac mister index] at all visits. Assessment was done on 0<sup>th</sup>, 1<sup>st</sup>, 7<sup>th</sup>, 14<sup>th</sup>, and 28<sup>th</sup> days of the study period.

### RESULTS

The pre and post treatment scores of the assessment criteria were tabulated and statistically analyzed by using repeated measures ANOVA. Pain and WOMAC showed remarkable clinical improvement and the same was supported by statistical analysis. These efficacy variables showed highly significant difference from baseline measures at all time points ( $p < 0.001$ ). Table 2 shows the mean difference and standard error of efficacy variables from baseline to 1<sup>st</sup>, 7<sup>th</sup>, 14<sup>th</sup>, and 28<sup>th</sup> days after intervention. There was a rapid decline in the mean value of pain and WOMAC (pain, stiffness, physical function difficulty and combined) immediately after treatment which followed a plateau effect there by. Graph 1 shows the mean efficacy of the therapy on pain and Graph 2 shows the mean efficacy of the therapy on WOMAC (combined) at the evaluating time points.

Clinically joint crepitus was appreciated in all patients. It remained unchanged throughout the study period. Hence data was not subjected to statistical analysis.

### DISCUSSION

#### Demographic distribution of 30 patients

The distribution of 30 patients according to age, gender and occupation is shown in table 1. It was observed that 11 (36.67%) patients each belonged to age group of 51-60

and 61-70. Considering gender, 23 out of 30 were females. Among 23 females, 19 (82.60%) females had reached menopause.

Symptomatic and radiographic OA increases with age. The age related increase is more in females. The disease is more severe in females with more symptoms, more extensive involvement, and increased prevalence of knee<sup>6</sup>. Considering occupation influence, more physical activity in the individual and house hold activities in females showed a relationship in the manifestation and aggravation of this condition. Epidemiological surveys suggest that physical factors involved in occupations are important determinants of the condition<sup>7</sup>.

### Jaloukavacharana

The effectiveness of the treatment may be attributed to the analgesic, anti-inflammatory and anaesthetic activity of the leech saliva which contains a number of pharmacologically active biological substances like hirudin, hyaluronidase, inhibitors of kallikerine, fibrinases, collagenase etc. These substances are injected via leech into the body during the bite which brings about the effect<sup>8</sup>.

### Adverse events

No major adverse events were observed in the intervention. 06 patients (20 %) complained of mild itching around the bitten area on the third and fourth day after application of leech which reduced and disappeared on dusting the bite area with turmeric powder. No oral medicine was given for this purpose.

### CONCLUSION

In this study it was observed that Jaloukavacharana had significant improvement on pain, and WOMAC in Janusandhigata Vata. But there was no change in joint crepitus. The therapy was found safe for practice. It was accepted as well as tolerated by patients. No obnoxious side effects were observed except for a mild local itching in few patients. The overall compliance to the therapy was good. Thus it can be concluded that leech therapy is an effective and safe treatment in symptomatic management of Janusandhigata Vata.

### REFERENCES

1. Vaidya Jadavaji Trikamji Acharya, editor. Caraka Samhita with Ayurveda Dipika Sanskrit commentary by Cakrapanidatta, Chaukamba Surbharati Prakashan, Varanasi, Reprint 2000; p. 618.
2. Sri Madhavkara, Madhavanidana with Madhukosha Sanskrit commentary by Sri Vijayarakshitha & Vidyothini Hindi commentary of Srikantadatta, revised & edited by Prof Yadunandana Upadhyaya, Chowkambha Sanskrit sanstan, Varanasi 20<sup>th</sup> edition, 1993; Part 1, p 418.
3. Sir. Davidson Stanley, Davidson's Principles and Practice of medicine, Musculo Skeletal Disorders. Nicholas A Boon, Nicki R Colledge, Brain R Walker, editors. John A A Hunter, International Editor. 20<sup>th</sup> edition, Churchill Living Stone, Elsevier Ltd; 2006; Part 2, Chap 25, p.1096
4. Shah Siddarth N, Das Siddarth kumar, API Text book of medicine, 8<sup>th</sup> edition, The Association of Physicians of India, Mumbai, 2009; Vol 1, Sec 7; Chap 5: p. 279-283.
5. Chopra A, et al. Evaluation of RA-11 in OA of knees, appendix B modification and validation of WOMAC for Indian Asian use, Indian (Asian) WOMAC Index (CRD Pune version), JCR 2004; vol 10: 236-245.

6. Shah Siddarth N, Das Siddarth kumar, API Text book of medicine, 8<sup>th</sup> edition, The Association of Physicians of India, Mumbai, 2009; Vol 1, Sec 7; Chap 5: p. 279-283.
7. Sir. Davidson Stanley, Davidson's Principles and Practice of medicine, Musculo Skeletal Disorders. Nicholas A Boon, Nicki R Colledge, Brian R Walker, editors. John A A Hunter, International Editor. 20<sup>th</sup> edition, Churchill Living Stone, Elsevier Ltd; 2006; Part 2, Chap 25, p.1096
8. Haycox C.L. et al, "Indications and complications of medicinal leech therapy", American academy of Dermatology, 1995; 33(6), p. 1053-1055.

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