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“Study The Efficacy Of Jalauka Avacharana In Tennis Elbow W.S.R To Vishwachi”

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Introduction

Jalauka has been used for medicinal purpose for many centuries in India. There are references in ancient textbooks such as Mahabharata, Puranas, and Vedas about their uses in treating various diseases. In the Koushik sutra of Atharva Veda, reference of Rakta Mokshana by leech application were found. Jalauka has been elaborately described in Sushruta, Charaka and Vagbhat Samhita. Sushruta mentioned Jalauka avacharan as one of the procedure of Rakta Mokshana. Jalauka has been extensively used for the treatment of various diseases. It is indicated in rakta, pitta, Vata, kandara dushti, diseases of avaghad Pradesh. Illustrations of leech application to patients were found in Egyptian tombs dating back to 1500 BC. Chinese writings from the first century AD describe medicinal leech application. There are also references in Sanskrit, Persian, and Arabic literature. The first documentation of therapeutic leech use is in the poem Alexipharmaca by Nicander of Colophon (200-130BC) (1). In Ayurveda leech application is called as *Jalauka avacharan*. It is indicated in various diseases. It is one of the important types of treatment.

दुष्टरक्तापगमनात्सद्यो राग रुजां शमः ॥ अ. ह. सू. २६। ५०

त्वग्दोषा ग्रन्थयः शोफा रोगाः शोणितजाश्च ये | रक्तमोक्षणशीलानां न भवन्ति कदाचन ॥ सु. सू. १४। ३४

Jalauka avacharan is commonly used for *Sukumar* patients, diseases related to skin, and localized rakta dushti.

Tennis elbow is common disease first described by Runge in 1873 in which there is pain at lateral aspect of elbow when wrist is extended. The tendon of common extensor muscles of forearm is inflamed. It is commonly seen in general population. The prevalence of tennis elbow is 1 to 3% (2). There is no difference in morbidity between the sexes, but the prevalence rate is higher in people over 40 years of age (3). In addition, it is more frequent in the dominant arm (4), and if untreated the symptoms persist for 6 to 24 months (5-7)

Treatment for tennis elbow includes non-steroidal anti-inflammatory drugs, corticosteroids injections, botulinum toxin injection, extracorporeal shock wave therapy, low level laser, physiotherapy, acupuncture and surgery. The short term effects of ultrasound therapy (8), low level laser therapy (9) and acupuncture has been accepted, but there is insufficient data regarding their long term effects (10). Also the short effects of injection treatment have been accepted, but there is high chances of relapse and adverse events reported (11).

Although the diagnosis of tennis elbow is quite straight forward, there has been no consensus on the optimal management strategy (12). Different treatment approaches exist with numerous and sometimes contradictory options with different mechanisms of action.

So it was decided to use *Jalauka Avacharan* for the treatment of tennis elbow as it is a localized disease of *kandara of Bahu Prakoshta*. There are micro-tears i.e. *Vrana* in the fibers of tendon due to repetitive wrist extension movements with force. This causes *Vata Dushti* and gives (*Vedana, Ruja*) painful movements of wrist especially dorsiflexion of wrist. The healing of the micro-tears is hampered due to deficient blood supply (*Rakta Dushti*) to the tendon. *Jalauka avacharan* is specifically used treatment for the localized dushti of *Rakta Dhatu* and *Vedana, Ruja* due to *Prakopita Vata*. In tennis elbow, the *Kandara of Prakoshta* is diseased. *Kandara is Updhatu of Rakta*. So it was hypothesized that use of *Jalauka Avacharan* will be helpful for relieving the pain, healing of the extensor tendon and the symptoms of tennis elbow. *Jalauka avacharan* is an OPD based procedure. It will be convenient to the patient to take the treatment.

Aim

To study the efficacy of *Jalauka avacharan* in tennis elbow with special reference to *Vishwachi*.

Objectives

1. Assessment of efficacy of *Jalauka avacharan* in comparison with the duration of reduction in pain free period by ultrasound therapy in tennis elbow.
2. Assessment of safety of *Jalauka avacharan* in tennis elbow.

Methodology

Total of 107 subjects were registered for the study. 93 subjects completed study. 14 subjects dropped out from the study. Two group were created, group A – trial group and group B – control group. Following investigations were done on the screening day of every patient of both groups. patients were treated with *Jalauka avacharan*. *Jalauka avacharan* was done on the affected site by applying two leeches at the lateral epicondyle – origin of common extensor tendon. Two settings of leech application were done. Second setting of leech application was given seven days after the first setting of leech application. Total Number of Visits Visit 1 – Day 1, screening visit and start of the treatment Visit 2 – Day 8, patient came for second setting of leech application & follow up Visit 3 – Day 15, follow up Visit 4 – Day 60, follow up Follow up of every patient was taken on each visit and recorded in case record form. Assessment of every patient done on 1st day, 15th day, 60th day using VAS & PRTEE questionnaire. Standard operating procedure for *Jalauka avacharan*.

Inclusion criteria

- Subjects aged >20 years and less than 70 years.
- Patient having complaints of radiating pain from the lateral aspect of elbow to wrist while holding, grasping heavy objects.
- Patient having positive Cozen's test - elbow is extended and forearm is fixed, hand is clenched. Patient is asked to dorsiflex the wrist against resistance. Patient will perceive pain at lateral epicondyle of elbow.
- Patient having pain on resisted dorsiflexion of the middle finger of affected elbow.
- Patient having above complaints for more than one month duration.
- Subject willing to participate in clinical study and who read, understood and signed informed consent form.
- Subjects willing to follow all required study visits.

Exclusion criteria

- Subjects who refuse to give informed consent.
- Subjects with pain in hand due to fracture and local joint disorders other than Tennis Elbow.
- Patients taking anti-platelet treatment.
- Patients having bleeding and clotting disorders.
- Patients having systemic disorders e.g. diabetes, hypertension, musculo-skeletal diseases
- Patients having active source of infection e.g. infected wounds, cellulitis.
- Subject having history of alcohol and/or drug abuse.
- Patients with pre-existing systemic disease necessitating long-term medications, genetic and endocrinal disorders.
- Subject with history of major psychiatric disorder.

Assessment parameters

Assessment of pain due to tennis elbow on Visual Analogue Scale (VAS). Assessment of pain and function of the affected elbow on Patient Rated Tennis Elbow Evaluation (PRTEE) Questionnaire. All these assessments will be done on day 1, day 15th, and day 60th. Study

Group A – trial group 47 patients were treated with Jalauka avacharan. Jalauka avacharan was done on the affected site by applying two leeches at the lateral epicondyle – origin of common extensor tendon. Two settings of leech application were done. Second setting of leech application was given seven days after the first setting of leech application.

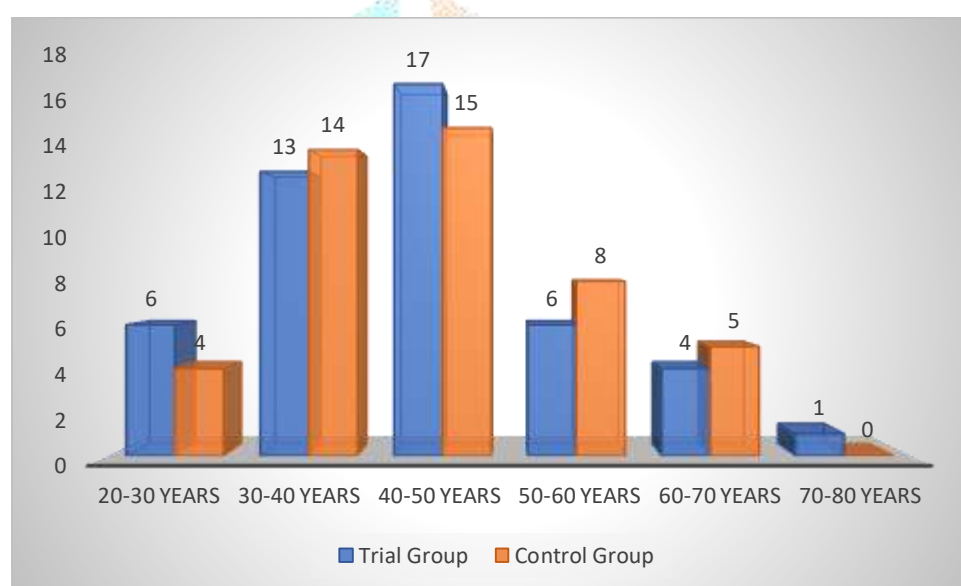
Group B - Control group Total 46 patients of tennis elbow were selected for ultra-sound therapy (UST). Prior to treatment the patient was explained the benefits and risks of the ultra-sound treatment. The informed written consent formed was signed and patient information sheet was given to patient. Supine position was given to the patient. Coupling medium used was Aquasonic gel. It has 72.6% transmission efficacy of ultrasound which is better than other coupling medium. (117)

RESULT AND OBSERVATION

Statistical analysis Demographic analysis:

1. According to age group percentage of subjects in trial and control group

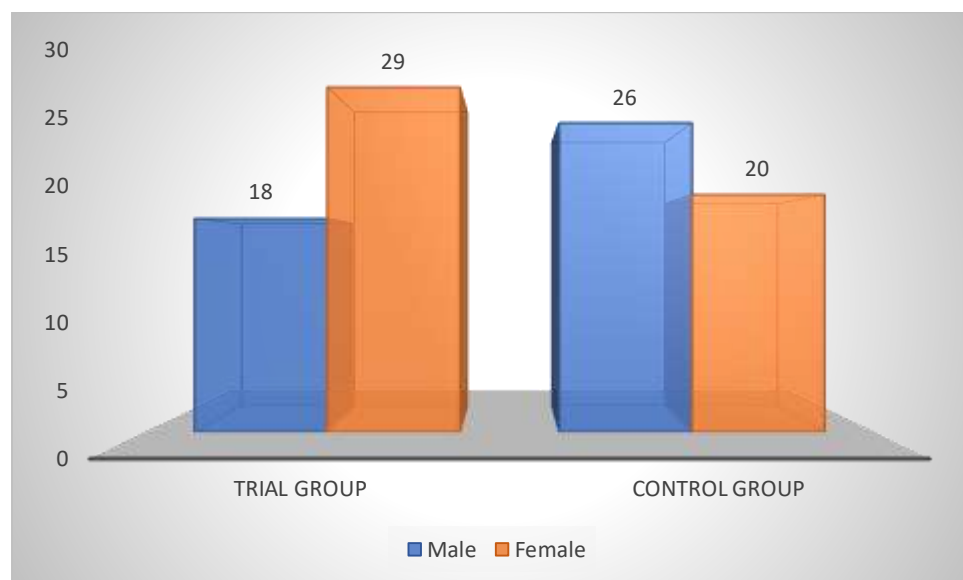
Age Group	Trial Group		Control Group	
	Frequency	Percentage	Frequency	Percentage
20-30 Years	6	12.8	4	8.7
30-40 Years	13	27.7	14	30.4
40-50 Years	17	36.2	15	32.6
50-60 Years	6	12.8	8	17.4
60-70 Years	4	8.5	5	10.9
70-80 Years	1	2.1	0	0.0
TOTAL	47	100.0	46	100.0



2. According to sex, percentage of the subjects in trial and control group

Gender	Trial Group		Control Group	
	Frequency	Percentage	Frequency	Percentage
Male	18	38.3	26	56.5
Female	29	61.7	20	43.5
TOTAL	47	100.0	46	100.0

In Trial Group, out of 47 patients 18 (38.3%) were male and 29 (61.7%) were female. In Control Group, out of 46 patients 26 (56.5%) were male and 20 (43.5%) were females.

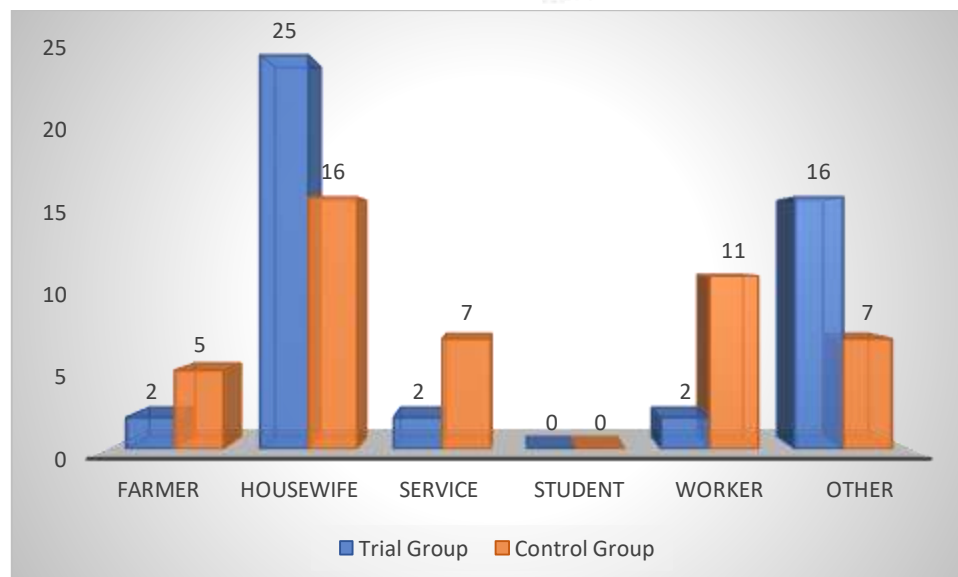


3. According to occupation, percentage of subjects in the trial and control group

Occupation	Trial Group		Control Group	
	Frequency	Percentage	Frequency	Percentage
Farmer	2	4.3	5	10.9
Housewife	25	53.2	16	34.8
Service	2	4.3	7	15.2
Student	0	0.0	0	0.0
Worker	2	4.3	11	23.9
Other	16	34.0	7	15.2
TOTAL	47	100.0	46	100.0

Out of 47 patients in Trial Group, 2 (4.3%) were farmers, 25 (53.2%) were housewife, 2 (4.3%) were doing service, 2 (4.3%) were workers and 16 (34%) had other occupation.

Out of 46 patients in Control Group, 5 (10.9%) were farmers, 16 (34.8%) were housewife, 7 (15.2%) were doing service, 11 (23.9%) were workers and 7 (15.2%) had other occupation.

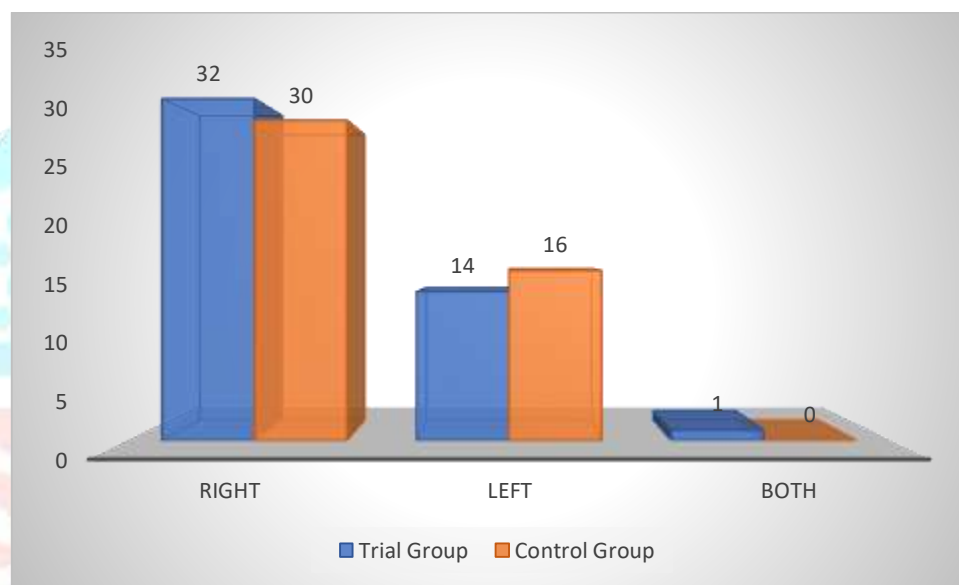


4. According to the side of the affected elbow, the percentage of the subjects in the trial and control group.

Side	Trial Group		Control Group	
	Frequency	Percentage	Frequency	Percentage
Right	32	68.1	30	65.2
Left	14	29.8	16	34.8
Both	1	2.1	0	0.0
TOTAL	47	100.0	46	100.0

In Trial Group Tennis Elbow was observed to Right side in 32 (68.1%) patients, to left side in 14(29.8%) patients and to the both sides in 1 (2.1%) patient, out of 47 patients.

In Control Group Tennis Elbow was observed to Right side in 30 (65.2%) patients and to left side in 16(34.8%) patients out of 46 patients.



Statistical Analysis

Data: Efficacy of the *Group A and Group B* treatment for each of the assessment criteria was assessed by subjecting the pre & post-treatment data for the patients from Trial group and control Group to Wilcoxon Paired Signed-Rank Test and Z-test.

Statistical Test for Effectiveness Testing: Wilcoxon Paired Signed-Rank Test and Z-test.

This test was carried separately for each of the assessment criterion

Followup wise comparison between control and trial group

VAS	% Change	
F/U	Trial Group	Control Group
Day 0	0.0	0.0
Day 15	18.3	12.6
Day 60	42.0	22.3

On Day 15 effect observed in Trial Group was 18.3% while in Control Group was 12.6%. On Day 60 effect observed in Trial Group Was 42 % while in control group was 22.3%. Hence we can conclude that effect observed at each follow up is more in trial group than control group.

PRTEE	% Change	
	Trial Group	Control Group
Day 0	0.0	0.0
Day 15	19.6	13.7
Day 60	43.4	20.9

On Day 15 effect observed in Trial Group was 19.6% while in Control Group was 13.7%. On Day 60 effect observed in Trial Group Was 43.4 % while in control group was 20.9%. Hence we can conclude that effect observed at each follow up is more in trial group than control group.

DISCUSSION Discussion on observation:

1. There were total 107 subjects registered for this study. 14 subjects were dropped out from the study. 93 subjects completed the study. 47 subjects were in Trial Group and 46 subjects were in Control Group.

2. In Trial Group out of 47 subjects, 30 subjects were from the age group of 30 years to 50 years.

In Control Group out 46 subjects, 29 subjects were from the age group of 30 years to 50 years. From the statistical data analysis, it is confirmed that the maximum incidence of Tennis Elbow is seen in the age group of 30 to 50 years which is middle age. The cause for this can be working age group who has to perform the daily activities and work related activities. So the incidence is high in this age group.

3. The occurrence of Tennis Elbow is more in women than men. Out of 93 subjects 49 subjects were women and 44 subjects were men. So it is seen in this study that the prevalence of tennis elbow is more common in women than men. However tennis elbow is not related to particular sex group. It occurs in working age group irrespective of sexes.

4. Large number of subject population is in the House wife category than any other occupation who suffered from Tennis Elbow. Around 53.2% of subjects were the house wives who are doing daily house hold activities.

5. Tennis elbow is always seen in the dominant hand. From this analysis the maximum affected elbows were of dominant hand. In trial group 68.1% and in control group 65.2% subjects' right side was affected.

6. Both Jalauka avacharan and ultrasound therapy was effective in treating the tennis elbow as per the results. The pain was significantly reduced in both groups after the treatment. The Jalauka avacharan is more effective than ultrasound therapy in tennis elbow as per results.

7. In *Jalauka avacharan* according to ayurvedic principles, the leech reduces the *Vedana*, *Shotha*, and *Raga* at the *Sthanik Rakta Dushti*. It also reduces the pain due to *Vata Dushti*. *Jalauka avacharan* is one of the treatments for *Dushta Vranas*.

In tennis elbow *Vata Dushti* is due to repetitive forceful movement of *Hasta Tal*, *Bahu Prakoshta Bahya Prushtagat Kandara*. This causes multiple *Vranas* at *Bahya Prushtagata Kandara*. These multiple *Vranas* could not heal due to deficient blood supply to *Kandara*.

This causes angiofibroblastic degeneration at the extensor tendon at lateral epicondyle of affected elbow with disordered collagen bundles, abnormal cellularity, mucoid ground substance and random neovascularization.

This pathology gives rise to painful elbow and wrist movements, the clinical features of tennis elbow (*Vishwachi*). These are the clinical features of *Vata dushti*.

Jalauka avacharan removes vitiated *Vata* and *Rakta* from multiple *Vranas* at *Kandara*. *Jalauka avacharan* draws *shudha Rakta* at *Kandara*, thus helps in the healing of multiple *Vranas* at the *Bahu Prakoshtagata Bahya kandara*. So the symptoms of the tennis elbow is relieved by using *Jalauka avacharan*.

8. Contents of leech saliva – Hirudin, Hyaluronidase, Calin, Destabilase, Apyrase, Eglin, Bdelins, Decorsin, Hirustasin, Guamerin, Piguamerin, Gelin, Gamma-glutamyl transpeptidase, Platelet Activating Factor Antagonist, Acetylcholine, histamine-like vasodilators, fibrinases and collagenase.

These contents are potent antithrombotic and has antiplatelet activity, so when leech is applied the fresh blood is drawn at injury site. There are growth factors in the blood which helps to repair the tendon.

They also reduce the density of scar tissue and help reduce fibroblast formation,

The collagenase, inhibitors of kallikrein and superoxide production reduces the disordered collagen bundles, random neovascularization and mucoid degeneration.

Poorly characterized anesthetic and analgesic compounds. So these active components helps in reducing the vitiated *Vata* (*Vata vrudhi* - causing painful movements), the healing of injured tendon and relieving of the tennis elbow symptoms.

9. Ultrasound therapy has beneficial effects in treating the soft tissue injuries of tendons. Effects of ultrasonic waves on tissues - Thermal effects, Cavitation, Mechanical and Biological effects are useful in three stages of repair i.e. *Inflammatory, Proliferative, Remodeling*.

CONCLUSION

After the completion of thesis work entitled 'To study the efficacy of *Jalauka avacharan* in tennis elbow with special reference to *Vishwachi*'. It has put light on the following conclusion:

The present study of the patients with tennis elbow were randomly selected and divided into two different groups. Trial group was treated with *Jalauka avacharan* two settings one week apart and control group treated with ultrasound therapy at the affected elbow for 15 minutes mode for 7 days.

After clinical observation and statistical analysis the following conclusions were drawn:

1. Both *Jalauka avacharan* therapy and ultrasound therapy were effective in treating the tennis elbow.
2. *Jalauka avacharan* was more effective than the ultrasound therapy on long term basis.
3. *Jalauka avacharan* therapy is safe for the treatment of tennis elbow.

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