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THE EFFICACY OF MARMA THERAPY IN ALLEVIATING PAIN AND IMPROVING FUNCTIONALITY IN PATIENTS WITH TENNIS ELBOW: A PILOT STUDY

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Abstract:

The purpose of this pilot study is to investigate the effectiveness of Marma therapy, in alleviating pain and enhancing functional outcomes in patients diagnosed with tennis elbow (lateral epicondylitis).

Methods

Study Design: This study was designed as a randomized controlled pilot trial to evaluate the effects of Marma therapy on pain and functional outcomes in patients with tennis elbow. A total of 10 participants diagnosed with tennis elbow (lateral epicondylitis) based on clinical criteria were recruited. Inclusion criteria: Adults aged 18-65 years with symptoms persisting for at least 6 weeks, moderate to severe pain (VAS score ≥ 4). Exclusion criteria: Recent elbow injury, previous surgery on the affected elbow, corticosteroid injections in the past 3 months, and other systemic conditions affecting musculoskeletal function (e.g., rheumatoid arthritis) Interventions: Marma Therapy Group (MTG): Participants received Marma therapy targeting specific energy points associated with pain relief and muscle relaxation. Sessions were conducted twice a week for 6 weeks. Each session lasted approximately 30 minutes. Control

Group (CG): Participants received standard care, which included rest, physiotherapy exercises, and non-steroidal anti-inflammatory drugs (NSAIDs) as needed.

Results

In this pilot study, 10 participants were analysed (5 in the Marma therapy group and 5 in the control group). The Marma therapy group exhibited an average 40% reduction in VAS pain scores from baseline to post-treatment, compared to a 15% reduction in the control group. Grip strength in the Marma therapy group improved by 25%, whereas the control group observed a 10% increase. DASH scores indicated a significant enhancement in functional ability in the Marma therapy group (30% improvement) versus the control group (12% improvement). These findings suggest Marma therapy's potential effectiveness in managing pain and improving function in tennis elbow.

Conclusion

Marma therapy shows promising potential in significantly reducing pain and improving functional outcomes in tennis elbow patients.

Keywords: - Marma Therapy, Lateral Epicondylitis, Tennis Elbow

Introduction:

Tennis Elbow (Lateral Epicondylitis): Tennis elbow, medically known as lateral epicondylitis, is a degenerative condition characterized by pain and tenderness on the outer part of the elbow. It typically results from overuse or repetitive strain on the extensor muscles of the forearm, particularly the extensor carpi radialis brevis tendon[1]. This condition is common among athletes, manual labourers, and others who engage in repetitive wrist and arm movements, with a prevalence estimated to be between 1% and 3% in the general population[2].

Current Treatment Options and Their Limitations: The management of tennis elbow includes a variety of approaches, such as rest, ice application, physiotherapy, non-steroidal anti-inflammatory drugs (NSAIDs), corticosteroid injections, and in severe or persistent cases, surgical intervention[3]. However, these conventional treatments often provide only temporary relief, and recurrence rates are high. Prolonged use of NSAIDs can cause gastrointestinal issues,

and corticosteroid injections may weaken the tendon structure over time[4]. Therefore, there is an increasing interest in alternative therapies that are safe, effective, and have fewer side effects.

Rationale and Significance:

Marma therapy is a traditional Indian practice rooted in Ayurveda, which involves the stimulation of specific energy points (Marma points) on the body. Marma points are specific anatomical locations in the body that are considered vital junctions of energy according to the principles of Ayurveda, the traditional system of medicine practiced in India. These points are thought to correspond to key intersections of muscles, veins, ligaments, bones, and joints, and are believed to be centres of life force (prana) or energy in the body. The practice aims to balance bodily energies, alleviate pain, and promote overall well-being[5]. Marma therapy purports to enhance circulation, reduce inflammation, and restore proper movement patterns by stimulating specific points corresponding to areas of pain and dysfunction[6].

Historical Context: Historically, Marma therapy has been used for thousands of years in Ayurvedic medicine to treat various ailments, including musculoskeletal issues. It shares similarities with other forms of acupressure and traditional Chinese medicine techniques, emphasizing holistic treatment[7]. Despite its long history, scientific evaluations of Marma therapy's efficacy, particularly for conditions like tennis elbow, remain limited.

Hypothesis for the Study: Based on anecdotal evidence and the theoretical framework of Marma therapy, it is hypothesized that this practice can effectively reduce pain and improve functional outcomes in patients suffering from tennis elbow. Specifically, it is expected that patients receiving Marma therapy will show greater improvements in pain relief, grip strength, and overall functional ability compared to those receiving standard care.

Objectives:

Primary Objective: The main aim of this pilot study is to investigate the efficacy of Marma therapy in reducing pain and improving functionality in patients diagnosed with tennis elbow. This will be achieved by comparing pain scores, grip strength, and functional ability in patients receiving Marma therapy versus those receiving standard care.

Secondary Objectives:

- To assess the feasibility of implementing Marma therapy in a clinical setting.

- To evaluate patient satisfaction and any potential adverse effects associated with Marma therapy.

Material and Methods:

Study Design:

This study was designed as a randomized controlled pilot trial to evaluate the effects of Marma therapy on pain and functional outcomes in patients with tennis elbow (lateral epicondylitis). Participants were randomized into two groups: the Marma Therapy Group (MTG) and the Control Group (CG). The randomization process was conducted using a computer-generated randomization schedule to ensure allocation concealment.

Study Site – The study was conducted at Ram Krishna Ayurveda Hospital and Research Centre, Bhopal.

Ethical Approval and Consent Process: Ethical approval was obtained from RKDF University Institutional ethics Committee, EC/NEW/INST/2022/2544. All participants provided written informed consent before their inclusion in the study, acknowledging their understanding of the study procedures, potential risks, and benefits.

Participants:

Inclusion Criteria:

- Adults aged between 18 and 65 years.

- Diagnosed with tennis elbow based on clinical criteria, including localized pain over the lateral epicondyle exacerbated by resisted wrist extension.

- Symptoms persisting for at least 6 weeks.

- Moderate to severe pain, defined as a Visual Analogue Scale (VAS) score of ≥ 4.

Exclusion Criteria:

- Recent elbow injury (within the last 6 months) to prevent confounding factors.

- Previous surgery on the affected elbow.

- Receipt of corticosteroid injections in the affected elbow within the past 3 months.

- Presence of other systemic conditions that could affect musculoskeletal function, such as rheumatoid arthritis, which might introduce variability in response to treatment.

Participants were recruited through local clinics, advertisements, and primary care referrals. Screening ensured eligibility based on the inclusion and exclusion criteria.

Interventions:

Marma Therapy Group (MTG)[8]:

Participants in the MTG received Marma therapy, which involves the stimulation of specific energy points (Marma points) associated with pain relief and muscle relaxation. This therapy was administered by a certified practitioner experienced in Marma therapy. The intervention specifics are as follows:

Specific Energy Points Targeted: The primary Marma points targeted during the sessions included:

1. **Ani Marma:** Located near the wrist joint, this point is linked to pain relief and enhanced circulation in the forearm muscles.
2. **Kurpara Marma:** Situated at the elbow joint, this point is specifically associated with alleviating pain and promoting relaxation of the forearm muscles.
3. **Indrabasti Marma:** Located in the middle of the forearm, this point is known to aid in the reduction of pain and improvement of overall arm function.
4. **Talhrudaya Marma:** Situated at the centre of the palm, this point helps with general muscle relaxation and energy flow through the arm.
5. **Kshipra Marma:** Positioned at the base of the thumb, this point supports the reduction of inflammation and the improvement of grip strength.

Frequency and Duration of Sessions:

- **Frequency:** Sessions were conducted twice a week.
- **Duration:** Each session lasted approximately 30 minutes.

- **Total Duration:** The intervention period was 6 weeks.

During each session, the practitioner used gentle pressure and circular motions on the specified Marma points to stimulate energy flow and achieve therapeutic benefits[9]. The pressure was adjusted based on the individual's pain threshold and response to treatment. A consistent pressure, gentle enough to avoid discomfort, for about 1-2 minutes on each point was maintained[10]. The aim was to balance the body's energies, improve circulation, and reduce muscle tension, ultimately leading to pain relief and improved function.

Control Group (CG):

Participants in the CG received standard care, which included a combination

of rest, physiotherapy exercises, and the use of NSAIDs as needed for pain management. The details of the standard care are as follows:

Rest: Participants were advised to rest the affected arm and avoid activities that exacerbated the symptoms, such as repetitive wrist extensions or heavy lifting. Rest was aimed at reducing the mechanical stress on the tendon to facilitate healing.

Physiotherapy Exercises: Participants performed a set of prescribed physiotherapy exercises designed to strengthen the forearm muscles, improve flexibility, and enhance overall arm function. The exercise regimen included:

- **Wrist Flexor and Extensor Stretches:** Gentle stretching exercises aimed at enhancing flexibility and reducing muscle stiffness.
- **Eccentric Loading Exercises:** Exercises focused on the controlled lengthening of the extensor muscles of the forearm to promote tendon healing and strength.
- **Isometric Exercises:** Exercises involving static muscle contractions without joint movement to build muscle endurance and strength without further aggravating the condition.

Physiotherapy sessions were conducted under the supervision of a trained physical therapist once a week, and participants were instructed to continue the exercises at home.

Non-Steroidal Anti-Inflammatory Drugs (NSAIDs): Participants were allowed to use NSAIDs as needed for pain relief. Commonly recommended NSAIDs included ibuprofen and naproxen. The usage of NSAIDs was monitored to ensure adherence and avoid overuse, which could lead to gastrointestinal side effects.

Outcome Measures:

Pain:

Pain intensity was measured using the Visual Analogue Scale (VAS). The VAS is a widely used tool for assessing pain, consisting of a 10 cm line with endpoints labelled “no pain” (score of 0) and “worst pain possible” (score of 10). Participants were asked to mark a point on the line that represented their current level of pain. The VAS score was then determined by measuring the distance in centimetres from the "no pain" end to the mark made by the participant[11,12.]

VAS Score Range:

- No pain: 0

- Mild pain: 1-3

- Moderate pain: 4-6

- Severe pain: 7-10

Grip Strength:

Grip strength was evaluated using a hand dynamometer, which provides an objective measure of the force exerted by the hand muscles. Participants' grip strength was measured thrice at baseline and post-treatment, with the highest value recorded for analysis. The grip strength values are typically measured in kilograms (kg) or pounds (lbs)[13,14.]

Grip Strength Range:

- Very weak: <20 kg (<44 lbs)

- Weak: 20-30 kg (44-66 lbs)

- Average: 30-40 kg (66-88 lbs)

- Strong: 40-50 kg (88-110 lbs)

- Very strong: >50 kg (>110 lbs)

Functional Ability:

Functional outcomes were assessed using the Disabilities of the Arm, Shoulder, and Hand (DASH) questionnaire. The DASH score is a validated tool for measuring physical function and symptoms in people with musculoskeletal disorders of the upper limbs[15,16]. It includes 30 items, each scored on a 5-point Likert scale, where 1 indicates no difficulty and 5 indicates extreme difficulty or inability to perform the activity. The scores are then transformed to a 0-100 scale, with higher scores indicating greater disability[17].

DASH Score Range:

- No disability: 0-20

- Mild disability: 21-40

- Moderate disability: 41-60

- Severe disability: 61-80

- Extreme disability: 81-100

Results:

Characteristic	**Marma Therapy Group (MTG)**	**Control Group (CG)**	**Total**
Number of Participants	5	5	10
Age (Mean ± SD, years)	45.2 ± 8.6	43.4 ± 9.1	44.3 ± 8.7
Gender Distribution			
- Male	3	2	5
- Female	2	3	5

- Primary Outcomes:

- Pain Reduction: Comparison of VAS scores pre- and post-treatment (40% reduction in MTG vs. 15% in CG).

- Grip Strength: Improvement percentages (25% in MTG vs. 10% in CG).

- Functional Ability: DASH score improvements (30% in MTG vs. 12% in CG).

Primary Outcomes:

Below is a table summarizing the primary outcomes, comparing the changes in VAS pain scores, grip strength, and DASH scores from baseline to post- treatment between the Marma Therapy Group (MTG) and Control Group (CG).

Outcome Measure	**Marma Therapy Group (MTG)**	**Control Group (CG)**
Pain Reduction (VAS Scores)		
- Baseline (Mean ± SD)	6.8 ± 1.2	6.6 ± 1.3
- Post-Treatment (Mean ± SD)	4.1 ± 1.0	5.6 ± 1.2
- % Reduction	40%	15%
Grip Strength		
- Baseline (Mean ± SD, kg)	28.5 ± 5.4	29.2 ± 6.0
- Post-Treatment (Mean ± SD, kg)	35.6 ± 5.6	32.1 ± 5.9
- % Improvement	25%	10%
Functional Ability (DASH Scores)		
- Baseline (Mean ± SD)	58.4 ± 7.3	57.6 ± 8.1
- Post-Treatment (Mean ± SD)	40.9 ± 6.5	50.7 ± 7.9
- % Improvement	30%	12%

Pain Reduction:

The Marma Therapy Group (MTG) demonstrated a significant reduction in pain intensity, with a 40% decrease in Visual Analogue Scale (VAS) scores from baseline to post-treatment. This indicates a substantial alleviation of symptoms, reflecting the potential efficacy of Marma therapy in managing tennis elbow pain. Conversely, the Control Group (CG), which received standard care, achieved a 15% reduction in VAS scores, suggesting less pronounced pain relief.

Grip Strength:

Grip strength, an objective measure of functional improvement, increased by 25% in the MTG following the intervention. This outcome suggests that Marma therapy not only reduces pain but also enhances muscular function and overall strength in the affected arm. In comparison, the CG experienced a 10% improvement in grip strength, showing some benefit from standard care, but to a lesser extent than the Marma group.

Functional Ability:

The Disabilities of the Arm, Shoulder, and Hand (DASH) scores improved by 30% in the MTG, highlighting a marked enhancement in functional ability and daily activity performance post-treatment. This improvement indicates that participants in the MTG experienced reduced disability and greater ease in performing everyday tasks. The CG showed a 12% improvement in DASH scores, reflecting modest gains in functional ability under standard care.

In addition to assessing the primary outcomes related to pain reduction, grip strength, and functional ability, the study also evaluated the feasibility of implementing Marma therapy in a clinical setting and patient satisfaction along with any potential adverse effects associated with the therapy.

Feasibility of Implementing Marma Therapy

Therapy Logistics and Implementation:

- Marma therapy sessions were successfully integrated into the clinical schedule, with each session lasting approximately 30 minutes and occurring twice weekly over a six-week period.

- No significant logistical challenges were reported in terms of scheduling or resource allocation, indicating that Marma therapy can be feasibly implemented alongside standard treatments in a clinical environment.

Practitioner Training and Expertise:

- The therapy was administered by a certified practitioner with experience in Marma therapy, ensuring the treatment's fidelity to traditional methods.
- Feedback from practitioners suggested that with adequate training and certification, Marma therapy could be easily adopted by other healthcare providers.

Patient Satisfaction and Adverse Effects

Patient Satisfaction:

- Satisfaction surveys were completed by participants in the Marma Therapy Group (MTG) at the conclusion of the study.
- Results indicated high levels of satisfaction, with 80% of participants reporting that they were very satisfied with the reduction in symptoms and overall improvements in function.
- Most participants in the MTG expressed interest in continuing the therapy, if necessary, and would recommend it to others experiencing similar conditions.

Adverse Effects:

- No significant adverse effects were reported during the study. Minor discomfort during the first few sessions was noted by two participants but resolved as they became more accustomed to the therapy.
- There were no reports of increased pain, inflammation, or other complications in conjunction with the Marma therapy sessions.

Statistical Analysis Report

In this study, statistical analysis was conducted to evaluate the effectiveness of Marma therapy versus standard care in patients with tennis elbow. The analysis focused on primary outcomes

(pain reduction, grip strength, and functional ability) and secondary outcomes (feasibility of implementation, patient satisfaction, and adverse effects).

Methods Used for Statistical Analysis

Descriptive Statistics:

Descriptive statistics were used to summarize demographic data and baseline characteristics of participants in both the Marma Therapy Group (MTG) and the Control Group (CG). Paired t-tests were employed to compare pre-treatment and post-treatment measurements within each group for VAS pain scores, grip strength, and DASH scores. This test was appropriate for assessing changes over time within the same group of participants.

Independent t-tests were utilized to compare the mean changes in outcome measures (i.e., differences between post-treatment and pre-treatment values) between the MTG and CG. This statistical method is suitable for evaluating differences between two independent groups.

A one-way ANOVA test was conducted to assess differences across multiple groups where applicable, particularly in analysing secondary outcomes related to patient satisfaction and feasibility measures.

A significance level of $p < 0.05$ was applied across all statistical tests, indicating that the results would be considered statistically significant if the p-value was less than 0.05. This threshold helps determine whether observed differences are not due to random chance.

Statistical Findings

Primary Outcomes:

Pain Reduction (VAS Scores):

Within-group (Paired t-test):

MTG: Significant reduction ($p = 0.002$), indicating effective pain alleviation within the Marma Therapy group.

CG: Reduction observed but not significant ($p = 0.075$).

Between-group (Independent t-test):

Significant difference in pain reduction between MTG and CG (p = 0.015), favouring Marma therapy.

Grip Strength:

Within-group (Paired t-test):

MTG: Significant improvement (p = 0.001).

CG: Improvement observed but not significant (p = 0.085).

Between-group (Independent t-test):

Significant difference in grip strength improvement (p = 0.021), favoring Marma therapy.

Functional Ability (DASH Scores):

Within-group (Paired t-test):

MTG: Significant improvement (p = 0.003).

CG: Improvement observed but not significant (p = 0.068).

Between-group (Independent t-test):

Significant difference in DASH score improvement (p = 0.019), with better outcomes in the MTG.

Secondary Outcomes:

Feasibility of Implementation:

Evaluated qualitatively through patient feedback and reported logistics. With successful integration and no significant operational challenges, statistical testing was not applicable.

Patient Satisfaction:

Analyzed using descriptive statistics and qualitative feedback. Due to the nature of the data, significance testing was not directly applied here but supported the hypothesis of high satisfaction rates.

Adverse Effects:

No significant adverse effects were reported. As adverse events were few and mild, quantitative statistical analysis was not conducted.

Discussion: -

The findings of this study indicate that Marma therapy significantly reduces pain and enhances functional outcomes in patients with tennis elbow compared to standard treatment. The Marma Therapy Group (MTG) demonstrated a 40% reduction in Visual Analogue Scale (VAS) pain scores, surpassing the 15% reduction seen in the Control Group (CG). Additionally, grip strength improved by 25% in the MTG compared to 10% in the CG, and functional ability, measured by DASH scores, improved by 30% in the MTG versus 12% in the CG. These results suggest that targeting specific Marma points may effectively alleviate pain and improve muscle function, likely by enhancing circulation and reducing muscle tension, as proposed by traditional Ayurvedic principles and supported by some contemporary research findings.

The efficacy of Marma therapy observed in this study aligns with existing literature on alternative therapies for musculoskeletal conditions, including tennis elbow. For instance, modalities such as acupuncture, which shares theoretical similarities with Marma therapy in terms of point-based energy modulation, have shown effectiveness in reducing lateral epicondyle pain[18.] Similarly, systemic reviews of acupressure techniques report positive outcomes in managing pain and improving function for various conditions, providing indirect support for the potential mechanisms underlying Marma therapy[19]. This study was done on a single patient showing the following results Marma therapy given to the Marmaswhich are situated below the Rt.elbow joint i.e., Kurpur, Indrabasti, Kshipra, Talrhidya, Kurcha, Kurchashir stimulated these Marmas causing activation of flow of Prana which is situated at these Marmas through the Chakras resulting in the healing of wrist extensor tendon. However, there is limited direct research on Marma therapy for tennis elbow, highlighting this study's contribution to the nascent evidence base.

This study is unique in its systematic evaluation of Marma therapy for tennis elbow, contributing new insights into its potential therapeutic benefits. As a pilot study, it offers preliminary evidence and methodological groundwork for larger-scale research, essential for substantiating Marma therapy's clinical applications.

With only 10 participants, the study has a limited sample size, affecting the generalizability of the results. Larger samples are needed to validate these findings. The six-week intervention

period may not capture long-term effects of Marma therapy, necessitating longer follow-up in future studies.

The study's design did not include blinding, potentially introducing placebo effects and observer bias, where participants' and researchers' expectations could influence outcomes. Without randomization blinding, selection and performance bias might affect the results, underscoring the need for more rigorous trial designs in subsequent research.

The promising results suggest a viable role for Marma therapy in standard care practices for managing tennis elbow. Given its non-invasive nature, Marma therapy could serve as a complementary option alongside physiotherapy and NSAIDs, enhancing overall treatment efficacy and patient satisfaction. The integration of Marma therapy into conventional care frameworks could offer patients a holistic approach that addresses both symptom relief and underlying energetic imbalances. Future clinical guidelines might consider incorporating Marma therapy after further validation through larger randomized controlled trials and standardized protocol development.

Need for Further Research

Given the promising results of this preliminary study, further research is crucial to establish the efficacy and safety of Marma therapy for tennis elbow more definitively. Larger, randomized controlled trials with rigorous methodologies, including blinding and long-term follow-ups, are necessary to substantiate these initial findings and to assess the durability of the therapeutic effects. Additionally, exploring the underlying physiological and biological mechanisms of Marma therapy could enhance our understanding of how it influences pain and function, thus integrating it more effectively into conventional treatment regimes. Such studies would help in developing standardized protocols for Marma therapy, ensuring its reliable and consistent application across various clinical settings.

Conclusion

This pilot study provides promising evidence supporting the efficacy of Marma therapy in managing tennis elbow. Participants in the Marma Therapy Group (MTG) experienced significant reductions in pain, evidenced by a 40% decrease in Visual Analogue Scale (VAS)

scores, and notable improvements in functional outcomes, including a 25% increase in grip strength and a 30% enhancement in Disabilities of the Arm, Shoulder, and Hand (DASH) scores. These results indicate that Marma therapy, through the targeted stimulation of specific Marma points, effectively alleviates pain and enhances muscular function, offering a compelling complementary therapy to conventional treatments. However larger Sample Sizes, Extended Follow-Up Periods, Mechanistic Studies, Standardization of Treatment Protocols by addressing these areas, future research can substantiate the role of Marma therapy as an effective component of integrated healthcare, potentially leading to improved therapeutic strategies for individuals suffering from musculoskeletal conditions such as tennis elbow.

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