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Efficacy of corticosteroid injection vs deep friction massage in lateral epicondylitis

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Abstract

Background: Lateral epicondylitis affects people mainly in middle-aged groups. Despite numerous studies, it is still a poorly understood illness with no clear treatment guidelines. The goal of the study was to compare deep friction massage vs corticosteroid injection for the management of lateral epicondylitis.

Methods: To compare outcomes, a randomised controlled trial was conducted. The patients were divided into 2 different groups. The first group was given a corticosteroid injection, while the second was given a deep friction massage. Disabilities of the Arm, Shoulder, and Hand (DASH) scores, visual analogue scale (VAS), and grip strength were measured before and after treatment.

Results: The results were expected in 6-12 weeks, with a 6-month follow-up. At the 6- to 12-week follow-up, both groups showed significant improvements in VAS pain score, DASH score, and grip strength. At the 6-month follow-up, all three end measures, VAS pain score, grip strength, and DASH score, indicated a substantial improvement in group 2 deep friction massage.

Conclusion: For lateral epicondylitis, deep friction massage is the best line of management and can be utilized in patients for whom various treatment options have failed. This form of treatment gives good functional outcomes without any complications as compared to a corticosteroid injection.

Keywords: Lateral epicondylitis; steroid injection; deep friction massage; DASH score

Introduction

In 1873, Runge published the first English description of lateral epicondylitis. ^[1] Lateral epicondylitis affects mainly in middle-aged groups ^[2]. Despite numerous studies, lateral epicondylitis is still a poorly understood illness with no clear treatment guidelines. Lateral epicondylitis can affect daily day to day activities and cause economic burden ^[3, 4]. Most patients recover without any treatment ^[5] PRP has also been used to treat lateral epicondylitis because platelet-derived growth factor enhances healing and pain relief. ^[6] Tennis players and others who use vibratory machines are more likely to develop tennis elbow ^[7, 8] Deep friction massage, we believe, is an effective treatment for lateral epicondylitis. The proposed treatment is based on the idea that the degenerative process is characterized by the absence of inflammation. Deep friction massage, we believe, increases local inflammation, which kickstarts the tendon repair system. The goal of this study was to examine two alternative therapeutic methods in the management of lateral epicondylitis

Materials and Methods

Patients chosen between the years 2020 and 2022 for a randomised controlled experiment. Patients were chosen from our institute's orthopaedic department. If a patient experienced signs and symptoms of lateral epicondylitis, they were included in the study. Clinical diagnosis was made based on tenderness present over lateral humeral epicondyle or pain while extending elbow and forearm pronation. Exclusion criteria are nerve compression syndrome surgery or trauma to the area in the past, cervical radiculopathy.

Patients were randomly assigned to one of two groups. The control group [Group 1] received a corticosteroid injection of 20 mg methylprednisolone in a 10ml solution containing 1% lidocaine, administered into the sore spot.

After 2 weeks of rest, the patient was advised to wear a detachable cockup brace for 1 week before beginning a structured therapy plan. The standardised therapy protocol, both groups were given upper limb stretching, as well as ROM exercises for upper limb. These exercises were to be done at home by the patients on a daily basis. Group 2 got a 10ml injection of 1% lidocaine into the lateral epicondyle, followed by deep friction massage. The treating physician applied friction massage to the sore location, which comprised of deep circular motions with finger tips over the tender spot. The lidocaine acts as a local anaesthetic, allowing the friction massage to be tolerated. Deep friction massage works by compressing the extensor tendons, as well as their origin and musculotendinous junctions. The massage lasted 5 minutes in total. Group 2 received the same post-massage treatment as group 1, including the same splinting and standardised rehabilitation program. The main outcome measure was pain on the visual analogue scale, DASH and grip strength as secondary outcomes. The grip strength was assessed with the elbow flexed and extended using a Jamar dynamometer. Two measurements were obtained in each location, and the average was calculated. At baseline, 6 to 12 weeks, and 6 months, the outcomes were assessed. For the VAS, DASH, and grip strength ratings, the results examined using a 2-sample T test comparing pre-treatment and post-treatment data. Using analysis of variance, the treatment groups were compared to one another (ANOVA) and a P value of less than 0.05 was deemed to be of statistical significance.

Results

In this study 20 patients were followed. 10 patients underwent corticosteroid injection {group 1} and 10 underwent deep friction massage {group 2}. There were 12men and 8 women. The average age of patients was 35 ±8 years. 75 percent of patients had problems with their right elbow, and 85 percent of them were right-handed. In 25% of patients, the left elbow was damaged, and 15% had a dominant left hand. All 20 patients were followed up on for 6 weeks, 12 weeks, and 6 months, and two patients from group 1 suffered skin necrosis and one patient from group 2 had severe pain. There was a significant difference in VAS pain score between groups 1 and 2 at 6 to 12 follow-ups. Group 1's VAS pain levels dropped from 6.9 to 4.7, while group 2's dropped from 8.1 to 3.9. At the early follow-up, group 1's DASH score dropped from 49.7 to 34.7, while group 2's dropped from 45.5 to 36.2 (figure 1 and 2).

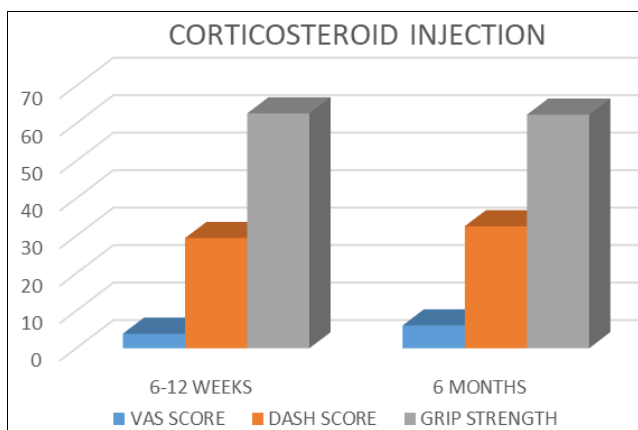


Fig1: Post corticosteroid injection

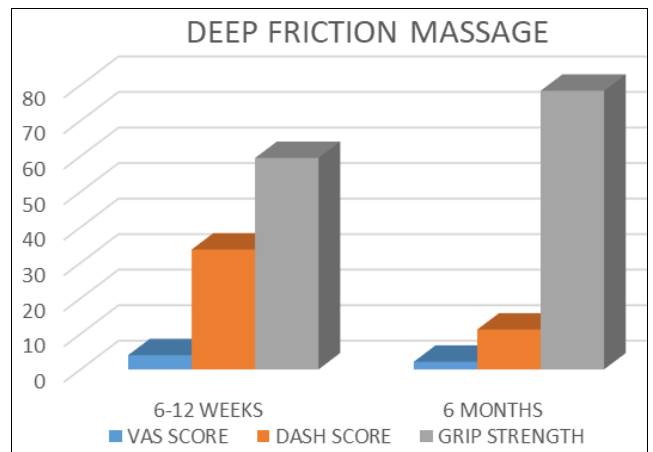


Fig 2: Post deep friction massage

Similarly, grip strength with the elbow extended increased from 43.5 to 58.4 lbs for group 1 and 47.5 to 58.3 lbs for group 2. The grip strength assessed with the elbow flexed at 90° showed no significant difference at the early follow-up. At the 6-month follow-up, the VAS pain score in group 1 did not show a significant decrease; however, group 2 did show a significant change from 6.4 to 1.9. Only group 2's DASH score changed significantly from 46.7 to 10.5; group 1's DASH score did not change significantly after therapy. With the elbow extended the grip strength was checked and found to have improved significantly in group 2 (from 45.6 to 78.6), while there was no significant change in group 1. (Table 1& 2).

Discussion

Management of lateral epicondylitis includes much non-operative treatments, but many patients with lateral epicondylitis improve without any treatment. In our study we compared between 2 non-operative treatments deep friction massage versus corticosteroid injections. Hay *et al*, was conducted a study between corticosteroid injection with naproxen and placebo. He conducted a randomized control study of 164 patients and followed up at 4week cortisone injection group were better 92%, 50%for placebo and 57% for naproxen. At 12th month there was no change in pain score. Thus he concluded that corticosteroid injection is more effective then naproxen and placebo [9]. Coombes *et al*, conducted a randomized control study to assess the safety and efficacy of corticosteroid injection and other injections for the management for tendinopathy. He analysed 17 studies for the management for lateral epicondylitis. He concluded that corticosteroid injection reduces pain in short time but in long term follow up there is no intervention favoured compared with corticosteroid injection. [10]

Smidt *et al*, done a randomized control study between corticosteroid injection, physical therapy, wait and watch. He followed 1845 patients and divided into 3 groups and compared the grip strength, pain threshold and elbow complaints. He concluded that corticosteroid injection group shows better results compared to the other 2 group. [11] Degen *et al*, reported that more than 3 corticosteroid injections provide short term pain relief but platelet rich plasma provide a great pain relief compared to corticosteroid injections. [12] Mishra *et al*, compared between needling and PRP injections in 230 patients. Insertion of needle produces therapeutic effects irrespective to the product injected. [13]

In the current study, both corticosteroid injection and deep friction massage demonstrated a substantial improvement at the early follow-up between 6-12 weeks. At the early follow-up, patients who received either a corticosteroid injection or a deep friction massage increased their DASH score and grip strength. ANOVA test, however, failed to reveal that either of

the two therapy groups had a therapeutic advantage over the other at an early follow-up. At the 6-month follow-up, only group 2 demonstrated a significant increase in VAS pain score, DASH score, and grip strength. In the groups that had cortisone injections, there was no significant difference.

Table 1: Outcome measures of group 1[corticosteroid injection]

Age	Sex	Side	Vas preinj Ection	Vas score [after 6 - 12weeks]	Vas score [6 months]	Dash pre injection	Dash [after 6- 12weeks]	Dash [6months]	Grip strength[6 months]
26	M	R	7.7	3.9	6.0	45.7	31.6	37.7	59.4
29	M	R	7.1	3.8	6.3	43.2	29.8	32.0	64.2
35	F	R	7.9	4.3	6.5	41.7	27.9	30.3	61.3
43	M	L	6.9	3.5	5.8	45.1	30.3	33.4	63.8
30	M	R	7.4	4.0	6.1	40.4	26.7	30.7	61.1
38	F	R	7.8	4.3	6.5	43.3	28.7	31.7	63.2
40	F	L	7.2	3.9	6.0	44.5	29.9	32.1	61.3
36	M	R	7.4	3.8	5.9	42.9	28.7	31.8	63.1
41	M	R	6.8	3.5	5.7	44.7	30.0	33.2	60.7
32	F	L	7.3	4.0	6.1	45.6	30.5	32.7	65.3

Table 2: Outcome measures of group 2[deep friction massage]

Age	Sex	Side	Vas pre inj	Vas score[after 6 to 12 weeks]	Vas score [6 months]	Dash Before injection	Dash after [6 to 12 weeks]	Dash [6 months]	Grip strength[6months]
32	M	R	7.3	4.1	2.5	48.3	32.7	10.3	79.5
29	M	R	7.1	4.0	2.0	45.7	34.6	12.4	78.1
42	M	R	6.9	3.9	1.9	45.1	34.2	11.9	78.4
38	F	R	7.3	4.2	2.5	47.4	33.2	10.9	79.3
30	F	R	7.2	4.1	2.3	45.8	34.2	12.5	77.9
36	M	L	6.8	4.0	2.0	46.7	33.5	10.4	78.2
31	F	R	7.0	3.9	1.8	48.1	33.7	10.6	79.5
40	M	R	7.1	4.1	2.4	45.7	33.9	10.4	77.6
39	M	L	7.0	4.0	2.2	47.1	34.3	11.1	78.1
27	F	R	6.9	3.9	1.9	46.6	33.1	11.6	77.6

Conclusion

In view of long term efficacy for the management of lateral epicondylitis, this study suggest that splinting and local cortisone injection will provide only immediate and short term relief whereas deep friction massage after a local infiltration of lignocaine has a longer therapeutic evidence at the end of 6 month follow up. In addition deep friction massage can be used as a mode of management in patient who have already underwent other managements such as splinting, cortisone injection and not improved symptomatically.

Conflict of Interest

Not available

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Not available

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