

EFFICACY OF LOCAL INFILTRATION OF AUTOLOGOUS BLOOD VERSUS LOCAL CORTICOSTEROID INJECTION- THE TREATMENT OF CHRONIC TENNIS ELBOW

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ABSTRACT

BACKGROUND

Chronic painful tendon disorders are common in both sport persons and common individuals.^{1,2} Lateral epicondylitis (tennis elbow) is relatively more common among active individuals in the general population.³ Typical signs and symptoms include pain and tenderness over the lateral epicondyle, exacerbated by resisted wrist extension and passive wrist flexion and impaired grip strength.

The aim of the study is to find whether autologous blood provides comparable functional outcome over local steroids and hence whether it can replace steroids in treatment of tennis elbow.

MATERIALS AND METHODS

Patients with nontraumatic elbow pain attending the Orthopaedics Outpatient Department of Nalanda Medical College Hospital from January 2016 to August 2016. The participating subjects were randomly grouped into two groups (steroid (Group A) and autologous blood (Group B)). Pain in the subject's affected elbow was measured using Visual Analogue Score (VAS).

RESULTS

Initially, both the groups had comparable initial VAS scores. At 1 month follow up, steroid group showed a significantly greater improvement in mean VAS scores when compared to autologous blood group. However, at 6 months follow up, steroid group showed no statistically significant difference in mean VAS scores when compared to autologous blood group.

CONCLUSION

From the current study, we concluded that both local corticosteroid and autologous blood were equally efficacious in the treatment of chronic lateral epicondylitis of elbow.

KEYWORDS

Autologous Blood, Corticosteroid, Local Injection, Tennis Elbow.

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BACKGROUND

Musculoskeletal disorders are common problems. They are the most common work-related disease with high costs incurred from long-term disability. Chronic painful tendon disorders are common in both athletic and sedentary individuals.^{1,2} Lateral epicondylitis is relatively more common among active individuals in the general population.³ Lateral epicondylitis has been found to be the second most frequently diagnosed musculoskeletal disorder of the upper extremities in a primary healthcare setting.⁴ Tennis elbow or lateral epicondylitis refers to a syndrome of pain centred over the common origin of the extensor muscles of the fingers and wrist at the lateral epicondyle. Typical signs and

symptoms include pain and tenderness over the lateral epicondyle exacerbated by resisted wrist extension and passive wrist flexion and impaired grip strength. It occurs more commonly in non-athletes than athletes and has a peak incidence in the fifth decade. The initial treatment is with rest, modification of activity and local splint. Local injection of corticosteroids comes next if the initial treatment is found to be unsatisfactory. Another modality of treatment is the local administration of growth factors. These growth factors are administered in the form of autologous whole blood or Platelet-Rich Plasma (PRP) that play a role in tissue regeneration processes.

Aims of the Study

In the treatment of lateral epicondylitis, there exist several different treatments with varying side effects. Local injection of corticosteroids has been "the treatment" for tennis elbow for long. Despite its local complications, it is still preferred over other treatment modalities. But, there is growing evidence in the current literature, which states that there is absence of an inflammatory component in lateral epicondylitis. So, the treatment by local steroids need to be

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re-evaluated as steroid treatment is based on the concept that the major pathological factor in tennis elbow is inflammation. Moreover, studies show conflicting evidence about their efficacy and there are some complications too. In a study by Jobe and Cicotti,⁵ it was found that superficial injection of corticosteroid may result in subcutaneous atrophy associated with local depigmentation and that intratendinous injection may lead to adverse changes within the ultrastructure of the tendon. The use of autologous growth factors seems to be promising in the treatment of this disease. It is thought to lead to tendon healing through collagen regeneration and the stimulation of angiogenesis. It is obtained from autologous blood and is a cheap and readily available alternative to steroids without any adverse effect. This study aims to find whether autologous blood provides comparable functional outcome over local steroids and hence whether it can replace steroids in treatment of tennis elbow. Autologous blood was selected as the medium for injection because-

1. It is minimally traumatic.
2. It is devoid of potential complications such as depigmentation skin atrophy, tendon tears.
3. It is simple to acquire and prepare, easy to carry out as an outpatient procedure.
4. It is inexpensive.^{6,7}

MATERIALS AND METHODS

Our study was a prospective interventional cohort study. Patients with nontraumatic elbow pain attending the Orthopaedics Outpatient Department of Nalanda Medical College Hospital, Patna, Bihar, were included for study. Total duration of study was 20 months from January 2015 to August 2016.

Inclusion Criteria

Patients between 18-60 years of age diagnosed of having chronic lateral epicondylitis.

Exclusion Criteria

1. Pain less than 6 months duration.
2. History of trauma.
3. Patients having local infection over the lateral aspect of elbow.
4. Patients with history of surgery for tennis elbow.
5. Effusion of the elbow.

50 patients attending OPD of Nalanda Medical College Hospital were selected in the study. All patients were informed about the study and a written consent was obtained from those willing to participate in the study. Then, the participating subjects were randomly grouped into two groups (steroid (Group A) and autologous blood (Group B)). Pain in the subject's affected elbow was measured using Visual Analogue Score (VAS).

Procedure

Subjects were made to lie supine. The affected elbow was thoroughly cleaned with povidone-iodine and spirit. The

point of maximum tenderness over the common extensor origin area was identified by palpation and 2 mL (80 mg) Depo-Medrol® was infiltrated locally into that point of subjects belonging to Group A. Under strict aseptic precautions, 2 mL of blood was drawn from subjects belonging to Group B via venepuncture from the contralateral antecubital fossa and it was infiltrated locally into their affected elbow as described earlier. All the subjects were observed for 1 hour for any acute adverse effects. Following the procedure, they were asked to apply ice over the elbow, take paracetamol as necessary. Pain in the subjects' elbow was reassessed after 1 month and again at 6 months using VAS. Patients were advised not to take any other analgesics during the study period. All injections were given by the same doctor.

RESULTS

Age group encountered in the study ranged from 20 years to 55 years with a mean age of 46.5 in steroid injection group and 38.5 in autologous blood injection group. Peak incidence at fifth decade of life was seen in steroid injection group and at fourth decade was seen in autologous blood injection group. The mean age of patients in steroid injection group was 46.5 and in autologous blood injection group was 38.5; p value = 0.15, which was not significant. Thus, age of patients in both the groups was comparable. Out of the 25 participants, 15 were males and 10 were females. In steroid injection group, males 14 (56%) and females 11 (44%) and autologous blood injection group, males 26 (52%) and females 24 (48%) patients, respectively; P value >0.05 (0.54), which is not statistically significant. Thus, both the groups were comparable in terms of number of males and females in each group. Prevalence of diabetes mellitus and prevalence of hypertension showed no significant difference between the two groups. The mean duration of symptoms in patients with lateral epicondylitis in steroid injection group and autologous blood group were 1.9 years and 1.9 years, respectively. P value was 0.916, which means there is no significant difference between the two groups regarding mean duration of symptoms.

Initially, both the groups had comparable initial VAS scores. At 1 month follow up, steroid group showed a significantly greater improvement in mean VAS scores (26.0; from 65.6 to 39.6, 39.6%) when compared to autologous blood group (7.4; from 65.2 to 57.8; 11.3%); p value 0.001. However, at 6 months follow up, steroid group showed no statistically significant difference in mean VAS scores (36.0; from 65.6 to 29.6; 54.9%) when compared to autologous blood group (36.4; from 65.2 to 28.8; 55.8%); p value 0.79. The above said score when compared to autologous blood group; p value 0.79. At 6 months follow-up also, steroid group didn't have a statistically significant difference in that score when compared to autologous blood group; p value 0.65 with autologous blood was 62.79; p value 0.92. This means both the groups had comparable initial average.

DISCUSSION

In this current study, the mean age encountered was 42.7 years (range- 24 to 54 years); the peak incidence was seen from 30 to 50 years. This was seen similar in two separate studies, which observed mean age of 45 and 43 years.⁸ Another study observed the mean age to be 46.5 years.⁶ In this current study, out of the 50 participants, 29 were male patients and 21 were female patients. Two other studies had more number of male patients.⁹ One study had equal number of males and female patients.⁷ Parameters like age, sex, duration of symptoms of the patients were comparable. The mean VAS score before injection in both the groups was comparable. Mean VAS score for steroid injection group was 65.6, mean VAS score for autologous blood injection group was 65.2, p value was 0.82. At 1 month follow up, statistically significant difference between the two groups with VAS scoring was seen. Corticosteroid injection group showed statistically significant decrease in VAS score at 1 month compared to autologous blood injection group. One study showed similar results with local corticosteroid injection group when compared with oral naproxen.⁹ A prospective, double-blinded, randomised trial by Creaney et al⁸ published in British Journal of Sports Medicine 2011 compared the effectiveness of PRP versus autologous blood. The main outcome measure was PRTEE. At 6 months, the authors observed a 66% success rate in the PRP group versus 72% in the autologous blood group. There was a higher rate of conversion to surgery in the autologous blood group (20%) versus the PRP group (10%). Our study results are in agreeance with the above-mentioned study in regard to improvement in function scores in the autologous blood group; though our study didn't compare PRP with autologous blood. The major disadvantage regarding studies including PRP is that there are no definite standardised means for extracting PRP.

A study by Kazemi M, Azma K, Tavana B, Rezaiee Moghaddam F and Panahi A¹⁰ compared local corticosteroid with autologous blood injections for the short-term treatment of lateral elbow tendinopathy. Intergroup analyses at 4 weeks showed superiority of autologous blood for severity of pain ($P = 0.001$), pain in grip ($P = 0.002$), pressure pain threshold ($P = 0.031$) and quick DASH questionnaire score ($P = 0.004$). They concluded that autologous blood was more effective in short term than the corticosteroid injection. When comparing with the above-mentioned study, our study had conflicting results as far as VAS scores are concerned, but there was no significant difference in short term with regard to PRTEE score and MEP the two groups. However, our study had results comparable to that of a study by Ozturan KE, Yucel I, Cakici H, Guven M, Sungur I¹¹ and a meta-analysis by Barr S, Cerisola FL and Blanchard V where corticosteroid injection provided a high success rate in the short term.

Limitations of the Study

1. Hand dominance was not taken into consideration.
2. Imaging measures (MRI and ultrasound) are useful in visualising the pathophysiology of LE. However, as the

severity of the pathophysiology is not related to pain and function, imaging measures may not provide the best clinical assessment.

3. Lack of muscle strength evaluation, which might have the potential to monitor progress in LE.
4. As evidence of efficacy exists for both of these methods,¹²⁻¹⁴ it was not considered ethical to include an inactive placebo control group. The lack of a placebo group in this study or blinding of the investigator and *A Comparative Study on the Efficacy of Local Infiltration of Autologous Blood Versus Local*. DOI: 10.9790/0853-150754953 www.iosrjournals.org 53 | Page the patient, means that a placebo effect from these injections cannot be ruled out with certainty. Introduction of bias at the treatment stage cannot also be ruled out with certainty.
5. Ultrasound guidance while administering autologous blood or steroid if available would have yielded much more meaningful results.

Complications

No complications were observed in any of the patients in the study population during the study period.

CONCLUSION

From the current study, we concluded that both local corticosteroid and autologous blood were equally efficacious in the treatment of chronic lateral epicondylitis of elbow.

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