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Original Work

Clinical assessment of functional outcome in lateral epicondylitis managed by local infiltration of autologous blood

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ABSTRACT: Lateral epicondylitis is a well known elbow disorder known to affect a variety of population. Though the disorder is expected to affect a lot of sports personnel, the incidence is not uncommon in persons of household activities. The management comprises of conservative to operative with a dilemma of what to be done in most of the affected population. A large number of interventions have been tried to delineate the best modality but none of them proved to be conclusive. The aim of the present study was to prove the efficacy of cheapest possible interventional modality autologous blood for treatment of Lateral Epicondylitis. Twenty five patients of Tennis elbow were included in this study who have attended the OPD of GSVM Medical College and associated LLR Hospital, Kanpur from November 2007 to April 2008 and fulfilled inclusion and exclusion criteria. 78% were females, mostly housewives involved in regular household activities. All the patients were infiltrated autologous blood with local anaesthetic infiltration. Patients were deprived of regular activities for 3 weeks after infiltration. Follow up was done at weekly interval for 2 weeks and then at 6th week and 12th week. Assessment was done using Visual Analogue Scale (VAS) and Verhaar et al scoring system. Total follow up period was 3 months. We observed that the mean VAS score improved from preinfiltrative 6.40±1.22 to 0.48±1.53 with p value being < .001. 64% patients showed excellent results and 32% showed good results as per Verhaar et al scoring system on 12 weeks follow up. One patient did not respond to this procedure and showed poor result as per Verhaar et al score. Therefore, autologous blood infiltration is a safe and effective modality in treatment of Lateral Epicondylitis.

KEY WORDS: Lateral epicondylitis; Autologous blood infiltration

INTRODUCTION

Lateral epicondylitis or tennis elbow is a commonly encountered problem in Orthopedic practice. It has been found to be the second most frequently diagnosed musculoskeletal disorder in the neck and upper extremity in a

primary care setting¹. In 1873, Runge first described the clinical entity of lateral epicondylitis of Humerus. Since then there has been much controversy over the pathophysiology and treatment of this disorder².

Although it has been termed tennis elbow, it is seen to affect non sports personnel more in comparison to the sports personnel with peak incidence in the later life. Currently, degeneration of the origin of the extensor carpi radialis brevis (ECRB), repeated micro trauma and incomplete healing response has been

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accepted as the cause of lateral epicondylitis by most of the researchers³. Another accepted cause has been angiofibroblastic degeneration⁴. Infiltration of local autologous blood may provide necessary chemical modifiers of cellular activity known to be mitomorphogenic⁵⁻⁷ which are helpful in healing. Local infiltration of autologous blood for tennis elbow is based on the histopathological observation that tennis elbow is not an inflammatory condition, but a fibroblastic and vascular response called angiofibroblastic degeneration more commonly known as tendinosis⁴. This is characterized by invasion of blood vessels, fibroblasts and lymphatics into the symptomatic area of the extensor carpi radialis brevis. The injection of autologous blood is thought to provide the necessary cellular and humoral mediators to induce a healing cascade⁸.

Aiming this hypothesis, our prospective clinical study has been designed to assess the functional outcome of local infiltration of autologous blood in cases of lateral epicondylitis. Autologous blood as the medium for injection was selected because it is simple to acquire, inexpensive, minimally traumatic and with minimal risk for immune-mediated rejection.

METHODOLOGY

Sample

The study included management of lateral epicondylitis by autologous blood infiltration. Twenty five patients with pain around lateral epicondyle of less than one month duration

were included. All the patients were thoroughly examined at out patient department of Orthopedics, GSVM Medical College and associated Hospital, Kanpur from November 2007 to April 2008. Patients with diabetes mellitus and hyperuricemia, and previously treated patients with local steroid injections or surgical intervention were excluded from this study.

Technique

All the patients were treated with autologous blood infiltration. The blood was withdrawn from the the median cubital vein of normal side. In patients where this vein was not accessible, veins of the dorsum of forearm from any side were considered. Patients were laid supine with elbow semi flexed. Lateral epicondyle was palpated to locate most tender area and then under aseptic condition, a mixture of 2 ml of autologous blood and 1 ml of 2% xylocaine was injected into the under surface of the extensor carpi radialis brevis extra-articularly after sensitivity test. Injections were administered once a week for 3 consecutive weeks. Nonsteroidal anti-inflammatory medications along with broad spectrum antibiotic were given for first three days. No immobilization of elbow was done and patients were advised to abstain from regular activities for 3 weeks. After that they were advised guarded physiotherapy consisting of stretching the musculature about the wrist and elbow, especially the extensor compartment of the forearm.^{8,9}

The results were evaluated according to Verhaar et al scoring system¹⁰. (**Table 1**)

Table 1: Scoring system for the results of treatment

	Excellent	Good	Fair	Poor
Pain on lateral epicondyle	No pain	Occasional slight pain after strenuous activity	Discomfort after strenuous activity but at more tolerable level than before treatment	No relief of pain
Patient's satisfaction for the results of treatment	Satisfied	Satisfied	Satisfied or moderately satisfied	Not satisfied
Subjective loss of grip	No loss of grip	No or slight	Slight or moderate	Severe
Pain on resisted dorsiflexion of the wrist	No pain	No pain	Slight or moderate	Severe

RESULTS

A total of 25 patients (19 females and 6 males) of lateral epicondylitis were included in this study to assess the function outcome who were treated by local infiltration of autologous blood. Dominant side was affected in all cases including 18 cases of right side involvement and 7 cases with left side involvement. Occupational distribution showed 17 cases of

housewives, 5 cases of teachers, 2 cases of carpenters and one case of shopkeeper. All the patients were followed up at 7th day, 14th day, and after 6 weeks and 12 weeks. The results were evaluated with ‘Visual Analog Scale’ (Table 1) and ‘Verhaar et al Scoring System’ (Table 2). Table 3 showed assessment of pain and functional recovery as per skill at 6 and 12 weeks after treatment.

Table 1: Assessment by Visual Analog Scale (VAS)

Pain	1 st day (n=25)	7 th day (n=25)	14 th day (n=25)	6 weeks (n=25)	12 weeks (n=25)
Nil (VAS-0)	-	05	16	20	22
Mild (VAS 1-3)	13	16	07	04	02
Moderate(VAS 4-6)	05	03	01	-	-
Severe (VAS 7-10)	07	01	01	01	01
Mean VAS	6.40±1.22	2.28±2.05	1.08±1.84	0.60±1.55	0.48±1.53
t-value	-	10.00	15.15	18.33	21.00
p-value	-	<.001	<.001	<.001	<.001

Table 2: Assessment by Verhaar et al Scoring System

	Excellent	Good	Fair	Poor
1 st day (n=25)	-	-	3	22
7 th day (n=25)	-	17	5	3
14 th day (n=25)	8	12	3	2
6 Weeks (n=25)	12	11	01	01
12 Weeks (n=25)	16	08	0	01

Table 3: Assessment of pain and functional recovery as per skill

Skill	6 weeks	12 weeks
Making chapatti (n=17)	No pain; Full recovery (16) Severe pain, no recovery (1)	No pain; Full recovery (16). Severe pain; No recovery (1)
Washing clothes by hand (n=17)	No pain; Full recovery (16). Severe pain; no recovery (1)	No pain, Full recovery (16). Severe pain; No recovery (1)
Lifting Weight (n=4)	Mild pain; Full recovery (4)	No pain; full recovery (2); Mild pain ; Full recovery (2)
Writing on board (n=2)	Mild pain; Full recovery (2)	No Pain; Full recovery (2)
Riding scooter (n=2)	No pain; Full recovery (2)	No pain; Full recovery (2)

DISCUSSION

Lateral epicondylitis is a well known enthesopathy disturbing day to day activity of professionally active individuals of all ages. Various therapeutic options include extracorporeal shock wave therapy¹¹, local steroid injection¹², local 2% Xylocaine infiltration¹³, physical therapy^{14, 15} and surgical intervention^{16, 17} suggesting that no single procedure is effective in all patients. Majority of the patients respond to non-surgical treatment, a small minority continues to persist with these symptoms and is labeled as resistant (refractory) tennis elbow. In fact a small number of patients (1%-2%) cannot be treated successfully by non-operative treatment methods. In our study none of the patients were involved in sports activities and majority of patients were housewives. This study also reveals that routine daily work such as chapatti making, washing clothes by hand and lifting bucket seem to be causative factors for lateral epicondylitis.

As depicted in the statistical analysis there is significant difference in mean VAS score at 7th day (2.28±2.050, 14th day (1.08±1.84) and after 6 weeks (0.60±1.55) and after 12 weeks (0.48±1.53) as compared with 1st day (6.40±1.22) along with p value less than 0.001. Our results are comparable to the study of Edwards et al⁸ who showed improvement in VAS from 7.8 to 2.3 in cases of refractory tennis elbow managed by autologous blood infiltration. Connell et al reported a case series of 35 patients with refractory lateral epicondylitis in which the median score improved from 6 points at baseline to 0 points on Nirschl's stage at 6-month follow-up (p < 0.001)¹⁸. Suresh SP et al¹⁹ showed the effect of autologous blood in medial epicondylitis and found it to be safe and effective in all the patients. They reported that median score improved from 6 points at baseline to 1 point at 6 months follow-up (p < 0.001) as per Nirschl scoring system. Accordingly assessment with Verhaar et al scoring system also showed improvement in function in terms of excellent, good, fair and poor; ranging from poor status in 22 cases on Day 1 to excellent status in 16 cases, good in 08 cases and poor in one case at 12 weeks. The results of autologous blood infiltration are better than steroid treated patients as per study of Bisset et al²⁰ who proved that at six weeks follow-up 78% of the participants reported success with injections compared with 65% for physiotherapy showing relative risk reduction (RRR) 0.4 (99% CI 0.2 to 0.9) and 27% for wait and watch with RRR 0.7 (99% CI 0.4 to

0.9). They have found that the long term results of steroid injection are worse as compared to physiotherapy alone or wait and watch policy.

CONCLUSION

This study offers encouraging results of an alternative minimally invasive treatment that addresses the pathophysiology of lateral epicondylitis over other traditional nonsurgical modalities. Autologous blood injection is safe and effective modality for treatment of these cases. It is cost effective and compliant.

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