ISSN- O: 2458 - 868X, ISSN–P: 2458 – 8687
Index Copernicus Value: 68 . 16
PubMed - National Library of Medicine - ID: 101731606

International Journal of Medical Science and Innovative Research (IJMSIR)
IJMSIR : A Medical Publication Hub
Available Online at: www.ijmsir.com
Volume – 5, Issue – 6, November - 2020, Page No. : 66 - 71

A prospective study to compare the pain score between autologous blood injection and steroid injection in lateral epicondylitis of humerus

[1]Dr. Tanmay Mallick (DNB), [1]Dr. Atul Singh (DNB), [2]Dr. Sarvesh Kumar Singh (MS), [3]Dr. Uttam Singh (MS), [1]Gurvinder Singh (Assistant Professor), [4]Dr. Ajay Abrol (Chairman), [5]Dr. Navneet Goel (HOD)

[1,5]Dr. Baba Saheb Ambedkar Medical College, New Delhi

[2]Dr. Rajendra Prasad Medical College Kangra at Tanda Himachal Pradesh

[3]Dr. R.P.G.M.C. Kangra

[4]Chairman, Abrol Medical Central, Gurdaspur, Pubjab.

Corresponding Author: Dr. Atul Singh, Dr. Baba Saheb Ambedkar Medical College, New Delhi

Citation this Article: Dr. Tanmay Mallick, Dr. Atul Singh, Dr. Sarvesh Kumar Singh, Dr. Uttam Singh, Gurvinder Singh, Dr. Ajay Abrol, Dr. Navneet Goel,"A prospective study to compare the pain score between autologous blood injection and steroid injection in lateral epicondylitis of humerus", IJMSIR- November - 2020, Vol – 5, Issue - 6, P. No. 66 – 71.

Type of Publication: Original Research Article

Conflicts of Interest: Nil

Abstract

Background: Lateral epicondylitis, or tennis elbow, is commonly encountered in orthopaedic practice. In spite of many treatment modalities there is no gold standard treatment for this condition. There are very few studies in the literature comparing the efficacy of corticosteroid and autologous whole blood for lateral epicondylitis. Autologous blood and corticosteroid injections are easily available cost effective modalities with simple technique. Although platelet rich plasma is the emerging modality, till date, no such study is done in our hospital on autologous whole blood and corticosteroid and also there is very limited data in India on comparison of efficacy between the two.

Methods: One hundred and twenty patients (two groups, sixty in each) with the diagnosed of tennis elbow of age group 20 – 65 years were included in the study between August 2014 to April 2016 in the department of orthopaedics in Dr. B.S.A. Medical College and Hospital, Rohini, New Delhi. One group was given local autologous blood injection (ABI) and the other group was given local corticosteroid injection (CSI).

Results: In our study the mean value of pre procedure VAS score of the ABI group were 7.82±0.87 and CSI group were 7.67±0.75, with insignificant differences between the groups (p=0.243).

Conclusion: In this prospective and randomized comparative study both single autologous blood and corticosteroid injection significantly reduced pain in the patients of lateral epicondylitis of humerus on medium term (12th week) follow up. Although corticosteroid injection reduced pain significantly better than autologous blood injection on short term (2nd week) follow up, the reduction in pain by autologous blood injection was significantly better than the corticosteroid injection on medium term (12th week) follow up.

Keywords: VAS, Elbow, Humerus, Lateral epicondylitis

Introduction

Racquet and overhead throwing sports put elbow under valgus extension overload. This may lead to medial, lateral and posterior elbow injuries; like tennis elbow, medial epicondylitis, ulnar collateral ligament sprain, olecranon stress fracture etc.; in which tennis elbow is the most common overuse injury.[1,2]

The anatomical basis of injury involves multiple factors, including hypo vascular zones, eccentric tendon stress and microscopic degenerative response in extensor carpi radialis brevis. The origin of the extensor carpi radialis brevis seems to be the primary site of this injury, and characterized by degenerative changes. Inflammation is rarely present and there is an increase in pain receptors in the area making the region extremely tender.

By injecting locally autologous blood, the aim is to provide cellular and humoral mediators to induce tendon healing through collagen regeneration and angiogenesis. Corticosteroids limit intracellular activity by decreasing nuclear-cytoplasmic communication pathways which influences the degenerative and reparative components and also down regulates the pain receptors.[3,4]

Materials And Methods

Study Design: This study was conducted on 120 adult patients of either sex presenting to the OPD of Department of Orthopaedics, Dr Baba Saheb Ambedkar Medical College and Hospital, Rohini, Delhi with the complaint of pain on lateral aspect of elbow and clinically diagnosed as cases of lateral epicondylitis (Tennis elbow) after taking their informed consent for procedure and to participate in study.

Sample size: 120

Types of study: Prospective and Randomized Comparative Study.

Randomization Technique: Block Randomization with Sealed envelope system

In this, I prepared 20 randomly generated treatment allocations within sealed opaque envelopes assigning A and B in 10 envelopes each, where A represents Group A receiving Blood Injection and B represents Group B receiving Steroid injection. Once a patient gave consent to enter a trial an envelope was opened and the patient was then offered the allocated group. In this technique, patients randomized in a series of blocks(6) of 20 that is, for every 20 patients randomized 10 received Group A treatment and other 10 received Group B treatment.

Inclusion criteria

1. 18 years of age of either sex.
2. Tenderness on palpation of lateral epicondyle or just distal to it, not associated with other condition.
3. If one of these critical test is positive
   a) Mills test[34] positive
   b) Cozen test[35] positive

Exclusion criteria

1. Hypersensitivity to lignocaine.
2. Pregnancy.
3. Coexisting pathology. i.e. RA of elbow, cervical radiculitis
4. Coexisting systemic disease such as Diabetes mellitus or Hypertension or metabolic disease such as gout.
5. Any other coexisting condition requiring analgesics during the course of study period.
6. Previous surgery for Lateral epicondylitis.
7. Patients who have received any form of treatment for lateral epicondylitis except analgesics.
8. Patients who have received steroid injections (local or systemic) within three months.

9. Previous history of trauma around elbow
10. Regional pain syndrome.

Methods of data collection

Patients attending OPD of Orthopaedics were included in this study after a diagnosis of Lateral Epicondylitis, which included interview and clinical examination comprising testing for tenderness over the lateral epicondyle or just distal to it, a positive Cozen's test and Mill's test. Informed consent was taken from the patient.

Group A (ABI group, 60 patients) was designated to receive an injection of autologous blood. Patients were infiltrated with injection of 2 ml of autologous blood drawn from the contralateral anticubital vein mixed with 1 ml of lignocaine after testing for lignocaine sensitivity, at the lateral epicondyle according to the technique described below.

Group B (CSI group, 60 patients) was designated to receive an injection of local corticosteroid. Patients were infiltrated with 2 ml of methyl prednisolone acetate (80 mg) mixed with 1ml of lignocaine after testing for lignocaine sensitivity, at the lateral epicondyle according to the same technique.

Results

One hundred and twenty patients (two groups, sixty in each) with tennis elbow of age group 20 – 65 years were included in the study.

Table 1: Mean Age (In years) in groups

Age (years)	Total(n=120)	ABI(n=60)	CSI(n=60)	P value
Mean ± SD	37.06 ± 10.75	35.73 ± 10.73	38.38 ± 10.7	0.152
Median	35	35	36.5	
Min-Max	20-65	20-65	20-65	
Inter quartile Range	29 - 42	27 - 41.5	30 - 47.5	

In this study, majority of patients were of age group of 31-40 years (36.67%). The youngest patient was of 20 years and oldest was of 65 years. The mean age of the total study group was 37.06±10.75) years and that of ABI and CSI group was 35.73±10.73) years and 38.38±10.7) years respectively.

Table 2: Sex distribution in groups

Sex	Groups		Total	P value
	ABI	CSI		
Female	35 (58.33%)	34 (56.67%)	69 (57.50%)	0.853
Male	25 (41.67%)	26 (43.33%)	51 (42.50%)	
Total	60 (100.00%)	60 (100.00%)	120 (100.00%)	

X2=0.034 df=1

In this study, females (69, 57.50%) were more commonly involved than males (51, 42.50%). 35 (58.33%) and 25 (41.67%) were the number of females and males in ABI group and 34 (56.67%) and 26 (43.33%) were that of CSI group respectively.

Table 3: VAS scores

Pre VAS score	Total(n=120)	ABI(n=60)	CSI(n=60)	P value
Mean ± SD	7.74 ± 0.81	7.82 ± 0.87	7.67 ± 0.75	0.243
Median	8	8	8	
Min-Max	5-9	5-9	6-9	
Inter quartile Range	7 - 8	7 – 8	7 – 8	
Second week VAS score				<.0001
Mean ± SD	5.63 ± 1.6	6.98 ± 0.72	4.28 ± 0.98	
Median	6	7	4	
Min-Max	3-8	6-8	3-7	
Inter quartile Range	4 - 7	6 - 7.5	4 – 5	
Sixth week VAS score				0.212
Mean ± SD	3.46 ± 1.13	3.48 ± 0.89	3.43 ± 1.33	
Median	3	3.5	3	
Min-Max	2-8	2-6	2-8	
Inter quartile Range	3 - 4	3 – 4	3 – 4	
Twelfth week VAS score				<.0001
Mean ± SD	2.01 ± 2	0.62 ± 0.98	3.4 ± 1.78	
Median	2	1	3	
Min-Max	0-9	0-7	2-9	
Inter quartile Range	1 - 3	0 – 1	2 – 4	
Decrease in VAS score in 2nd week				<.0001
Mean ± SD	2.11 ± 1.72	0.83 ± 1.09	3.38 ± 1.21	
Median	2	1	4	
Min-Max	-2-6	-2-3	1-6	
Inter quartile Range	1 - 4	0 – 2	2.5 – 4	
Decrease in VAS score in 6th week				0.861
Mean ± SD	4.28 ± 1.34	4.33 ± 1.3	4.23 ± 1.39	
Median	4	4	5	
Min-Max	0-7	1-7	0-6	
Inter quartile Range	4 - 5	4 – 5	4 – 5	
Decrease in VAS score in 12th week				<.0001
Mean ± SD	5.73 ± 2.2	7.2 ± 1.39	4.27 ± 1.87	
Median	6	7	5	
Min-Max	0-9	0-9	0-7	

Inter quartile Range	5 - 7	7 – 8	3.5 – 6	
Decrease in VAS score in 6th week as compared to 2nd week				<.0001
Mean ± SD	2.17 ± 1.75	3.5 ± 1.11	0.85 ± 1.18	
Median	2	3	1	
Min-Max	-1-6	1-6	-1-4	
Inter quartile Range	1 - 3.5	3 – 4	0 – 2	
Decrease in VAS score in 12th week as compared to 6th week				<.0001
Mean ± SD	1.45 ± 1.9	2.87 ± 1	0.03 ± 1.47	
Median	2	3	0	
Min-Max	-6-5	-1-5	-6-2	
Inter quartile Range	0 - 3	2 – 3	-1 - 1	

Discussion

Lateral epicondylitis or tennis elbow is one of the most regularly encountered disorders of the elbow that can cause significant pain and dysfunction. Over the past 100 years since its first description, there have been many theories regarding the etiology of tennis elbow, with different treatment methods suggested for this condition.[5] The argument that tennis elbow is a self-limiting condition without any intervention cannot be upheld for those patients in whom symptoms have been troubling their daily activities for nearly 1-2 years. The most widely accepted theory is that this is caused by micro or macro tears in the tendon of extensor carpi radialis brevis (ECRB) and treatment has been directed at this. Greenbaum et al [6,7] suggested that even in the most controlled situation it was not possible to separate the origin of the ECRB from the common extensor tendon, which suggests that the pathology cannot be isolated to a single structure.

The treatment of the tennis elbow has been the subject of much debate. Greater than 90% of tennis elbow patients can be successfully treated non-operatively [8], which comprises chiefly of rest, activity modification, analgesics, physiotherapy and local injection.

Keeping these facts in mind, 120 patients (60 in each group) with lateral humeral epicondylitis were treated with single autologous whole blood injection (ABI) and local corticosteroid (methylprednisolone) injection (CSI) at the point of maximum tenderness at common extensor origin , in the department of Orthopaedics, Dr Baba Saheb Ambedkar Medical College and Hospital, New Delhi between 2014-2016.

In our study the mean value of pre procedure VAS score of the ABI group were 7.82 (0.87) and CSI group were 7.67 (0.75), with insignificant differences between the groups (p=0.243).

CM Dojode [9] - pre procedure VAS score was 7.7±1.3 and 7.5±1.3 in ABI and CSI groups respectively with insignificant differences between the groups (p=0.5395).

Arik et al[10]- pre procedure VAS score of the ABI group were 6.9±1.2) and that of the CSI group were 6.8±1.3, with insignificant differences between the groups (p=0.679).

Conclusion

In this prospective and randomized comparative study both single autologous blood and corticosteroid injection significantly reduced pain in the patients of lateral epicondylitis of humerus on medium term (12^{th} week) follow up. Although corticosteroid injection reduced pain significantly better than autologous blood injection on short term (2^{nd} week) follow up, the reduction in pain by autologous blood injection was significantly better than the corticosteroid injection on medium term (12^{th} week) follow up.

References

1. Runge F. Zur genese und behandlung des schreibekrampfes. Berl Klin Wochenschr. 1873;10:245-8.
2. Major HP. Lawn-tennis elbow. Br Med J. 1883;2:557.
3. Kazemi M, Azma K, Tavana B, Moghaddam FR, Panahi A. Autologous blood versus corticosteroid local injection in the short-term treatment of lateral elbow tendinopathy: a randomized clinical trial of efficacy. American Journal of Physical Medicine & Rehabilitation. 2010 Aug 1;89(8):660-7.
4. Wolf JM, Ozer K, Scott F, Gordon MJ, Williams AE. Comparison of autologous blood, corticosteroid, and saline injection in the treatment of lateral epicondylitis: a prospective, randomized, controlled multicenter study. The Journal of hand surgery. 2011 Aug 31;36(8):1269-72.
5. Nirschl RP, Pettrone FA. Tennis elbow. The surgical treatment of lateral epicondylitis. J Bone Joint Surg Am. 1979 Sep 1;61(6):832-9.
6. Greenbaum B, Itamura J, Vangsness CT, Tibone J, Atkinson R. Extensor carpi radialis brevis. Bone & Joint Journal. 1999 Sep 1;81(5):926-9.
7. Greenbaum B. The pathoanatomy and histopathology of tennis elbow. Current Opinion in Orthopaedics. 2001 Aug 1;12(4):353-5.
8. Kraushaar BS, Nirschl RP. Tendinosis of the elbow (tennis elbow): clinical features and findings of histological, immunohistochemical, and electron microscopy studies. Journal of bone and joint surgery. 1999 Feb 1;81(2):259.
9. Dojode CM. A randomised control trial to evaluate the efficacy of autologous blood injection versus local corticosteroid injection for treatment of lateral epicondylitis. Bone and Joint Research. 2012 Aug 1;1(8):192-7.
10. Arik HO, Kose O, Guler F, Deniz G, Egerci OF, Ucar M. Injection of autologous blood versus corticosteroid for lateral epicondylitis: a randomised controlled study. Journal of Orthopaedic Surgery. 2014;22(3).