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Autologous Blood Injection for Tennis Elbow – A Prospective Study

DR. ANEEN N. KUTTY — ASSOCIATE PROFESSOR, DEPT. OF ORTHOPAEDICS, GOVT. MEDICAL COLLEGE, KOZHIKODE, KERALA

DR. RAVIKUMAR V. — ASSOCIATE PROFESSOR, DEPT. OF ORTHOPAEDICS, GOVT. MEDICAL COLLEGE, KOZHIKODE, KERALA

ABSTRACT

AIM: *To evaluate Efficacy of intra Tendinous injections of Autologous blood with Lignocaine at Lateral Epicondylar region in Tennis Elbow patients.*

MATERIALS AND METHODS: *The study was conducted in 50 cases of Tennis Elbow in 47 patients, from January 2012 to December 2015 in the Department of Orthopaedics, Govt. Medical College, Kozhikode. Patients were followed up at 1 week, 3 weeks, 3 months, 6 months, and one year.*

Results: *About 60% of patients had excellent pain relief lasting about 1 year as per criteria of Roles and Mandsley. The average pain score decreased from 8.4 to 2.7 and average Nirschl stage from 6.8 to 2.0.*

Conclusion: *Injection of autologous blood mixed with 2% lignocaine at lateral epicondylar region appears to be promising, cost effective, simple, efficient method of treatment for Tennis Elbow.*

KEYWORDS : Tennis Elbow, Lateral Epicondylitis, Autologous blood injection

INTRODUCTION

Tennis Elbow or Lateral Epicondylitis of Humerus has been recognized for over hundred years and is an enthesopathy of the common Extensor Origin at the Elbow of unclear pathogenesis. It is a painful condition, which effects four adults per thousand annually.

Many treatment modalities have been proposed and tried including rest, modification of activities, splints, analgesic and anti-inflammatory drugs, physical therapy, acupuncture, steroid injection and surgery. The choice of treatment is empirical and based on personal experience.

Although several comparative studies have been published the optimum treatment is still uncertain.

Calandrucio[1] had introduced a method of treatment by injecting autologous blood mixed with lidocaine into the intra-tendinous portion of lateral Epicondyle. This modality of treatment is being undergoing evaluation now.

AIM OF THE STUDY

To evaluate the Efficacy of intra-tendinous injections of Autologous blood mixed with Lignocaine at the Lateral Epicondylar region in Tennis Elbow patients in terms of pain relief, grip strength and return to work.

MATERIALS AND METHODS

This study was conducted in the Department of Orthopaedics, Govt. Medical College, Kozhikode during the period January 2012 to December 2014. It included altogether 50 cases of Tennis Elbow in 47 patients. All the patients were treated on outpatient basis. The available medical records of these patients were reviewed. Patients were recalled for assessment clinically on the prescribed time of follow up.

Age - The youngest patient in the series was 20 years old and oldest was 58 years old. Majority of the patients were in 30-40 years ago group.

Table 1 Age distribution

Sex - There was not much difference in the gender ratio in the series.

Through a slight male preponderance was there. The mean age of the female patients was 34 years and that of male patients was 38 years.

Table 2 Sex distribution

Occupation - Majority of cases in this series were manual workers doing heavy works. In the females, most of them were house wives.

Table 3 Occupation

Duration of symptoms - The mean duration in male patients were 48 days and female patient was 34 days. The female patients tend to consult doctors a little earlier than the male patients.

Side affected - In majority cases, in the series the dominant hand side was affected. In 3 cases out of 47, both sides was involved.

Table 4 Side of Affection

Associated Rheumatic condition - Of the 47 patients studied in the series, the common 'rheumatism' associated was plantar fascitis.

Table 5 Associated Rheumatic condition

Associated systemic disease - Diabetes Mellitus (NIDDM) was present in 3 patients in the series. Hypertension seen in 3 patients.

Investigations - All patients underwent investigation to find out rheumatologic disorder, x-rays of the elbow were taken to risk out any bony lesion in the lateral epicondylar region.

Procedure

Patients are positioned in the supine position with the affected elbow flexed over the body and the other elbow extended over arm board. Under all aspectic measures, 4ml of venous blood is drawn from the cubital vein. 1ml of 2% lignocaine solution is drawn into the same syringe making a total volume of 5ml.

Lateral epicondyle region of the affected elbow is prepared aseptically and the blood with lignocaine solution is injected at the lateral epicondyle region at the point of maximum tenderness. Blood is infiltrated beneath the common extensor origin. Injection site is pressed with a cotton swab for few minutes.

PHOTO 1

Patient was discharged with a course of antibiotics and analgesics and asked to review next week.

Follow up

Patients were followed up at 1 week, 3 weeks, 3 months, 6 months, and one year. All the patients turned up follow up at 1 week, 3 weeks. If pain relief was not relieved entirely 6 weeks after the autologous blood injection a repeat injection was offered to the patient. But out of 47, only 40 patients tuned up follow up at 3 months and 6 months. 38 patients came for review at 1 year. All the patients were assessed clinically for the outcome of treatment and also their ability to return to their job which they were doing before.

All the patients were assessed clinically and the results were graded from excellent, good, fair and poor as per criteria of Roles and Mandsley[2].

Excellent - No pain, full movement, full activity

Good - Occasional discomfort, full movement, full Activity

Fair - some discomfort after prolonged activities

Poor - pain limiting activity.

Pain ratings and Nirschl[3] stages were recorded before and after injection at each follow up

Nirschl[3] phase scale (NPS) for tennis elbow
Phase 1 Mild pain with exercise; which resolves in 24 hours
Phase2 Pain with exercise; exceeds 48 hours
Phase3 Pain with exercise; does not alter activity
Phase4 Pain with exercise; alters activity
Phase5 Pain with heavy activities of daily living
Phase6 Pain with light activities of daily living;intermittent pain at rest
Phase7 Constant pain at rest; disrupts sleep

RESULTS
Results of the treatment were graded from excellent to poor as per criteria of Roles and Mandsley. 60% of patients showed excellent, 27% good, 7% fair and 6% poor results.

Table 6 Roles and Mandsley criteria
In 47 patients before autologous blood injections the average pain score was 8.4 (range, 5-10) and average Nirschl stage was 6.8 (range, 5-7). After autologous blood injections the average pain score decreased to 2.7 and average Nirschl stage decreased to 2.0

Our results have shown that injection of Autologous blood mixed with lignocaine locally at the lateral epicondylar region is an effective method of treatment.

Disscussion
Tennis Elbow, a familiar term used to describe a myriad of symptoms about the lateral epicondylar region of the Elbow occurs more commonly in non-athletes than athletes.

Patients presenting with complaints of lateral epicondylitis can be categorized into 2 groups. The younger group has a sports related injury, usually after the arm is used incorrectly for forceful swing-through or backhand follow through. The other older group usually has epicondylitis as a result of a work related injury or over use syndrome. A work related overuse syndrome is much more difficult to treat often having resistant lateral epicondylitis that may need surgical intervention. This division may be related to the fact that, with the exception of professional athletes, most athletes can curtail or stop their participation in the activity that aggravates the condition, where as those with an occupationally related epicondylitis usually are not fortunate enough to have that option. The annual incidence of non-sports related lateral epicondylitis has been reported at 59 per 10000 workers.

Tennis Elbow is a common disorder and it results in considerable morbidity and financial cost in Western world. It is reported that 7.4% of industrial workers and 40-50% of Tennis Player in the USA are at sometimes affected by it.

Many papers have been published on TE and review articles have reported over 40 different treatment used either alone or in combination. These include anti-inflammatory drugs, steroids, many physiotherapy techniques, cast immobilization, Orthoses, surgical operation and less conventional methods such as radiotherapy, acupuncture and vitamins.

The choice of the treatment for an individual case remains controversial, because it is empirical and based on the personal experience of the physician treating the patient.

Morrey et al[4] found that only few patients (5-10%) are unresponsive to conservation treatment. According to Coonrad and Hooper[5] patients who fail to respond to a non-operative regimen should be scrutinized for possible sources of secondary gain through psychological evaluation, if other melodies in differential diagnosis have been excluded. In some patients one or two local injections of a steroid preparation to the area of maximal tenderness are helpful.

Porreta and Janes[6] reported that 40% of their patients obtained complete and permanent relief of symptoms after steroid injections.

Binder et al[7] reported significant therapeutic effect of ultrasound in Tennis Elbow patients. But Lundberg et al[8] and Strafford et al[9] reported not much difference between ultrasound and placebo in Tennis Elbow treatment. Ultrasound may have a therapeutic effect in Tennis Elbow patients which needs detailed evaluation.

Mills[10] and later Wadsworth[11] advocated manipulation under anesthesia especially in patients with concomitant flexion contracture. The technique involves sudden forcible, full extension of the elbow with wrist and fingers flexed and the forearm pronated to place the ECRB and extensors under tension.

Comparative study between local steroid injection and acupuncture was done by Day et al[12] and found that steroid injections has better therapeutic effect in Tennis Elbow patients. But studies by Clarke and Woodland[13], Hughes and Curvey[14], Kivi[15] did not show any superior efficacy of steroid in Tennis Elbow.

In these days of increasing accountability, the price of the various treatments must be justified with the respect to the clinical benefit with regard to expenditure. Autologous blood injection is the cheapest method of treatment.

Like in other series of studies, there is male predominance seen in this study also. But there is a little difference in the age pattern in this study. 30-40 years age group is mostly affected.

Nicola Massy Westropp et al[16], Edwards et al[17] reported in their trial, that autologous blood is superior to local steroid injection in medium to long term follow up.

Introduction of autologous blood in a relatively a traumatic manner may initiate inflammatory cascade and promote healing in an otherwise degenerative process Mechanism of action of autologous blood is attributed to degranulation of a granule of platelets releasing growth factors responsible for tissue healing and regeneration. Mitogens such as Platelet derived growth factor, transforming growth factor ß, vascular derived endothelial growth factor, epithelial growth factor, hepatocyte growth factor and insulin like growth factor are some of the factors involved.

One major limitation of our study is absence of long follow up. Long term follow up is required to see the sustained effect of autologous blood injection in terms of pain relief and healing of disease. Comparative studies are few but have shown the better long term results with ABI

Jindal et al[18] compared autologous blood injection with steroid injection. They also concluded that autologous blood injection was better than corticosteroid injection in relieving symptoms.

A study by Gani et al[19] also concluded that autologous blood injection for lateral epicondylitis significantly reduced the symptoms. Kazemi et al[20] also reported in their trial, that the benefits afforded by autologous blood injection outweighed those by local corticosteroid injection.

Unlike the steroid injection, autologous blood injection does not produce a rapid pain relief. The relief of pain appears to a little late, but continues to last long. In this study, about 60% of the patients had excellent pain relief lasting about 1 year which was the last follow up period.

Advantages of autologous blood injection are
1. It is virtually inexpensive
2. Simple method that is carried out in patient clinics.

3. Can be used in Diabetic patients without risk of aggravating diabetes.
4. It has got much more patient compliance as the patients are aware that it is only their own blood which is being injected and not some drugs.
5. The disadvantages are
6. Some patients may feel apprehensive and dizzy seeing the blood being withdrawn and injected to the affected elbow.
7. We are not aware of very late effects of this treatment.

Further studies with a more lengthened follow up are needed to assess the long term effect of this treatment as well as to identify which groups of patients will benefit most, for example, those with an acute presentation, chronic resistant pain with failed injections or surgery or those with a sedentary life style.

Conclusion

Tennis elbow is a common disorder with unknown aetiology. A number of treatment modalities have been attempted in Tennis Elbow with variable results.

Injection of autologous blood mixed with 2% lignocaine at the lateral epicondylar region is an evolved method of treatment. And the results appears to be promising. It is a cost effective, simple, efficient and patient friendly method of treatment of Tennis Elbow.

Tables & Photos

Age	No. of Patients
20-30	6
30-40	24
40-50	14
50-60	3
60-70	0

Table 1 Age distribution

No. of cases	Male	Female
47	25	22

Table 2 Sex distribution

Occupation	Male	Female
Manual workers	18	8
Carpenters	2	0
Teachers	1	2
House wives	-	12
Plumber	2	0
Other jobs	2	0

Table 3 Occupation

Side of Affection	No. of Cases
(Right) side- Dominant	34
(Left) side-Dominant	5
(Right) side- Now dominant	3
(Left) side- Now dominant	2
Bilateral	3

Table 4 Side of Affection

Associated Rheumatic condition	No. of cases
Plantar fascitis	5
De Quervain's tenosynovitis	3
Fibro fasciitis	3
Golfer's elbow	2

Table 5 Associated Rheumatic condition

PHOTO 1

Results	No. of cases	Percentage
Excellent	29	60%
Good	13	27%
Fair	3	7%
Poor	2	6%

Table 6 Roles and Mandsley criteria

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