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Evaluation of Outcome of Autologous Blood Injection In Racalicitrant Tennis Elbow Cases Not Responding To Conservative Management

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Abstract
Introduction : Tennis Elbow is a commonly diagnosed condition of elbow in middle age group. The optimum treatment for Recalcitrant Tennis Elbow remains controversial. In the present prospective study we evaluated the outcome of Local injection of Autologous Blood for treatment of recalcitrant Tennis Elbow not responding to conservative management.
Materials and methods: This study was conducted on 19 patients having recalcitrant Tennis Elbow not responding to conservative management treated with local autologous blood injection. Patients of recalcitrant Tennis Elbow associated with any underlying comorbid condition or elbow joint pathology were excluded from the study.
Results: Results were evaluated based on Functional score with Nirschl staging before and after treatment (at 2 weeks, 4 weeks, 12 weeks and 6 months). Average duration of symptoms prior to treatment with Autologous Blood Injection was 4.2 months. Eight patients were having excellent results while eleven patients were having good and fair results at six months follow up.
Conclusion: Our results with local autologous blood injection are encouraging, we recommend use of autologous blood injection for recalcitrant Tennis Elbow patients not responding to conservative management. It is safe, cost effective and can be performed as a routine OPD procedure.

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I. Introduction

Tennis Elbow or Lateral Epicondylitis is a commonly diagnosed condition of elbow in middle age(30-55 years) group individuals[1]. Tennis Elbow affects both male and female equally with prevalence of 1 to 3% in general population. It is an overuse Tendinopathy of wrist extensors at humeral attachments[2], which is characterized by activity related pain, focal tenderness and decreased grip strength[3].

Tennis Elbow is considered a form of tendinosis because it is degenerative process rather than an inflammatory one, characterized by fibroblastic and vascular response[4]. Various non-surgical and surgical options are available for treating tennis elbow cases like Rest, Non Steroidal Anti-inflammatory Drugs, Bracing, Physical Therapy, Extra Corporeal Soft Wave Therapy, Local Injections of Corticosteroids, Platelet Rich Plasma, Autologous Blood and Surgical Procedures but there is no consensus on optimal treatment for all patients[5].

There has been a lot of research on treatment of Lateral Epicondylitis with injections of Corticosteroids, Platelet Rich Plasma and Autologous Blood but none is proven to be more beneficial in all patients. In the present prospective study we evaluated the outcome of Local injection of Autologous Blood for treatment of recalcitrant Tennis Elbow not responding to conservative management.

II. Materials And Methods

This prospective study was carried out in a total number of 19 patients having recalcitrant Tennis Elbow not responding to conservative management, presented to us between February 2016 to July 2017 at our institute SMS Medical College and Hospital, Jaipur treated with Autologous Blood Injections. Patients with recalcitrant Tennis Elbow recruited in the study once written informed consent had been provided.

Inclusion criteria were patients with age more than 18 years, unilateral Tennis Elbow not responding to conservative management of at least 6 weeks, not associated with any comorbid conditions while newly

diagnosed patients without fair conservative trial, Tennis Elbow associated with underlying comorbid conditions (like diabetes mellitus, Rheumatoid Arthritis etc.) or patients associated with other pathologies of elbow joint like previous elbow surgery, history of trauma, cervical disorder were excluded from the study.

To rule out any periarticular condition routine X-Rays of elbow joint (AP and lateral views) were obtained in all patients. For all patients recruited in the study standard protocol of local injection used which consists 1ml of 2% lignocaine hydrochloride and 2ml of Autologous Blood drawn from dorsal vein of opposite hand and injected into area of maximum tenderness around Lateral Epicondyle using multiple puncture from single skin entry point under all asceptic precautions. Analgesics given for few days in case of pain after injections and physical therapy started once pain subsided. We did not use splints or brace in any patient after local autologous blood injection, three patients required second injection at four weeks due to persistent symptoms.

Results were evaluated based on functional scoring with Nirschl Score before and after treatment[6].

Table 1 Nirschl staging of lateral epicondylitis

Phase 1	Mild pain with exercise, resolves within 24 hour
Phase 2	Pain after exercise, exceeds 24 hour
Phase 3	Pain with exercise and does not alter activity
Phase 4	Pain with exercise and alters activity
Phase 5	Pain with heavy activities of daily living
Phase 6	Pain with light activities of daily living and intermittent pain at rest
Phase 7	Constant pain at rest , disrupts sleep

For Post injection protocol Nirschl score measured at 2 weeks, 4 weeks, 12 weeks and 6 months.

III. Results

There were 12 males and 7 females in our study with an average age of 38 yrs (Range 18 to 55 yrs). 14 patients out of 19 were having right sided Tennis Elbow while 5 were having left sided Tennis Elbow. Average duration of symptoms prior to treatment with local autologous blood injection was 4.2 months.

Table 2. Nirschl staging before and after treatment

Duration of evaluation	Before treatment	At 2 weeks	At 4 weeks	At 12 weeks	At 6 months
Nirschl stage	5.2	3.4	2.1	1.3	0.4

Nirschl staging functional score was done prior to local autologous blood injection and at 2 weeks, 4 weeks, 12 weeks and 6 months after local autologous blood injection. The relief of symptoms from pre injection phase to 6 months post injection was graded as fair, good and excellent based on improvement in Nirschl staging. Eight patients had excellent results and eleven patients were having good and fair results.

IV. Discussion

The designation lateral epicondylitis is a misnomer since it has been proved that it is primarily a disorder related to degeneration in the tendon of common extensor origin (mostly extensor carpi radialis brevis) rather than inflammatory process as was thought to be earlier[7]. Local corticosteroid injection is one of the commonest treatment prescribed in cases where initial activity modification and NSAIDs don't work. However, a randomised control trial conducted by Bisset et al.[8] found out that corticosteroid although effective at short term yielded poorer results at long term follow up (1 year) than physiotherapy. D'Vaz[9] conducted a double blinded randomised controlled trial and concluded that pulsed low intensity ultrasound therapy offered no significant benefit over placebo. Several recent reports have emerged suggesting a beneficial role of growth factors delivered locally at the site of tendinopathy. This can be accomplished by injection of autologous blood or platelet concentrates. Mishra and colleagues[10] conducted a study wherein they treated patients of lateral elbow tendinopathy of less than 6 weeks duration by local injection of platelet rich plasma.

Study by Edwards et al.[11] reported dramatic relief in symptoms in 28 patients of tennis elbow after injection of autologous blood. They postulated that autologous blood initiated an inflammatory reaction which allowed healing in otherwise degenerative process. A systematic review done by Vos et al.[12] however found that autologous blood has limited application in the management of tendinopathy. This was concluded on the basis of three studies which involved management of plantar fasciitis with injection of autologous blood. The desired results may have not been achieved since the mechanical and healing properties of weight bearing and non weight bearing tendons differ a lot. Kazemi et al.[13] also reported in their trial, that the benefits afforded by autologous blood injection outweighed those by local corticosteroid injection. The mechanism of action of both autologous blood and platelet rich plasma is attributed to degranulation of α granules of platelets releasing

growth factors which play a role in tissue healing and regeneration. Platelet derived growth factor, transforming growth factor β, vascular derived endothelial growth factor, epithelial growth factor, hepatocyte growth factor and insulin like growth factor are some of the factors involved[14]. Another review performed by Smidt et al.[15] evaluated thirteen randomized controlled studies regarding the use of local corticosteroid injections in tennis elbow and found that local corticostreoid injections have superior benefit (pain, global improvement and grip strength) in the short-term (≤6 weeks) compared to placebo, local anesthetic and conservative treatment.

In a study by Thanasas et al.[16] platelet rich plasma and autologous blood injection for chronic tennis elbow were compared and it was found that VAS score improvement was statistically significant in favor of PRP only at 6 weeks. The Liverpool elbow score was not significantly different between groups. They stated that PRP is not cost-effective over autologous blood injection for the treatment of chronic, refractory tennis elbow.

V. Conclusion

Autologous blood injection is safe, cost effective and successful procedure for treatment of recalcitrant Tennis Elbow, can be performed as a routine OPD procedure. We recommend use of Autologous blood injection for recalcitrant Tennis Elbow patients not responding to conservative management with rest, analgesics, physical therapy, bracing and sprints use. Limitations of our study includes that it was not a comparative study and sample size in our series was small.

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