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Functional outcome of autologous blood injection for chronic lateral epicondylitis

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Abstract
Background: Lateral epicondylitis is the commonest chronic disabling painful condition of the elbow. Elbow pain and tenderness with resisted wrist extension are common manifestations in lateral epicondylitis. Recent studies have suggested ABI to be a safe and effective therapy for tennis elbow.
Purpose: To compare the effectiveness of single dose injection of autologous blood injection in treatment of lateral epicondylitis.
Methods: A total of 46 patients with lateral epicondylitis were treated at GMC Jammu. All patients had minimum three months of symptoms. Randomization and allocation to the trial group were carried out by a lot method. After receiving a local anesthetic, all patients had single dose injection of autologus blood injection in their extensor tendons at elbow. The primary analysis included visual analog scale (VAS) pain scores NIRSCHL score and Hand Grip.
Results: The degree of pain was assessed by employing the Visual Analogue scale (VAS), the degree of disability was evaluate by Nirschl staging & functionally by Hand grip. Pre-injection average pain (VAS) score was 8.9 (range, 6-10), the average Nirschl stage was 6.6 (range, 5-7) & the Hand grip was 29 (range 20-50%). After autologous blood injections the average pain score decreased from 8.9 to 0.19, the average Nirschl stage decreased from 6.6 to 0.1& Hand grip from 29 to 97.3% at 1 year follow-up most number of patients dramatically improved with single injection.
Conclusion: Treatment of patients with Refractory lateral epicondylitis with autologous blood injection reduces pain and increases function significantly. Future decisions for application of Autologous blood injection for lateral epicondylitis should be confirmed by more number of patients and further follow up and should take into account possible costs and harms as well as benfits

Keywords: Lateral epicondylitis, autologous blood injection, Visual Analogue scale (VAS), NIRSCHL score

Introduction
Tennis elbow (lateral epicondylitis) is a degenerative tendinopathy of extensor carpi radialis brevis muscle. It is commonly caused by repetitive micro trauma of the muscle due to overuse resulting in tendinosis of ECRB with or without involvement of extensor digitorum communis muscle. Autologous blood injection technique is an outpatient basis easy procedure, safe (no reactions), cheap for both patient & institution, devoid of any biohazard complications, minimally traumatic, avoids regular use of NSAIDS, early recovery, no complications, effective & reduced recurrence rate, provides pain free elbow. These details make us to conduct the above study. Even though previously similar studies conducted we have decided to conduct the study in larger group of patients.

Materials and Methods
Is a prospective trial involving the patients in the Department of Orthopaedics, Government Medical College Jammu from April 2022 to April 2023. Approval was obtained from Ethics Committee for Research in human beings before this study. A total of 46 patients were included in this study. All the patients were selected based on the inclusion and exclusion criteria described. All patients were treated as Out Patient. All the patients underwent same method of treatment.

Inclusion Criteria

1. Pain more than 3 months after failed conservative treatment.
2. Patients should have pain score more than eight at the time of injection.
3. Patients should not had a local steroid injection in last 2 months.
4. Both male and female.
5. Age- 18 years and above.
6. Pain and tenderness over the lateral aspect of elbow.

Exclusion Criteria

1. Less than 3 months duration
2. Pain score less than eight
3. Patients with diabetes mellitus
4. Infection at the injection site
5. Thrombocytopenia
6. Patient on anti-platelet medications
7. Pregnancy
8. Patients younger than 18years
9. Pre-operative preparation

Patients underwent a pre-operative evaluation including the following parameters: Hemoglobin, blood sugar, Renal Function Test, serum uric acid, RA factor, C Reactive Protein, x ray elbow anteroposterior& lateral view.

Procedure

Informed consent from patient, Patients were taken 3 ml of autologous blood drawn from contra lateral upper limb mixed with 1 ml of 0.5% bupivacine. Patient in supine with elbow is flexed to 90 degree with palm facing down. Under aseptic precautions needle is introduced proximal to lateral epicondyle along the supracondylar ridge into the tendon at the maximum point of tenderness.

Post-operative protocol

The evaluation of the patients was carried out by the degree of the pain and the amount of disability in the pre injection phase, and at subsequent outpatient visits at 1st week, 1, 3, 6, and 12 months (the final follow up). Pain (VAS) and NIRSCHL Score& Hand grip will be assessed on follow-up. Patient's clinical improvement will be assessed using NIRSCHL SCORE & manual Hand grip clinically during every follow-up.

Results

A total of 46 patients 26 male and 20 female conducted. Among the 46 patients studied, highest number of patients were seen in 41-50 years (35.8%) age group. The average was 43.56 year. The evaluation of the patients was carried out by the degree of the pain and the amount of disability in the pre injection phase, and at subsequent outpatient visits at 1st week, 1,3, 6, and 12 months (the final follow up). The degree of pain was assessed by employing the Visual Analogue scale (VAS), the degree of disability was evaluate by Nirschl staging & functionally by Hand grip. Pre-injection average pain (VAS) score was 8.9 (range, 6-10), the average Nirschl stage was 6.6 (range, 5-7) & the Hand grip was 29 (range 20-50%). After autologous blood injections the average pain score decreased from 8.9 to 0.19, the average Nirschl stage decreased from 6.6 to 0.1& Hand grip from 29 to 97.3% at 1 year follow-up. Most number of patients dramatically improved with single injection. Only 2 patients required another second episode of injection, those 2 patients also having some amount of improvement in VAS score, Nirschl score & Hand grip from pre-injection & first time ABI, second injection for achieving maximum improvement in Vas score functional & pain score. The significant maximal benefit was reached at an average of 6 weeks (range, 1 wk. to 10 wk.) after injection.

Discussion

Lateral epicondylitis is an inflammatory condition at the origin of the extensor tendon of forearm muscles over the lateral epicondyle. It is the commonest chronic disabling painful condition of the elbow. It causes symptoms in 1% to 3% of the general population. It is common in people whose occupation requires frequent rotary motion of the forearm like in carpenter, gardener, computer workers and knitting workers. The age of onset of lateral epicondylitis is between 35 and 50 years with an equal male to female sex ratio. The dominant upper limb is most. Commonly affected. Bora Boston *et al* at 2016" Autologous blood injection works for Recalcitrant Lateral Epicondylitis" conducted a prospective study & evaluated the long term results of autologous blood injection for treatment of recalcitrant lateral epicondylitis in 46 elbows (26female, 12 male). The mean age of the patient was 47.25 years (range 20-68 yrs) and follow-up for 3 years. They analyze the visual analogue scale (VAS), Nirschl score and grip strength was significantly improved after injections when compared to before treatment. The best improvement in terms of VAS score, hand grip strength & Nirschl score was detected at the one year follow-up. The improvement sustained until the third year. In 2014 Naseem ul gani *et al* "Long term results in refractory tennis elbow using autologous blood" a prospective study of 120 patients (76 males & 44 female) was conducted. The effectiveness was assessed by pain rating scale & Nirschl score which was monitored before the procedure, & serially followed up to 3 years. The mean pain score & Nirschl score before the procedure was 3.3±0.9 & 6.2±0.82 respectively. At final follow-up the pain score & Nirschl score were 1.1±0.9 & 1.5±0.91 respectively. Autologous blood injection was found to be one of the cheap, available and easy methods of treatment, it should be considered as treatment modality before opting for surgery. Ricardo Monreal *et al* "Treatment of Lateral Epicondylitis with Autologous Blood Injection" 2017. 32 consecutive patients were evaluated with lateral epicondylitis 15 patients opted for autologous blood injection. The evaluation of the patients was carried out by the degree of the pain and the amount of disability in the pre injection phase, and at subsequent outpatient visits at 2, 4, 6, 10, and 12 weeks (the final follow up). The degree of pain was assessed by employing the Visual Analogue scale (VAS) and the degree of disability was evaluated by Nirschl staging. The 15 patients were followed-up for an average of 4.6 months (range, 2-6 months.). Before autologous blood injections the average pain score was 8.2 (range, 4-10). The average Nirschl stage was 6.5 (range, 5-7). After autologous blood injections the average pain score decreased from 8.2 to 1.3. The average Nirschl stage decreased from 6.5 to 1.0. Maximal benefit was reached at an average of 2.5 weeks (range, 1wk. to 8 wk.) after injection. Autologous blood injection is an effective way to treat patients of lateral epicondylitis improving pain, and functional status. It is recommended because it is simple, cheap, and effective. To our knowledge this study, perhaps the large group of 46 patients having refractory lateral epicondylitis participating with follow-up of 1 year. The evaluation of the patients was carried out by the degree of the

pain and the amount of disability in the pre injection phase, and at subsequent outpatient visits at 1st week, 1,3, 6, and 12 months (the final follow up). The degree of pain was assessed by employing the Visual Analogue scale (VAS), the degree of disability was evaluated by Nirschl staging & functionally by Hand grip. Pre-injection average pain (VAS) score was 8.9 (range, 6-10), the average Nirschl stage was 6.6 (range, 5-7) & the Hand grip was 29 (range 20-50%). After autologous blood injections the average pain score decreased from 8.9 to 0.19, the average Nirschl stage decreased from 6.6 to 0.1 & Hand grip from 29 to 97.3% at 1 year follow-up. Most number of patients dramatically improved with single injection. Only 2 patients required another second episode of injection, those 2 patients also having some amount of improvement in VAS score, Nirschl score & Hand grip from pre-injection & first time ABI, second injection for achieving maximum improvement in functional & pain score. The significant maximal benefit was reached at an average of 6 weeks (range, 1 wk. to 10 wk.) after injection. Autologous blood injection technique is an outpatient basis easy procedure, safe(no reactions), cheap for both patient & institution, devoid of any biohazard complications, minimally traumatic, avoids regular use of NSAIDS, early recovery, no complications, effective & reduced recurrence rate, provides pain free elbow & improving functional status.

Conclusion

Even though various studies prefer PRPP & steroid injection over Autologous blood, from our experience on larger sample of patient, we strongly recommend Autologous Blood Injection(ABI)in the management of Refractory lateral epicondylitis, for the simple reason that it is cheap & doesn't require any specialized apparatus & practically nil complications & also can be done as an Outpatient procedure. We conclude that, Autologous Blood Injection can be safely adviced as a method of treatment for all Chronic, Refractory & Relapsed cases of lateral epicondylitis.

Conflict of Interest

Not available

Financial Support

Not available

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