

Combined steroid and lignocaine injection in resistant cases of tennis elbow: A prospective, interventional study from India

Vishal Marwaha¹, A. K. Pawah², J. Muthukrishnan³, K. V. S. Hari Kumar⁴

¹Department of Rheumatology, Amrita University, School of Medicine, Kochi, Kerala, ²Department of Medicine, Mayo Institute of Medical Science, Barabanki, Uttar Pradesh, ³Department of Medicine, AFMC, Pune, Maharashtra, ⁴Department of Endocrinology, Army Hospital (R&R), Delhi, India

ABSTRACT

Background: Tennis elbow or lateral epicondylitis is a chronic, painful condition and is often resistant to conventional therapy. We evaluated the benefits of a combined steroid and lignocaine injection in resistant cases of tennis elbow. **Materials and Methods:** In this prospective, interventional study, we included chronic lateral epicondylitis patients resistant to analgesics and physiotherapy. The pain was assessed by visual analog scale (VAS), and we included patients with a baseline VAS >4. All patients were given local infiltration at the painful site with methylprednisolone (1 ml) and lignocaine (1 ml) by the peppering technique. The primary outcome was the change in VAS from the baseline at the end of 7 and 28 days. The improvement is classified as good, moderate, or mild based on the reduction in VAS score by 3, 2, 1, respectively. Descriptive statistics and appropriate tests were used to analyze the results. **Results:** The study population ($n = 63$; male: female - 33:30) had a mean age of 36.2 ± 4.5 years and disease duration of 17.4 ± 5.8 weeks. After 1 week, 55 patients showed good improvement, three patients showed moderate improvement, two patients showed mild improvement, and three patients had no improvement. The improvement persisted till 28 days in all the patients and one patient who had not improved after 7 days did not report for 28 days follow-up. **Conclusion:** Local infiltration with steroids and lignocaine is a useful modality of therapy for tennis elbow, especially in patients where ultrasonic therapy and conservative measures have failed.

Keywords: Lateral epicondylitis, lignocaine, methylprednisolone, tendinopathy, tennis elbow

Introduction

Tennis elbow or lateral epicondylitis is a painful, rheumatological condition causing significant morbidity in patients.^[1] The condition is one of the most common painful disorders that are encountered in the clinical practice by the family physicians. It is related to the overuse of the extensor tendons of the forearm although relatively little is known about its natural history.^[2] The disease leads to significant curtailment in the mobility of the wrist and also affects the quality of the life. The disease is characterized

by the tenderness at the epicondyle. The pathophysiological basis is poorly understood and is characterized by the degenerative process, injury, inflammation, and repair mechanisms.^[3] On the basis of the pathophysiological mechanisms, growth factors and bone marrow elements have been tried to augment the local repair.^[4] Platelet-rich plasma (PRP) acts by angiogenesis, recruitment of repair cells, cell proliferation, growth factor expression, and increasing the tensile strength of the tissues.^[5]

Lateral epicondylitis has shown response to the physiotherapy, hot fomentation, and analgesics in majority of the patients. However, the disease is often resistant to therapy, leading to a

Address for correspondence: Dr. K. V. S. Hari Kumar, Department of Endocrinology, Army Hospital (R&R), Delhi - 110 010, India.
E-mail: hariendo@rediffmail.com

Access this article online

Quick Response Code:



Website:
www.jfmpc.com

DOI:
10.4103/2249-4863.222032

This is an open access article distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 3.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as the author is credited and the new creations are licensed under the identical terms.

For reprints contact: reprints@medknow.com

How to cite this article: Marwaha V, Pawah AK, Muthukrishnan J, Hari Kumar KH. Combined steroid and lignocaine injection in resistant cases of tennis elbow: A prospective, interventional study from India. *J Family Med Prim Care* 2017;6:498-501.

prolonged period of functional limitation. The management of resistant cases includes local injections with PRP, autologous blood, prolotherapy, steroids, extracorporeal shock wave therapy, and anesthetic agents.^[6] There is a paucity of evidence-based data, which establish superiority of a particular treatment modality over others.^[7] The data on the management of lateral epicondylitis from India are even scantier.^[8,9] Previous studies have shown the benefits of steroids, PRP, autologous blood in resistant cases.^[10] Local steroid injection has been shown to give a consistent, predictable short-term relief from the pain, and the movement limitation.^[11] To the best of our knowledge, the use of combined steroid and anesthetic agents has not been evaluated earlier. Hence, we conducted this study to evaluate the response to local infiltration with steroids and lignocaine in resistant cases of lateral epicondylitis.

Materials and Methods

Study setting

This prospective, interventional study was conducted at a teaching hospital of the armed forces between October 2014 and December 2015. We included serial patients of tennis elbow (age >18 years, disease duration more than 3 months, no improvement with the use of analgesics and ultrasonic therapy for more than 4 weeks, baseline visual analog pain score >4) in this interventional study. We excluded patients with any coexisting major illness, local trauma, or neoplastic lesion and patients who were treated with local steroid injections. The patients were subjected to visual analog scale (VAS) and numerical pain scale on a scale of 1–10. The VAS was assessed at the baseline and should be more than 4 for inclusion into the study and local injection therapy. The primary outcome of our study was the change in the VAS at the end of 7 and 28 days. None of the patients were given a repeat injection within 28 days. The Local Ethics Committee approved the trial protocol and all patients provided written informed consent for the injection therapy.

Study interventions

The patients were injected with methylprednisolone acetate 40 mg (1 ml) and lignocaine (1 ml) locally at the site of the tendon. The local infiltration was given by the peppering technique, wherein multiple injections were given at the most tender point of the elbow after changing direction so that maximum and effective infiltration could be achieved.^[12] Postprocedure, patients were observed for 90 min before they were allowed to go home. The tendon infiltration procedure was carried out by a single researcher to minimize the personal variations in the injection technique. A close watch was kept for any systemic side effect, especially the giddiness and syncope. All patients were advised to rest the elbow and were given oral nonsteroidal analgesics for 48 h after the procedure. The improvement in pain is graded based on the quantum of change in the VAS score. A reduction by ≥ 3 is termed as good, ≥ 2 as moderate, and ≥ 1 as mild improvement. We considered lack of improvement if the VAS score did not change from the baseline or showed an increase in the severity.

Statistics

Data are presented as mean \pm standard deviation, and Wilcoxon signed-rank test was used for comparison of the data before and after intervention. A $P < 0.05$ was considered statistically significant, and the statistical analysis was done using the GraphPad Prism Software, Version 6 (GraphPad Software, San Deigo, CA, USA).

Results

The study population ($n = 63$; male: female - 33:30) had a mean age of 36.2 ± 4.5 years and disease duration of 17.4 ± 5.8 weeks. The etiologies of lateral epicondylitis include seronegative spondyloarthropathy (SSa) in 12 patients, rheumatoid arthritis (RA) in 14, and idiopathic in the remaining 37 patients. SSa is more common in males and RA in female patients. The right elbow ($n = 44$) was affected more commonly than the left ($n = 29$) side and none of the patients had bilateral affection. The baseline VAS score was 6.7 ± 1.1 and the reduction in the VAS was significant at all stages of follow-up ($P < 0.0001$). After 1 week, 55 patients showed good improvement, three patients showed moderate improvement, two patients showed mild improvement, and three patients had no improvement. Figure 1 showed the rate of improvement at 28 days in all the patients, and one patient who did not improve in 7 days failed to report for the subsequent follow-up. Postprocedure, the patients discontinued analgesic drugs within 48 h and none of the patients had any major adverse consequence related to the procedure. All the patients were advised to support the elbow in a sling for 24 h after the injection. Two patients reported transient episode of itching and flushing around the injection area.

Discussion

Our study showed a beneficial effect of a combination therapy, in resistant cases of lateral epicondylitis, which is one of the most perplexing musculoskeletal disorders. The majority of patients have shown improvement in the 1st week after injection, which

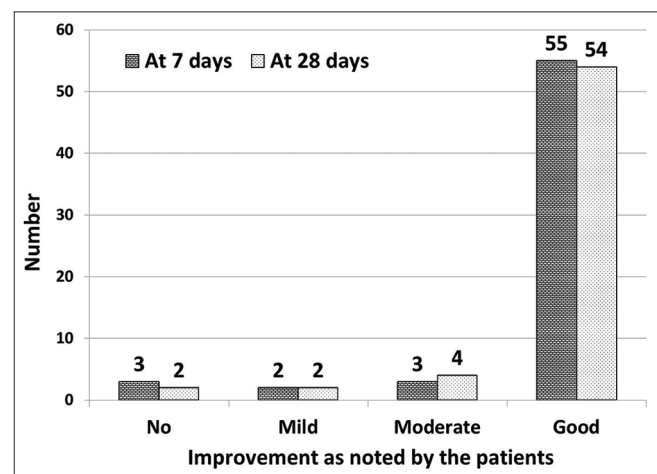


Figure 1: Rate of improvement at 7 and 28 days

was sustained for 1 month. Previous studies have shown that corticosteroid injections have given good relief but have a high rate of relapse.^[13,14] In the limited follow-up data of our study, we had shown a reduction in relapse with the combination of an anesthetic agent to the corticosteroid. Steroids give excellent pain relief immediately after the local injection leading to excessive use of the arm.^[15] In fact, this is one of the main reasons responsible for the high relapse rates with the use of steroids.^[16] Hence, all the patients are advised to rest the arm in a sling at least for the 24–48 h postprocedure.

The family physicians are often the first point of contact with the patients of lateral epicondylitis.^[17] They are expected to be aware of the etiopathogenesis, identify the correct therapeutic approach, and make an early referral of the resistant cases for specialist consultation.^[18] This helps in reducing the morbidity associated with the condition. The local anesthetic agent used in our study, lignocaine, also has certain properties that make the combination therapy attractive. It has a synergistic action with the steroid and prolongs the durability of action of the steroid.^[19] The lignocaine injection has also been used as a diagnostic marker before the steroid injection.^[20] A significant improvement of pain after the lignocaine injection predicts a favorable response to the subsequent steroid injection. Other injectable modalities tried by the researchers include PRP, botulinum toxin, and growth factors.^[4-7] None of the published reviews and meta-analysis could identify the ideal treatment for the chronic lateral epicondylitis.^[7] The controversy also stems from the lack of clear pathogenic mechanism identifiable for the causation of tennis elbow.

Recent literature has shifted the focus from an inflammatory process to a degenerative process.^[21] This is established despite the fact that most of the trials using steroids have shown immediate and consistent benefit in the condition. The recent literature is swamped with many studies showing the beneficial effects of the growth factors, PRP, or whole blood. The beneficial effects of the blood and blood products are primarily mediated by the growth factors released from the platelets that help in the tissue repair and regeneration.^[22] Although our study showed the benefit of combination therapy, it has certain limitations such as small sample size, patients from a single ethnic background, and lack of a placebo arm for comparison.

Conclusion

We demonstrated the beneficial effect of the local infiltrations with steroids and lignocaine in resistant cases of tennis elbow. Our findings have more relevance to developing countries, where ultrasonic therapy and botulinum toxin are not widely available and costly. Further randomized studies involving a large number of patients are essential to identify the best treatment option in chronic lateral epicondylitis.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

References

- Behrens SB, Deren ME, Matson AP, Bruce B, Green A. A review of modern management of lateral epicondylitis. *Phys Sportsmed* 2012;40:34-40.
- Zeisig E. Natural course in tennis elbow - Lateral epicondylitis after all? *Knee Surg Sports Traumatol Arthrosc* 2012;20:2549-52.
- Nirschl RP. Tennis elbow tendinosis: Pathoanatomy, nonsurgical and surgical management. In: Gordon SL, Blair SJ, Fine LJ, editors. *Repetitive Motion Disorders of the Upper Extremity*. Rosemont, IL: American Academy of Orthopaedic Surgeons; 1995. p. 467-79.
- Maffulli N, Longo UG, Denaro V. Novel approaches for the management of tendinopathy. *J Bone Joint Surg Am* 2010;92:2604-13.
- Mishra A, Pavelko T. Treatment of chronic elbow tendinosis with buffered platelet-rich plasma. *Am J Sports Med* 2006;34:1774-8.
- Lin YC, Tu YK, Chen SS, Lin IL, Chen SC, Guo HR. Comparison between botulinum toxin and corticosteroid injection in the treatment of acute and subacute tennis elbow: A prospective, randomized, double-blind, active drug-controlled pilot study. *Am J Phys Med Rehabil* 2010;89:653-9.
- Labelle H, Guibert R, Joncas J, Newman N, Fallaha M, Rivard CH. Lack of scientific evidence for the treatment of lateral epicondylitis of the elbow. An attempted meta-analysis. *J Bone Joint Surg Br* 1992;74:646-51.
- Tonk G, Kumar A, Gupta A. Platelet rich plasma versus laser therapy in lateral epicondylitis of elbow. *Indian J Orthop* 2014;48:390-3.
- Yadav R, Kothari SY, Borah D. Comparison of local injection of platelet rich plasma and corticosteroids in the treatment of lateral epicondylitis of humerus. *J Clin Diagn Res* 2015;9:RC05-7.
- Behera P, Dhillon M, Aggarwal S, Marwaha N, Prakash M. Leukocyte-poor platelet-rich plasma versus bupivacaine for recalcitrant lateral epicondylar tendinopathy. *J Orthop Surg (Hong Kong)* 2015;23:6-10.
- Smidt N, van der Windt DA, Assendelft WJ, Devillé WL, Korthals-de Bos IB, Bouter LM. Corticosteroid injections, physiotherapy, or a wait-and-see policy for lateral epicondylitis: A randomised controlled trial. *Lancet* 2002;359:657-62.
- Okçu G, Erkan S, Sentürk M, Ozalp RT, Yercan HS. Evaluation of injection techniques in the treatment of lateral epicondylitis: A prospective randomized clinical trial. *Acta Orthop Traumatol Turc* 2012;46:26-9.
- Tonks JH, Pai SK, Murali SR. Steroid injection therapy is the best conservative treatment for lateral epicondylitis: A prospective randomised controlled trial. *Int J Clin Pract* 2007;61:240-6.
- Kazemi M, Azma K, Tavana B, Rezaiee Moghaddam F, Panahi A. Autologous blood versus corticosteroid local injection in the short-term treatment of lateral elbow tendinopathy: A randomized clinical trial of efficacy. *Am J Phys Med Rehabil* 2010;89:660-7.
- 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. *J Hand Surg Am* 2011;36:1269-72.
16. Lewis M, Hay EM, Paterson SM, Croft P. Local steroid injections for tennis elbow: Does the pain get worse before it gets better?: Results from a randomized controlled trial. *Clin J Pain* 2005;21:330-4.
 17. Johnson GW, Cadwallader K, Scheffel SB, Epperly TD. Treatment of lateral epicondylitis. *Am Fam Physician* 2007;76:843-8.
 18. American Academy of Family Physicians. Information from your family doctor. Tennis elbow: What you should know. *Am Fam Physician* 2007;76:853.
 19. Yarrobino TE, Kalbfleisch JH, Ferslew KE, Panus PC. Lidocaine iontophoresis mediates analgesia in lateral epicondylalgia treatment. *Physiother Res Int* 2006;11:152-60.
 20. Mehra A, Zaman T, Jenkin AI. The use of a mobile lithotripter in the treatment of tennis elbow and plantar fasciitis. *Surgeon* 2003;1:290-2.
 21. Nirschl RP, Ashman ES. Tennis elbow tendinosis (epicondylitis). *Instr Course Lect* 2004;53:587-98.
 22. Molloy T, Wang Y, Murrell G. The roles of growth factors in tendon and ligament healing. *Sports Med* 2003;33:381-94.