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# EFFECT OF COMBINED STEROID AND LIGNOCAINE INJECTION IN RECALCITRANT CASES OF LATERAL EPICONDYLITIS: A TERTIARY CARE MULTICENTRE STUDY ACROSS INDIA

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**ABSTRACT** **Background:** Lateral epicondylitis (Tennis elbow) is a common cause of elbow pain, and originates in the lateralepicondyle of humerus. Conservative management in the form of rest, non-steroidal anti-inflammatory drugs, bracing and physiotherapy comprise the mainstay of therapy. There are not many studies evaluating efficacy of combined steroid and local anaesthetic injection for treating recalcitrant cases.

**Aim:** To evaluate effect of combined steroid and lignocaine injection at lateral epicondyle humerus in recalcitrant cases of lateral epicondylitis.

**Methods:** A prospective, multi-centre interventional study was conducted at tertiary care teaching hospitals at Kolkata, Mumbai and Kochi, respectively over 12 months. Patients with lateral epicondylitis refractory to conventional conservative treatment methods (physiotherapy, ultrasound therapy etc.) for more than 6 weeks and presenting with pain measuring 4 or more on the visual analogue scale (VAS) were enrolled. They were infiltrated with methyl prednisolone and lignocaine at the origin of extensor carpi radialis brevis muscle (lateral epicondyle humerus). Purpose of study was to observe change in VAS at day 7 and day 28 post-injection respectively. Improvement was classified as good, moderate or mild based on reduction in VAS score compared to the baseline by 3 or more, 2 and 1 respectively. Wilcoxon signed rank test was used for comparing data before and after injection.

**Results:** Total of 49 patients with a mean age of 41.78 ± 1.73 years were enrolled. After week one, 40 out of 49 patients showed good improvement, while moderate and mild improvement was seen in 2 patients each. The progress was sustained for up to 28 days in all these patients. In five patients there was no improvement.

**Conclusion:** Combined steroid and lignocaine injection is a safe and effective modality of treatment for resistant cases of lateral epicondylitis when compared to steroid injection alone. This may prove to be a very promising modality, especially in limited resource regions where complex treatment options are not be available.

**KEYWORDS :** Lateral Epicondylitis, Recalcitrant, Visual Analogue Scale.

## INTRODUCTION

Lateral Epicondylitis (Tennis elbow) results from overuse of extensor muscles of the forearm that originate in the lateral epicondyle of distal humerus. Lateral Epicondylitis, as it is commonly known, was first described by Runge in 1873 (1). It involves tendinosis of origin of extensor carpi radialis brevis at lateral epicondyle of the humerus. This is common following unaccustomed movements of the wrist in unusual position repetitively, in sport activities like tennis, gardening etc. (2). It has been observed in studies that 70% to 80% of the affected patients have resolution of symptoms spontaneously without any treatment for the same within one year (3, 4). Conservative management in the form of rest, non-steroidal anti-inflammatory drugs, bracing and physiotherapy comprise the mainstay of therapy. Therapeutic modalities used for recalcitrant cases include local injection with platelet rich plasma, autologous blood, steroids, local anaesthetics, botulinum toxin, prolotherapy and extracorporeal shock wave therapy (5). Not many studies have evaluated and documented effectiveness of local infiltration of combined steroid and anaesthetic at the affected site i.e. lateral epicondyle of humerus (6). This multi-centre study was done to evaluate the outcome of local infiltration of combined steroid and lignocaine in resistant cases of lateral epicondylitis.

## MATERIAL AND METHODS

This was a prospective, multi-centre, interventional study, conducted at tertiary care teaching hospitals at Kolkata (Command Hospital, Indian Army), Mumbai (INHS, Asvini, Colaba) and Kochi (Amrita Institute of Medical Sciences) respectively from 1st June 2016 to 31st May 2017.

Patients with lateral epicondylitis whose age was above 18 years and with disease duration more than 3 months were recruited into the study. Inclusion criteria also comprised those patients who showed no improvement with analgesics and conventional conservative treatment methods such as ultrasound therapy, for more than 6 weeks. Only those patients affected with pain, equal to or more than 4, on the visual analogue scale (VAS) were enrolled in the study. Patients, who underwent prior local injections, or surgery for lateral epicondylitis, were excluded from this study. Also patients affected with radiculopathy from cervical spine pathology, distal humerus pathology such as bone tumour or infections, fracture of lower humerus including periarticular fracture were excluded. Due clearance was obtained from respective institutional ethics committees of these hospitals. Written informed consent was obtained from the respective patients who fulfilled all the criteria. Symptomatic improvement, observed as change in VAS score from baseline, at the end of 7th day and 28th day respectively was the primary outcome of our study.

The enrolled patients were infiltrated with 1ml of 40mg methyl prednisolone acetate and 1ml of 2% lignocaine at the site of origin of the extensor carpi radialis brevis (lateral epicondyle) with multiple injections repeatedly (Peppering needling technique) given at the most tender area of the lateral epicondyle (7). After the procedure, patients were monitored for at least two hours before discharge from hospital. Systemic adverse effects (SAE) like syncope, giddiness, vomiting etc. were closely observed for in each patient. All patients were then advised support of the affected elbow in an arm sling for 2 days.

Pain was monitored and graded on the Visual Analogue Scale (VAS). Reduction in VAS scores by 3 or more than 3, was recorded as good response. Reduction in VAS scores by 2 was recorded as moderate response and reduction by 1 score was recorded as mild response. If VAS score did not change after injection or worsened after the infiltration, it was termed as lack of improvement. Wilcoxon signed rank test was used for comparison of data before and after injection. Data was extrapolated as mean +/- standard deviation, p value of less than 0.05 was considered statistically significant. Statistical analysis was done using Graph Pad Prism Software Version 6.

## RESULTS

This prospective interventional study was conducted at 3 centres, Command hospital, Kolkata (21 cases); INHS, Asvini, Colaba, Mumbai (18 cases) and Amrita Institute of Medical Sciences, Kochi (10 cases). Of the 49 patients, 28 were females. The maximum number of patients (n=14) were in the 30 to 40 year age group (Fig.1) (Table-1). The mean age of the group was 41.78 +/- 1.73 years.

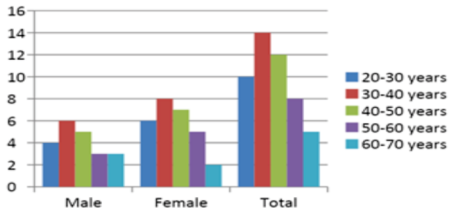


**Fig 1: Age & Sex Distribution**

**Table. 1: Age Distribution**

| Age Interval (in years) | Number | Percentage (%) |
|---|---|---|
| 20 - 30 | 10 | 20.4 |
| 30 - 40 | 14 | 28.6 |
| 40 - 50 | 12 | 24.5 |
| 50 -60 | 08 | 16.3 |
| 60 -70 | 05 | 10.2 |

Majority of the patients (n=25) had no specific aetiology attributed to their pain in the elbow, while 15 patients had rheumatoid arthritis and 9 patients had seronegative spondyloarthropathy (Fig.2).

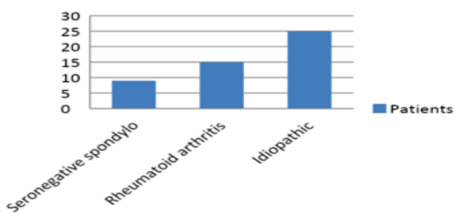


**Fig.2: Associated Pathology**

At the end of week one, 40 of the 49 patients in the study reported good improvement of pain while 2 patients each had moderate and mild improvement respectively. 5 patients did not experience any improvement of pain after the injection procedure (Fig 3). All the patients who responded to treatment could maintain their improvement with reduced VAS scores, even at day 28 after the procedure. No SAE were reported during the study.

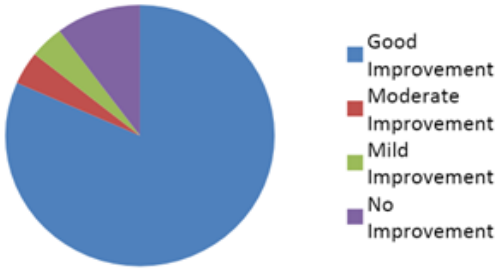


**Fig.3: Treatment response after week 1 and week 4**

## DISCUSSION

In our study, the female population had a slightly higher incidence. Most of the patients (73.5%) were in the less than 50 year age group, similar to the observations supported by Ono Y et al (8) and Thanigaimani et al (9).

Majority of patients in the study showed improvement in the 1st week after injection with combined steroid and lignocaine. The improvement in pain was sustained and was observed to be the same even at the end of one month in all patients who responded and the findings were similar to that reported by Marwaha et al (6). The procedure was reasonably safe and was not technically demanding. Studies done with corticosteroid injection alone, have documented immediate relief of pain, but have also shown high recurrence rates (10, 11) after the initial effect of the drug waned off.

By combining steroid with anaesthetic agent, this study could demonstrate not only remarkable reduction in pain, but also a durable response even up to 1 month, which is better than the published results with steroid alone. Lignocaine may be having a synergistic action with steroid, thus enhancing and prolonging the duration of action of the combination when injected (12). As the understanding of the pathology of this disease evolved, its aetiology has been shifted from an inflammatory disease to a degenerative one. Hence, many recent studies have used blood and blood products, with promising results (13) though the same was beyond the purview of our study.

Even if the patients were from different geographic and ethnic groups, a small sample size with limited follow up, lack of placebo arm and lack of comparison with recent treatment modalities like injection with blood products, remain the major limitations of this study.

## CONCLUSION

This study indicates that combined steroid and lignocaine injection is a useful and effective modality of treatment for resistant cases of lateral epicondylitis when compared to steroid injection alone. This can be safely and easily delivered and this relatively simple intervention of local injection therapy offers effective and sustained pain relief. This may prove to be a very promising modality, especially in limited resource regions, where complex treatment options like blood products, botulinum toxin, ultrasound therapy etc. are not easily affordable and available. Sufficiently powered, randomised control trials with larger sample size and longer follow up would be essential to further substantiate the findings of this study.

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**Conflict of interest:** There are no conflicts of interest

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