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To compare the efficacy of local corticosteroid injections and autologous blood injections in patients presenting with lateral epicondylitis

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Abstract
Background: The present study was conducted to compare the efficacy of local corticosteroid injections and autologous blood injections in producing analgesia in patients presenting with lateral epicondylitis.
Materials & Methods: The present study was conducted on 40 adult patients of either sex presenting to the OPD with the complaint of pain on lateral aspect of elbow. Patients were divided into 2 groups of 20 each. Patients of group I was given local steroid injections as a single dose of 40 mg methylprednisolone mixed with 2 cc of 2% lignocaine, 3 such dosages was given at intervals of two weeks. Patients of group II received autologous blood injections 2 cc of autologous blood was drawn from the ipsilateral upper extremity and mixed with 1cc of 2% lignocaine. Pain was assessed as per VAS scale.
Results: Thirty-seven (92.5%) patients showed involvement of right elbow and only 3 (7.5%) of left elbow. All patients showed involvement of their dominant side. The 40 patients enrolled in the study presented with insidious onset of pain and tenderness over lateral epicondyle of humerus. Amongst them, 30 patients had pain only localized to lateral epicondyle, while 10 complained of pain radiating down the forearm.
Conclusion: Corticosteroid injection was more effective over the immediate follow-up period than autologous blood injection in improving pain and function but over long term autologous blood injection scores over corticosteroid injection. It is recommended as a first-line injection treatment because it is simple, cheap, and effective.

Keywords: Corticosteroid, lateral epicondylitis, autologous blood

Introduction
Injuries are quite common especially for people who tend to be active or exercise a lot and so are with people who work a lot to acquire and master new skills in social environment. There are injuries which are because of repetitive movements and overuse like wrist fractures, ankle sprain, shoulder dislocations, hamstrings muscle strain and many others. The overuse of the muscles, bones, joints, ligaments and tendons occurs when they participate in athletics and may also occur from repeated activities such as gardening and certain household chores [1].
Tennis elbow is classic example of repetitive strain injury which is caused with combination of chronic exhaustion and irritation in muscles and tendons on back of arm and outside of elbow which lifts (extend) the wrist and fingers. The condition "tennis elbow" was first described by Runge in 1873 but the name is derived from "lawn tennis arm" described by Morrison in 1882 [2].
Pain around the lateral epicondyle is known by a variety of names and was described as periostitis, external carpi radialis brevis tendinosis and epicondylalgia. But these names are were questioned over time, as histological studies failed to show inflammatory cells (macrophages, lymphocytes and neutrophils) in affected tissues [3].

Materials & methods
The present study was conducted in the Department of Orthopaedics, GMC Amritsar. The present study was conducted on 60 adult patients of either sex presenting to the OPD with the complaint of pain on lateral aspect of elbow. Patients were divided into 2 groups of 30 each.

Patients of group I was given local steroid injections as a single dose of 40 mg methylprednisolone mixed with 2 cc of 2% lignocaine, 3 such dosages was given at intervals of two weeks. We had to exclude 10 patients from each group, who were lost to follow up or did exceedingly well after single shot and refused 2nd dose. So study was limited to 40 patients with 20 candidates in each group, presenting to the OPD with the complaint of pain on lateral aspect of elbow and clinically diagnosed as cases of lateral epicondylitis (Tennis elbow) after taking their informed consent as per attached performa.

Group I was given local steroid injections as a single dose of 40 mg methylprednisolone mixed with 2 cc of 2% lignocaine; 3 such dosages were given at intervals of two weeks. Patients with diabetes were excluded from this group. Group II received autologous blood injections 2 cc of autologous blood was drawn from the ipsilateral upper extremity and mixed with 1 cc of 2% lignocaine. The needle was introduced proximal to the lateral epicondyle along the supracondylar ridge and gently advanced into the undersurface of the extensor carpi radialis brevis while infusing the blood-anesthetic mixture extra-articularly. Pain was assessed as per VAS scale. In VAS scale a 100 mm unmarked line was drawn. Patients pain at the start of the treatment was considered at 100 and at each visit patient is asked to mark a point on the line and then measured with the scale. Thus, pain severity was quantified. Results were subjected to statistical analysis. P value less than 0.05 was considered significant. Results were graded as excellent, good, fair and poor. VAS scale 0 was excellent, 1 – 30 as good, 31 – 60 as fair and more than 60 as poor.

Results

Our study shows that at 1.5 months follow up, in group I, out of 20 patients, 4 showed excellent, 14 had good, 1 had fair and 1 had poor results. In group II, 9 had good, 7 had fair and 4 had poor results. At 3 months follow up, in group I, out of 20 patients, 1 showed excellent, 10 had good, 6 had fair and 3 had poor results. In group II, 2 showed excellent, 12 had good, 5 had fair and 1 had poor results. At 6 months follow up, in group I, out of 20 patients, 9 had good, 6 had fair and 5 had poor results. In group II, 4 showed excellent, 14 had good, 2 had fair and results.

Discussion

Lateral epicondylitis is a common cause of lateral elbow pain, with a prevalence of 1% to 3% in the general population aged 45 to 54 years. It is considered a degenerative process (rather than an inflammatory process), characterized by angiofibroblastic degeneration or hyperplasia within the common extensor tendon, particularly affecting the extensor carpi radialis brevis [5].

The present study was conducted to compare the efficacy of local corticosteroid injections and autologous blood injections in producing analgesia in patients presenting with lateral epicondylitis and to evaluate the duration of analgesia using local corticosteroids and autologous blood injections.

We found that in group I, maximum males (5) and females (6) were in age group 40-49 years. Similarly, in group II also, maximum males (5) and females (4) were in age group 40-49 years. Average age of patients was 41.7 years. Kazemi *et al* [6] studied sixty patients aged 27-64 yrs. Arik *et al* [7] included 21 men and 59 women with mean age, 45.2 years.

Mardani *et al* [8] found that occupation of patients was of forceful hand work in 72 patients, low hand work in 90 and unemployed in 28. Ozturen *et al* [9] found that 17.5% patents were heavy workers. In our study, out of 40 patients, 37 (92.5%) showed involvement of right elbow and only 3 (7.5%) of left elbow, thus all had involvement of their dominant side. Mardani [8] found right side involvement in 174 and left side in 56 patients. Arik *et al* [7] found right side in 57 cases and left side in 23 cases.

In present study while recording duration of pain, 15 (37.5%) presented with >2-<4 weeks, 10 (25%) patients with >4-<8 weeks, 9 (22.5%) with <2 weeks and 6 patients (15%) with >8 weeks. Oztugen[9] found duration of pain be 6-8 weeks in 74% of cases.

At 1.5 months and 3 months corticosteroid injection results were better than autologous blood injection but at 6 months autologous blood injection patients fared better.

We found that common complications were whitish discoloration of skin seen in 1 male and 1 female in group I and transient pain in 1 male and 1 female in group I and 3 males and 1 female in group II. In group I, transient pain was due to crystallization of steroid at site and in group II because of inflammatory cascade at site and some patients is more susceptible to this. Previously case reports have documented local skin hypopigmentation after intralesional and intra-articular injection of steroids at different sites [10, 11].

The most commonly used injection therapy is corticosteroid injection (CSI), which is extensively used in the treatment of tendinopathy because of the low cost and easy application; however, the effects are short term at reducing pain and improving function. More recently, biological solution injections are being used as an alternate option. Biological therapeutics—termed autologous blood products (ABPs)—such as autologous blood (AB) and platelet-rich plasma (PRP), have been used for the management of orthopaedic diagnoses such as osteoarthritis, bone healing, muscle strain, tendinopathy, ligament, cartilage, and other soft tissue injuries [12].

Conclusion

Corticosteroid injection was more effective over the immediate follow-up period than autologous blood injection in improving pain and function but over a longer follow up autologous blood inoculation is better.

Table I: Results of follow up

Duration	Outcome	Group I		Total	Group II		Total	P value
		Male	Female		Male	Female		
1.5 months	Excellent	3	1	4	0	0	0	<0.05
	Good	6	8	14	4	5	9	
	Fair	0	1	1	5	2	7	
	Poor	1	0	1	1	3	4	
3 months	Excellent	1	0	1	1	1	2	>0.05
	Good	6	4	10	7	5	12	
	Fair	1	5	6	2	3	5	
	Poor	2	1	3	0	1	1	

6 months	Excellent	0	0	0	2	2	4	<0.05
	Good	6	3	9	7	7	14	
	Fair	2	4	6	1	1	2	
	Poor	2	3	5	0	0	0	

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