

FİZİKSEL TIP

THE COMPARATIVE EFFICACY OF DIFFERENT LOCAL STEROID INJECTIONS IN THE TREATMENT OF LATERAL EPICONDYLITIS

FARKLI LOKAL STEROİD ENJEKSİYONLARININ LATERAL EPİKONDİLİT TEDAVİSİNDE KARŞILAŞTIRMALI ETKİNLİĞİ

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ÖZET

Bu çalışmanın amacı lateral epikondilit tedavisinde dört farklı grubun lokal steroid enjeksiyonlarının kısa ve uzun zaman etkisini ve gruplar arasındaki farkı değerlendirmektir. Çalışma randomize, kontrollü, prospektif olarak yapıldı. Lokal steroid enjeksiyonundan önce, 4 hafta ve 6 ay sonra ağrı yoğunluğu vizüel analog skala (VAS) ve ağrı fazı (0-4) derecelendirme ile değerlendirildi. Sonuç olarak enjeksiyondan 4 hafta sonra tedavi gruplarında ağrı seviyesinde belirgin azalma meydana geldi ($p<0.05$). Ancak enjeksiyondan 6 ay sonra azalma yoktu ($p>0.05$). Aynı zamanda gruplar arasında da 4. hafta ve 6. ay sonuçları arasında fark gözlenmedi ($p>0.05$). Lateral epikondilitlerin lokal steroid tedavisinde kısa dönemde etkili ancak uzun dönemde etkisinin olmadığı sonucuna varıldı.

Anahtar kelimeler: Lateral epikondilit, lokal steroid enjeksiyon

SUMMARY

The aim of the study was to evaluate short and long term effects of local corticosteroid injections in 4 different groups and the differences between their results of 4th weeks and 6th months. In addition, we compared the effects of these corticosteroid preparations with each other. Our study was randomised, controlled, prospectived. We used the grading system (0-4) to evaluate the pain phase and Visual-analog scale (VAS) to evaluate the pain intensity before the injection and at four weeks and six months after the first injection.

A significant decrease in pain level had occurred four weeks after the injection ($P<0.05$). There was no decrease 6 months later ($P>0.05$). Also, there were no difference between therapeutic effects of solutions at 4th weeks and 6th months ($p>0.05$).

In conclusion, the treatment of lateral epicondylitis by local steroid injection has only short term beneficial effects. There was no difference between 3 agents for treatment results.

Key Words : Lateral epicondylitis, local steroid injection

INTRODUCTION

Lateral epicondylitis is a common condition, in which pain derives from the origin of the wrist and finger extensors at the lateral epicondyle (1). Conservative treatments such as physical therapy, nonsteroidal anti-inflammatory drugs and local corticosteroid and anesthetic mixed injections to the site of tendon origin provide healing in most cases (1,2). There are many studies for evaluating lateral epicondylitis treatment by means of local steroid injection (2,3,4,5,6,7,8,9). It is shown by many authors that with steroid injection a temporary relief is achieved in lateral epicondylitis (2,3,4,5,6,7,8,9), but its long term effect is controversial (7,11).

In view of these studies, our objective was undertaken to

analyse the short-term and long term effects of the local injection of steroids to treat lateral epicondylitis. In our study, we had used different plasma half-elimination levels existing among 3 drugs. Also, our objective was to identify whether there was a significant difference between these 3 drugs. Thus, we compared the effects of these corticosteroid preparations with each other.

THE PATIENTS AND METHODS

One hundred patients with the diagnosis of lateral epicondylitis were included in our study at Physical Therapy and Rehabilitation Clinic of Vakıf Gureba Training Hospital. Diagnosis was made by means of pressure sensitivity around lateral epicondyle, pain with dorsiflexion of the wrist against

resistance, radial deviation and supination and spontaneous pain at the region of lateral epicondyle. Direct radiography were obtained and sedimentation and hemogram analysis were made for ruling out some specific rheumatic disease affecting the elbow joint. Any patient who had had steroid injection previously or had other upper extremity problems (such as carpal tunnel syndrome, shoulder periarthritis, medial epicondylitis, elbow injury, radial neuropathy) was not included. As our purpose was to evaluate patients who had isolated lateral epicondylitis.

Pain phase scale was classified as absent (0), mild (1), moderate (2), severe (3), and very severe (4) pain by the way of spontaneous, lateral epicondyle pressure and under resistant wrist dorsiflexion. Also, the patients were asked to use a ten-centimeter visual-analog scale for evaluation of the intensity of pain. In that scale zero indicating no pain and ten indicating maximum intensity of pain. All patients evaluated pain with this scale before the injection and injection 1., 2., 4. weeks and 6. months after the injection.

In our study the patients were randomly divided into 4 groups and were applied with 3 separate steroid injection. The four groups weren't different in terms of the parameters. Patients weren't managed nonsteroidal anti-inflammatory medications and therapy in addition to the injection of the steroid. Thus, any observed differences be attributed only to the pharmacological effects of the steroid. Twentyfive patients were injected by methylprednisolone acetate (MPA), 25 patients by triamcilon acetone (TA) and 25 patients by betamethasone sodium phosphate acetate (BSPA) suspension and 25 patients by saline solution (control group: C).

The patients were evaluated as regard to age, sex, duration of disease, and pain level prior to injection, 4 weeks and 6 months after the injections. Pain evaluation was performed by pressure and resistance to wrist as pretreatment and spontaneous posttreatment on the 4th weeks and 6th months. The injections were applied locally under aseptic conditions by the same doctor. But, none of the patients and researchers knew which solution had been injected. Neither local anesthetic nor serum physiologic was used with steroid. The patients were evaluated with regard the pain 1., 2., 4. weeks and 6th months after the injections.

Follow up consisted of interviews and physical examination for possible local complications such as fat atrophy, depigmentation of skin and distruption of the muscle origin as well as for postinjection flare, facial flushing and iatrogenic infection. Mann-Whitney U, Wilcoxon test and khi square test were used for evaluation for statistical analysis.

RESULTS

Prior to injection no difference existed among the 4 groups regarding age, sex, duration of disease, and pain level ($p > 0.05$). The average age at MPA injected group was 47.72 ± 3.8 , TA injected group was 47.88 ± 2.2 , and BSPA injected group was 46.39 ± 2.7 , control group was 48.67 ± 3.2 years. There was no significant difference among 4 groups ($p > 0.05$). Considering sex distribution the groups were homogeneous. As far as the time period of complains are concerned, the number of cases with complain period less than 3 months was 44% with MPA injected group, 40% with TA injected group, and 40% with BSPA injected group, 44% with control group. These numbers were 48%, 50%, 54% and 56% respectively for complains of more than 6 months period. There existed no difference of pain among the groups so far as the beginning period of complains were considered ($p > 0.05$).

Four weeks after the beginning of the treatment, there was a significant decrease in the pain phase score regarding spontaneous pain and intensity of pain at treatment the groups when compared to that of pretreatment conditions ($p < 0.05$) (Figure 1, 2). But, there was not a significant decrease at the control group. However after 6 months no significant improvement in pain level to that of the pretreatment condition could be assessed at any group ($p > 0.05$) (Figure 1, 2). The mean score on the pain phase scale was no significant difference between therapeutic effects of solutions the groups regarding spontaneous pain, pain with pressure before the injection and at the end of 4th weeks and 6th months after the injection ($p > 0.05$) (Table I).

TABLE I: The comparison of Betamethasone Sodium Phosphate Acetate(BSPA)and Triamcinolone Acetonide(TA) and Methylprednisolone Acetate(MPA) in terms of pressure pain and spontaneous pain at pretreatment, 4. weeks and 6.months after treatment.

Solution	Pressure Pain			Spontaneous Pain		
	BSPA(%)	TA(%)	P value	BSPA(%)	TA(%)	P value
Pretreatment	100	100	p>0.05	48	70	p>0.05
4. weeks	60	55	p>0.05	20	10	p>0.05
6.months	84	100	p>0.05	40	50	p>0.05

Solution	MPA(%)			TA(%)		
	MPA(%)	TA(%)	P value	MPA(%)	TA(%)	P value
Pretreatment	100	100	p>0.05	56	70	p>0.05
4. weeks	52	55	p>0.05	20	10	p>0.05
6.months	92	100	p>0.05	50	50	p>0.05

Solution	MPA(%)			BSPA(%)		
	MPA(%)	BSPA(%)	P value	MPA(%)	BSPA(%)	P value
Pretreatment	100	100	p>0.05	56	48	p>0.05
4. weeks	52	60	p>0.05	20	20	p>0.05
6.months	92	84	p>0.05	50	40	p>0.05

P>0.05 statistically insignificant



Figure II : The mean scores on the visual analog scale for the intensity of pain

MPA: Methylprednisolone Acetate

TA : Triamcinolone Acetonide

BSPA: Betamethasone Sodium Phosphate Acetate

C: Control group

DISCUSSION

M.brachioradialis, M.extensor carpi radialis longus and brevis and supinator muscles which are wrist extensors take origin from lateral epicondyle and lateral supracondylar ridge.The tendoperiostities (enthesopathies) of these muscle tendons are

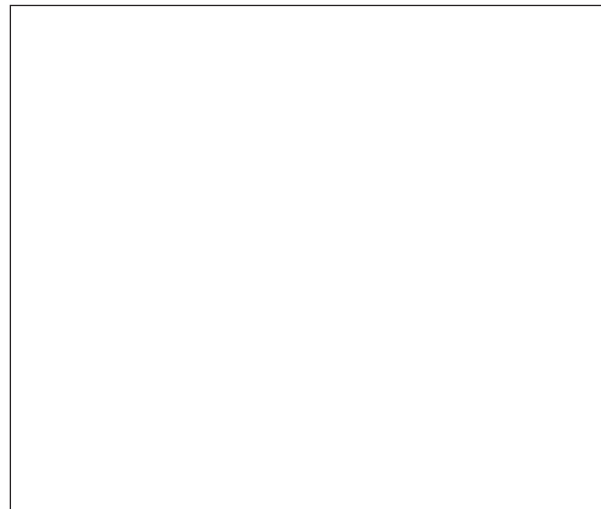


Figure I : The main pain phase score of four groups in terms of pre-treatment, posttreatment 4 weeks and 6 months spontaneous pain existence.

MPA: Methylprednisolone Acetate

TA : Triamcinolone Acetonide

BSPA: Betamethasone Sodium Phosphate Acetate

C: Control group

known as lateral epicondylitis(3). This process causes secondary inflammatory reactions such as fibrillary degeneration of collagen, angiofibroblastic hiperplasia at the origin of muscle mass,microfragmentation or laceration of tendons, vascular granulation tissue collection and necrosis (1,3).

The nonoperative methods used in the treatment of lateral epicondylitis (tennis elbow) , characterised by degenerative changes in wrist extensors and supinator muscle group origins , are rest, the administration of non-steroidal antiinflammatory drugs , physical therapy and local steroid injection (1,2). Although local injection applications reduces the pain with lateral epicondylitis in short term (2,3,5,6,8,9) it's long term effects are controversial (7,11,12). Hay and his colleagues have compared clinical effectiveness of local corticosteroid injection, standart non-steroidal anti-inflammatory drugs and simple analgesics for early treatment of lateral epicondylitis in primary care. He stated that early local corticosteroid injection is effective for lateral epicondylitis (9).

Some authors suggest that frequent intratendinous injections may cause to tendon atrophy or its actual dissolution, and thus should be used cautiously. Nevertheless, it is stated that injection just below the muscle origin may immediately reduce the

pain (2,7). In a study carried out by Stahl and his colleagues, they treated patients with medial epicondylitis with methylprednisolone injection (experimental group), local saline solution injection (control group), 6 weeks after the injection there was a significant reduction of pain in experimental group, but at the end of three months and one year no pain difference between the two groups could be found (7). Conrad and his colleagues (3) have got better results by injection hydrocortisone acetate, Clarke and his colleagues have got better results by injection methylprednisolone or hydrocortisone to patients suffering from lateral epicondylitis (4). On the other hand, Newcomer and his colleagues suggested that local corticosteroid injection does not provide a clinically significant improvement in the treatment of lateral epicondylitis (10).

Pain is the major indication for operative treatment whenever nonoperative treatment has failed (13). Therefore, the evaluation of intensity of pain and pain phase score was done to estimate the beneficial effects of the treatment steroid injection.

Four weeks after application, observation of a significant reduction of pain in all 3 groups suggested that in steroid injections, the steroid had a useful effect against secondary inflammatory reaction occurring with lateral epicondylitis. However further evaluation after 6 months showed that the pain was not different from that of pretreatment, which indicated the steroid had no effect on long term. Our results are in accordance with other trials (2,3,4,7,11). According to plasma elimination and biologic half-life periods, the drugs that we used are; the MPA is short, the TA medium and the BSPA is long term effective preparations.

It is stated that short and medium term corticosteroids have strong preventive effect against inflammation. Fluorised preparations such as triamcinolone and betamethasone have strong metabolic effect. However as the pharmacodynamic effects are the same for all such preparations, it is not possible to make any differentiation among them regarding their indications and clinic effects (14). In our study, different plasma half-elimination levels existing among 3 preparations we had used had not caused any change in clinical effect duration. There were no difference between 3 agents for treatment results at 4 weeks and 6 months.

As a result, to treat lateral epicondylitis by local steroid injection reduces the pain in short duration only, but do not appear to have any changing effect on the final state.

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