ORIGINAL ARTICLE

Results of injection corticosteroids in treatment of De Quervain's Tenosynovitis

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Abstract

Background: De Quervain's tenosynovitis is defined as stenosing tenosynovitis of the synovial sheath of tendons of abductor polices longus and extensor pollicis brevis in the first compartment of wrist due to repetitive use.

Objective: To assess the results of injecting corticosteroids injections for De Quervain's tenosynovitis.

Material and Methods: 80 patients with disease were included in this study. All had a mean of 5.87 weeks of treatment of the condition with NSAIDs and had shown no response. Using Visual analogue scale the severity of tenderness on first dorsal compartment and pain felt on Finkelstein test was recorded. A mixture of 1 ml (40mg) of methylprednisolone acetate and 1 ml of 2% lignocaine hydrochloride was injected in first dorsal compartment of involved wrist. Patients were followed for 28 weeks on monthly basis. Outcome measure was reduction in pain and tenderness on the radial side of wrist and negative Finkelstein test subsequent to injection.

Results: 65% patients after 1st injection were symptoms free at two weeks, 35% patients were given second injection two weeks after the first. 80% patients at four weeks, 95% patients at six weeks and 98.75% patients were symptom free at 12th week. One patient underwent surgical release. The adverse reaction of steroid was seen in 25% of patients, which were subsided in 20 weeks.

Conclusion: We conclude that two or three local steroid injections in the first dorsal compartment lead to significant improvement in patients with de Quervain's tenosynovitis.

Keywords: De Quervain's, Tenosynovitis, Methylprednisolone acetate, lignocaine hydrochloride.

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Introduction

De Quervain's tenosynovitis is defined as stenosing tenosynovitis of the synovial sheath of tendons of abductor polices longus and extensor pollicis brevis in the first compartment of wrist due to repetitive use.[1] In United Kingdom its prevalence is 0.5% in men and 1.3 % in women.[2] The name De Quervain's tenosynovitis given is after the name of SwisssurgeonFritz de Quervainwho mentioned it in 1895 for the first time and reported five case and later eight cases in 1912.[3] The first article on de Quervain's was published in American literature in 1989 by Hoffmann who was a surgeon.[4] The condition De Quervain's disease is referred for the first time in an article which was read at the New England Surgical SOCIETY in 1936 by the surgeon Patterson at Bridgeport Hospital.[5] In distal upper limb deformity the most second common entrapment tendinitis is de Quervain's and the most common is trigger digit, although it occurs 20 times less as to that trigger digit.[6]

The condition can easily be diagnosed by history and clinical examination. Patient presents with pain at the site of radial styloid, and clinical examination reveals tenderness in almost all the cases and local swelling in some cases. Finkelstein's test is positive in typical cases.[7] The Finkelstein's test is performed by asking the patient to clench the fist with thumb inside and by ulnar deviation of the hand at the same time. Patient with De Quervain's tenosynovitis feels pain at the affected site.[8]

There is no consensus in the management of the disease and the treatment modalities like rest massage, cold and heat application, diathermy and splints are not effective in the disease.[9,10] However the non-surgical treatment like bracing, physical therapy, thumb Spica and local corticosteroids injections are most effective. Surgical treatment includes surgical release of the first dorsal compartment of the wrist (excising or dividing the strip of the covering sheet of the tendon).[11] Surgical release has been reported to be curative in 91% of patients, but it has been associated with higher costs and sometimes-surgical complications.[12]

The purpose of this study is to know the results of injecting corticosteroids injections for De Quervain's tenosynovitis.

Material and Methods

This prospective study was conducted at Department of

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Orthopedic Surgery and Traumatology, Unit-I, Mayo Hospital, during the period from January 2011 March 2014. A total of 80 patients were registered in the study. All patients previously had a mean of six weeks (range 4-8 weeks) of treatment of the disease with oral and local NSAIDs and had shown no response and were not satisfied with treatment. On physical examination the area around the radial styloid (first dorsal compartment of wrist) was tender, and the Finkelstein test was positive in all patients. The severity of pain was noted on Visual analogue scale, (VAS 0-10), with zero no pain, one to three as mild, and four to six as moderate and seven to 10 as severe pain. The exclusion criteria were age less than 18 years, evidence of diseases like rheumatoid arthritis, gout, carcinoma, pregnancy and previous history of trauma.

Injection Technique

One ml (40mg) of methylprednisolone acetate and 1 ml of 2% lignocaine hydrochloride was taken and mixed in 5 cc syringe. The area of tenderness was confirmed before injection. The needle was passed in the first extensor compartment of wrist, directing proximally towards the styloid process of radius and parallel to the abductor polices longus and extensor polices bravis tendons. Stretching of the synovial sheath by volume effect was observed. For early clinical response each patient examined two weeks after the injection, and then followed monthly for 28 weeks. Treatment efficacy was measured by assessing reduction in severity of pain and tenderness on the radial side of wrist, negative Finkelstein test and patient satisfaction. Primary outcome measures were pain relief and negative Finkelstein test. Secondary outcome measures were persistent pain and tenderness, skin depigmentation and positive Finkelstein test.

Results

The data was analyzed by SPSS version 20.0 and one sample t-test was applied (Table-1). Out of a total of 80 patients, 24(30%) were men and 56(70%) were women. The age ranged between 20 to 40 years. (Mean age 29.32 Years SD ±6.099). The right hand was affected in 48 (60%) and left in 32 (40%) patients. The mean duration from the onset of symptoms to enrolment for this study was 5.87 weeks (range 4 weeks to 8 weeks SD ±0.527). At the start of study the severity of pain on 10cm VAS was recorded. 32 patients had VAS score eight, 25 patients had six and 23 patients had four. Out of 80, 28 (35%) patients were given second injection two weeks after first as they claimed no

Table-1: T-test, one-sample test.

	Test Value = 0					
					95% Confidence Interval of the Difference	
	t	Df	Sig. (2tailed)	Mean Difference	Lower	Upper
Age	42.999	79	0.000	29.32500	27.9675	30.6825
Gender	29.271	79	0.000	1.72500	1.6077	1.8423
Duration of symptoms: Duration of symptoms: 4-8 Weeks	37.790	79	0.000	5.87500	5.5656	6.1844
Pain score at start VAS: 1-10	33.676	79	0.000	6.22500	5.8571	6.5929
Pain score at 4 weeks 64/80	25.157	79	0.000	1.35000	1.2432	1.4568
Adverse reactions 25/80	18.724	79	0.000	2.06250	1.8432	2.2818

Table-2: Statistical analysis.

		Age	Gender	Duration symptoms: Weeks 4-8	Pain score at start VAS: 1-10	Pain score at 4 weeks 65/80	Adverse reactions 25/80
N	Valid	80	80	80	80	80	80
	Missing	0	0	0	0	0	0
Mean		29.3250	1.7250	1.7250	6.2250	1.3500	2.0625
Std. Error of Mean		0.68200	0.05893	0.05893	0.18485	0.05366	0.11015
Median		29.0000	2.0000	2.0000	6.0000	1.0000	2.0000
Mode		24.00	2.00	2.00	8.00	1.00	2.00
Std. Deviation		6.09996	.52711	0.52711	1.65334	.47998	0.98526
Variance		37.209	.278	0.278	2.734	.230	0.971
Range		20.00	3.00	3.00	4.00	1.00	3.00
Minimum		20.00	1.00	1.00	4.00	1.00	1.00
Maximum		40.00	4.00	4.00	8.00	2.00	4.00

response 52 patients (65%) were symptoms free after single injection. The patients were called every two weeks after the injections. At four weeks, 64 (80%) out of 80 patients were symptoms free and completely satisfied with treatment with zero VAS (Table-2). The remaining 16 patients had positive tenderness at first dorsal compartment of wrist and positive Finklestein test. At six weeks 76 patients (95%) were symptoms free and fully satisfied with the results.

The remaining four patients were given a third injection as they still claimed no response. Out of which three patients were symptom free by the end of 12th week, and one patient underwent surgical treatment. We found no recurrence in this series of patients after 28 weeks of follow-up. The adverse reaction of steroid although seen in 25/80 (31%) of patients but were transient. Temporary pain at the site of injection was reported by 36/80 (45%) patients, which subsided in four to 10 days. Local area of de pigmentation was seen in 08 patients and atrophy of subcutaneous fat was seen in 15 patients. These changes reversed in 20 weeks' time. There was no incidence of nerve injury tendon rupture or infection.

Discussion

In our study 70% of patients were female; the mean age of all patients was 29.6 years. Mehdinasab SA, Ale Mohammad SA in their study reported 86.3% female patients, with mean age of all patients 32.6 years.[9] Gulzar Saeed Ahmed, Imtiaz Ahmed Tago, Asadullah Makhdoom in their study reported all the 50 patients at six weeks were symptoms free and fully satisfied with the therapy. All the 50 patients were followed for 24 weeks and no recurrence was found. The adverse reaction of steroid was seen in 18/50 (36%) of patients, which were subsided in 20 weeks. There was no incidence of nerve injury, tendon rupture, or infection.[13]

All the patients presented to us initially tried different modalities of treatment like NASID's rest and casting, but local injection of corticosteroids is now accepted as it has high levels of success which is reported previously in many studies. Richie and Eriner concluded that local steroid injection is effective in 83% of patients. 61% of the patients receiving injection and splint were cured while 14% of patients with splints only and was 0% for the patients who were taking only NSAID's and rest. Injection corticosteroids was found to be the most effective and successful treatment for this disease. In their analysis it was noticed that 327 wrists were injected and followed up for 9.6 months and no tendon rupture was found.[14] Avciet al claimed 100% success rate.[15] Takuya Sawaizumi, (2007) claimed 94% success rate in their study in which they locally injected Triamcinolone for patients with De Quervain's disease. He concluded 90% of patients were fully satisfied, relapse was seen in 26% of patients, and complications were seen in 32 %.[16] McDermott JD et al, reported in 2012 that at a follow up of 6 weeks no complications were noted and 36 of the 37 wrist checked in 36 patients (97%) had relapse of symptoms. However 14 % of wrist had recurrence of symptoms.[17] This is in contrast to this study where we observed different complications in 25% of cases, this may be due to the comparatively prolong follow-up of 28 weeks in contrast to study of McDermott JD et al, where it was 6 weeks only.

In our study, 65% of patients were symptom free two weeks after intervention, 80% after four weeks and 95% were free of symptoms at six weeks after intervention and 99% by the end of 12 weeks. There were no recurrences at 28 weeks. This shows that the effect of methylprednisolone acetate may persist for 4 to 6 weeks. It is believed that anti-inflammatory effects of this drug persist for two to four weeks.[18] The adverse events in our study were seen in 25/80 (25%) of patients. out of these 18 patients recovered from transient pain at injection site within 10 days. In Remaining 7 patients with skin de pigmentation (4 patients) and atrophy of subcutaneous fat (3 patients) the changes reversed in 20 weeks' time. Steroid injections may have adverse side effects e.g. pain at the injection site and skin hypo pigmentation. These effects are transient. It is recommended that before starting the treatment the patients should be informed about these side effects.[19,20]

The limitation of our study is a short term follows up. No recurrence was detected in 6 months of follow up. We believe that a future study will be needed on this subject.

Conclusion

We conclude that injecting local corticosteroids once twice or thrice in the 1st dorsal compartment results in early improvement in de Quervain's tenosynovitis patients

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Conflict of Interest

The authors have no conflict of interest to declare.

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