Original Article

Outcome of Corticosteroid Injection in De Quervain's Tenosynovitis

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ABSTRACT

BACKGROUND: De Quervain's tenosynovitis is a stenosing tenosynovitis of the first dorsal compartment of the wrist. The diagnosis is made by history and physical examination. Finkelstein's test is positive in typical cases.

OBJECTIVE: To assess the clinical effect of local corticosteroid injections for de Quervain's tenosynovitis.

MATERIAL & METHODS: Fifty De Querven's Tenosynovitis patients were included in the study. All had a mean of 6 weeks of treatment of the condition with oral and local NSAIDs and had shown no response. The severity of tenderness on first dorsal compartment and pain felt on Finkelstein test was recorded on Visual analogue scale. A mixture of 1 ml (10mg) of triamcinolone acetonide and 1 ml of 1% lidocain hydrochloride was injected in first dorsal compartment of involved wrist. Patients were followed for clinical assessment fortnightly for 24 weeks. Outcome measure was reduction in pain and tenderness on the radial side of wrist and negative Finkelstein test subsequent to local triamcinolone acetonide injection.

RESULTS: Out of 50, thirty-five patients (70%) after 1st injection were symptoms free at two weeks, fifteen patients who showed no improvement were given second injection two weeks after the first. 42(84%) patients at four weeks, and all 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.

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

KEY WORDS: De Quervain's, Triamcinolon, local steroid.

INTRODUCTION

De Quervain's tenosynovitis is a stenosing tenosynovitis of the first dorsal compartment of the wrist, caused by impaired gliding of the abductor pollicis longus and extensor pollicis brevis tendons. The condition is probably caused by thickening of the ligamentous structures covering the tendons of the first dorsal compartment of the wrist.[1, 2] The term stenosing tenosynovitis is commonly used for the condition but the microscopic appearance, is consistent with degeneration. The degeneration is myxoid and fibrocartilagenous in type. The accumulation of mucopolysaccharide is also seen.[3] The prevalence of the condition in United Kingdom is reported around 0.5% in men and 1.3% in women.[4] The history and clinical examination can easily diagnose the condition. Patient reports with pain at the site of radial styloid, clinical examination reveals local tenderness, and local swelling in some cases. Finkelstein's test is positive in typical cases.[5] The Finkelstein test is performed by asking the patient to clench the fist with the thumb inside and at the same time deviating the hand towards the ulnar side. Patient feels pain at the affected site in De Quervain's disease.[6]

There is no consensus in the management of this condition.[7] It has been reported that treatment modalities like, rest massage, cold and heat applications, diathermy, splints and counter irritants, are not effective in this condition.[8] Non surgical treatment, consisting of local corticosteroid injections, bracing, physical therapy, and thumb spica cast, is mostly rewarding. In resistant cases, surgery is performed to release of the first dorsal compartment of the wrist.[9] Surgery (dividing or excising a strip of the covering sheet of tendon) has been reported to be curative in 91% of patients, but it has been associated with higher costs and sometimes-surgical complications.[10]

Objective of this study is therefore to assess outcome of local corticosteroid injections for de Quervain's tenosynovitis.

MATERIAL AND METHODS

This prospective study was conducted at Liaquat University Hospital and a private practice setup during the

period from January 2010 to December 2011. A total of 55 patients (55 hands) were registered in the study. Five patients lost on follow up and data of 50 patients was available for analysis. All patients previously had a mean of 6 weeks (range 4-8 weeks) of treatment of the condition with oral and local NSAIDs and had shown no response and were therefore not satisfied with treatment. On physical examination the area at and 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 0 no pain, 1 to 3 as mild, 4to 6 as moderate and 7 to 10 as severe pain.

The exclusion criteria were age less than 18 years, evidence of diseases like rheumatoid arthritis, gout, diabetes mellitus, and pregnancy and previous history of trauma and steroid injection in the region.

Injection technique: One ml (10mg) of triamcinolone acetonide and 1 ml of 1% lidocain hydrochloride was taken and mixed in 5 cc syringe with 24 or 26 gauge needles. 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. Patients were allowed to take tablet Paracetamol for pain, when needed. For early clinical response each patient examined two weeks after the injection, and then followed fortnightly for 24 weeks. Treatment efficacy was measured by assessing reduction in severity of pain and tenderness on the radial side of wrist and negative Finkelstein test. Primary outcome measures were pain relief and negative Finkelstein test. Secondary outcome measures were persistent pain and tenderness, skin de pigmentation and positive Finkelstein test.

RESULTS

The data was analyzed by SPSS version 17.0 and one sample t-test was applied **(Table I)**. Out of a total of 50 patients, 15(30%) were men and 35(70%) were women. The age ranged between 25 to 60 years. (Mean age 36.6Years). The right hand was affected in 34 (68%) and left in 16 (32%) patients. The dominant hand was affected in 32 (64%) patients. The mean duration from the onset of symptoms to enrolment for this study was 6 weeks (range 4 weeks to 8 weeks).

At the start of study the severity of pain on 10cm VAS was recorded. Twenty-three had VAS score 8, fifteen patients had 6 and twelve patients had 4. Out of 50, fifteen patients were given second injection two weeks after first as they claimed no response**.** Thirty-five patients (70%) were symptoms free after single injection. The patients were called every two weeks after the injections.

At four weeks, 42(84%) out of 50 patients were symptoms free and completely satisfied with treatment with zero VAS **(Table II)**. The remaining 8 patients had positive tenderness at first dorsal compartment of wrist and positive Finklestein test (severity of pain, VAN 6 in 3 and VAN 3 in 5 patients). At six weeks all patients were symptoms free and fully satisfied with the results. We found no recurrence in this series of patients after 24 weeks of follow-up.

The adverse reaction of steroid although seen in 18/50 (36%) of patients but were transient. Temporary pain at the site of injection was reported by 13 (26%) patients, which subsided in 4 to 10 days. Local area of de pigmentation was seen in 3 patients and atrophy of subcutaneous fat was seen in 2 patients. These changes reversed in 20 weeks time. There was no incidence of nerve injury tendon rupture or infection.

TABLE I: T- TEST, ONE-SAMPLE TEST

	Test Value = 0					
	t	Df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Age	20.841	49	.000	36.600	33.07	40.13
Duration of symptoms: Duration of symptoms: 4-8 Weeks	29.698	49	.000	6.000	5.59	6.41
Pain score at start VAS: 1-10	27.923	49	.000	6.440	5.98	6.90
Pain score at 4 weeks 8/50 (16%)	2.852	49	.006	.660	.19	1.13
Adverse reactions 18/50	4.481	49	.000	.500	.28	.72

TABLE II: STATISTICS

		Age	Duration of symptoms: Duration of symptoms: 4-8 Weeks	Pain score at start VAS: 1-10	Pain score at 4 weeks 8/50 (16%)	Pain score at 6 weeks 0/50	Adverse reactions 18/50
N	Valid	50	50	50	50	50	
	Missing	1	1	1	1	1	
Mean		36.60	6.00	6.44	.66	.00	.50
Std. Error of Mean		1.756	.202	.231	.231	.000	.112
Median		30.00	6.00	6.00	.00	.00	.00
Mode		25	4(a)	8	0	0	0
Std. Deviation		12.418	1.429	1.631	1.636	.000	.789
Minimum		25	4	4	0	0	0
Maximum		60	8	8	6	0	3

DISCUSSION

In our study 70% of patients were female; the mean age of all patients was 36.6 years. Mehdinasab SA, Alemohammad SA[7] in their study reported 86.3% female patients, with mean age of all patients 32.6 years.

All of our patients had previously tried other form of treatment (rest and oral NSAID's). Topical Local steroid injection in now accepted as standard treatment for DeQurvain ds. High level of success has been reported for local steroid injection in various studies.

Richie and Eriner reviewed seven papers and concluded that local steroid injection is effective in 83% of patients. This cure rate was 61%for patients receiving injection and splint, and 14% for patients with splint only and it was 0% for those receiving rest or non-steroid anti-inflammatory drugs. It was found to be the most effective and successful treatment for this condition. In their analysis it was noticed that 327 wrists were injected and followed up for 9.6 months and no tendon rupture was found.[11] Avciet al claimed 100% success rate.[12]Takuya Sawaizumi,(2007) performed local injections of Triamcinolone for patients with De Quervain's disease, and they claimed 94% success rate. 90% of patients were fully satisfied, relapse was seen in 26% of patients, and complications were seen in 32%.[13] In this study all patients were satisfied up to 24 weeks follow-up, and we observed no recurrence.

McDermott JD et al, (2012) reported that at 6-week follow-up, 36 of the 37 wrists checked in 36 patients (97%) had relapse of symptoms. However 14% of wrists had recurrence of symptoms. No complications were noted.[14] This is in contrast to this study where we observed different complications in 36% of cases, this may be due to the comparatively prolong follow-up of 24 weeks in contrast to study of McDermott JD et al, where it was 6 weeks only.

Peters-Veluthamaningal C et al, compared single steroid injection with splinting with thumb spica in 18 pregnant or lactating ladies. The patients were randomized in two groups of 9 patients each. They reported that all the patients in steroid group had complete pain relief within one week on intervention, while no patient in spica group had relief. No complications were detected.[15]

In our study, 70% of patients were symptom free two weeks after intervention, 84% after four weeks and 100% were free of symptoms at six weeks after intervention. There were no recurrences at 24 weeks. This shows that the effect of triamcinolone may persist for 4 to 6 weeks. It has been reported that triamcinolone is a lyophobic steroid and its absorption by the tissues is slower than other steroids and it remains in the sheath for long time. It is believed that anti inflammatory effects of this drug persist for two to four weeks.[16]

The adverse events in our study were seen in 18/50 (36%) of patients. out of these 13 patients recovered from transient pain at injection site within 10 days. In Remaining 5 patients with skin de pigmentation (3 patients) and atrophy of subcutaneous fat (2 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.[17,18,].

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 one or two local steroid injections in the first dorsal compartment leads to early improvement in patients with de Quervain's tenosynovitis.

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