

Platelet-rich plasma as a treatment for DE Quervain's Disease

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ABSTRACT:

platelet-rich-plasma is increasingly used in De Quervain's Disease. This study show the clinical outcomes of a single PRP injections.my study was done between Dec. 2015 and Oct. 2016, thirty patient receive single injection of platelet-rich –plasma All patients underwent prospective clinical evaluation, including visual analog scale (VAS) for pain for six month follow up .most of the patient (VAS) significantly improve from 5.9,to 2.0 ($p > 0.05$) after injection with platelet-rich –plasma .

PRP injections in De Quervain's Disease showed better improvement in outcomes .

Key words: PRP, De Quervain's Disease,injection;

Introduction

Fritz de Quervain first described De Quervain's tenosynovitis in 1895 .[1,2] De Quervain's disease is defined as soreing stenosing tenosynovitis of the first dorsal compartment of the hand.[3,4] It is generally caused by abuse or an increase in repetitive activity , resultant in crop microtrauma from monotonous gliding of the first dorsal compartment tendons (abductor pollicis longus or APL, and extensor pollicis brevis or EPB) under the sheath of the first compartment above the styloid of the radius causing to thickening of the extensor retinaculum of wrist.[2,3,5] .Influencing movements enclose powerful grasping with ulnar deviance or repetitive usage of the thumb (like sporty pursuits, such as golf , fly-fishing and row sports)[.3]

Patients frequently complaining of radial wrist discomfort with thumb activities and tenderness above the first dorsal compartment.[2–4]Diagnosis is typically concluded by a positive Finkelstein's exam (that result in a reproduction of the aching at the radial styloid), The reliability , validity, specificity and sensitivity of this test has not been reported,.[5–7] It has also been suggested that a patient must have pain four days out of seven.[8]

The incidence of De Quervain's is not well-known in primary care, but the prevalence that found in people of UK as

0.5 % of them is males and 1.3 % in females.[8] De Quervain's typically present in the fifth and sixth decades of life, and common in pregnant and lactating females.[4]

The general management process is as follows: conservative measures such as limiting usage of thumb, supports and intra-sheath steroid injections, and, if those procedures are unsuccessful, tendon sheath of the first dorsal compartment is surgically freed [9, 13]. usually surgery is often done without exhausting all these conservative treatments. Though there are new reports on the effectiveness of the intra-sheath injection of triamcinolone acetonide (TC), which is a long-acting and lyophobic steroid,to the patients complaining snapping digits [9, 11, 12], no comprehensive reports telling the clinical results of intra-sheath injection in the management of de Quervain's disease.

Methods

Our study was done at the Orthopaedic Department of al qadissyia teaching hospital , Iraq, This study was done between Dec. 2015 and Oct. 2016 . After approval from ethical committee thirty patients were included in study after screening & exclusion from diagnosed criteria .

The patients involved in the study were greater than twenty years, develop hurt with thumb movements that cause tenderness above the first dorsal compartment .

There are many kind of systems used to prepare the PRP . In our study we used the Ycellbio prp system . For PRP preparation, 20 mL venous blood was drawn from the antecubital vein using an aseptic technique and mixed with the anticoagulant citrate phosphate dextrose adenine (CPDA-1) 1.5 cc. The blood was then placed into the PRP kit and centrifuged for 4 minutes at 3,400 rpm to separate it into platelet-poor plasma, red cells , and PRP. After blood was collected , 1.5 -2 mL PRP was made and used for injection. A sterile field was set up and ensure throughout the procedure. Depending upon the clinical examination the injection inserted into one point nearly above the indurated tendon sheath in the first dorsal compartment of the wrist. which was before confirmed with clinical examination.

To all patient used a povidone iodine dressing at the injection site after the procedure . Patient was watched for 15 minute , at that time they discharged with advice to takings the rest in next 24 hour. The patient advised not takings an anti-inflammatory pain-relieving drugs .The paracetamol was the only painkiller which was given . all patients assessed with VAS score earlier the procedure & later one, three & six months interval.

Results

The results evaluated on the basis of VAS score. We asked the patients to degree their results dependent on the scoring scheme of VAS (Tables 1).The patient follow up complete at one month, three & six months. All Patients asked about the pain by VAS score. All patients examined for existence of any complication of the injection site like infection, loss of function and existence of stiffness and tendon rupture. In our study no one of patient develop complication like mentioned above.

After one month of treatment VAS score significantly ($p < 0.001$) in PRP therapy

(Table 2). Those patients who are treated with PRP therapy VAS score decreases at three months and remnants constant until six months. At one, three and six months those who are on PRP therapy VAS score remnants considerably lesser than befor the treatment.

Discussion

These findings are consistent with previous prospective studies that demonstrate benefits conferred by intratendinous PRP insertional tendinopathies . [14] and provides satisfactory results in young subjects recalcitrant non-insertional tendinopathy reducing pain and improving function [15]. And These findings also are in agreement with previous literature data in patients suffering from Achilles, patellar, and elbow tendinopathies .

the PRP treatment should be adapted as a best of therapy for relief symptoms . Though this must be advised merely next other type of nonsurgical treatment failed because lower involvement of tools/technologies & fewer contact to blood products in other type of therapies .[16,17,18,19]

The main findings of this study are that PRP injection resulted in better pain control and the improvement in functional outcome was stable and maintained up to a mid-term follow-up.

It is current opinion that the therapeutic activity of PRP is mainly due to the release of many growth factors (GFs) , which can act on many aspects of tendon repair, including angiogenesis , chemotaxis, and cell proliferation by activating intracellular signal-transduction pathways . [18,19]

In the short term (1–3 months) effect , GFs can directly stimulate tenocytes to produce extracellular matrix, and promote neofibrils formation and remodeling . Insulinlike GF-1 stimulates production of collagen.[19]

in long-term (6 – 12 months), depend on a direct stimulation, probably relies on the

activation of resident tendon stem/progenitor cells (TSPCs), which have been recently identified in tendons tissue from different animal species. Like stem cells found in adult tissues, TSPCs are believed to be the source of recent differentiated tenocytes, responsible for maintaining adequate tenocyte numbers in the tissue throughout life and replenishing them after injury.[20]

Regarding the amount of injection, although smaller volume (2-3 ml) of PRP was injected in present study or even 1.5 ml such as in previous study, the proportion of spread beyond tendon was little. so the amount of PRP is even 1.5 ml is adequate to achieve good result. on the other hand the greater volume of PRP could be an option. However, large volume can lead to further diffusion and require much more blood collection, which is undesirable.

In our study, we not used ultrasonographic injection technique and the accuracy of injection was not to be guaranteed. Therefore we increase the volume of injection up to 3 ml so we can get maximum distribution of PRP in the area of maximal tenderness, in comprising with ultrasound injection which use 1.5 ml.

Other therapies modalities want few expertise in contrast to injection PRP therapy. all staff should be good trained to make PRP from blood while these is not required in steroid injections or others.

Corticosteroid injections have also been used extensively for this problem, but studies showed that there is controversy about their efficacy.[22]

There is essential of long time trials to found PRP as a best of treatment for long term permanent heal from tendinitis due to mechanical causes.

the study was limited by a minor sample size and absence of a control group. Larger-scale randomized controlled studies are required to assistance elucidate PRP as a good management for this musculoskeletal injury.

Conclusions

Although it is an invasive method, it has a lot of advantages in that. It is less time consuming and has an autologous nature with easy application. We believe that PRP injection should be offered to all patients with De Quervain's disease after failure of other conservative treatment. Further comparative studies with other type of injection or surgery are required to evaluate the long-term outcomes.

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Table 1 : VAS pain score in patients with PRP therapy .

VAS score before prp therapy	VAS score at one month	VAS score at three month	VAS score at six month
7	2	2	1
7	2	3	1
6	1	1	1
7	1	1	1
7	1	1	1
6	2	3	1
5	2	2	2
6	2	2	2
7	2	2	2
5	1	1	1
6	2	2	2
7	2	1	1
7	1	1	1
5	2	2	3
6	2	2	3
5	3	2	2
7	2	2	2
6	1	2	2
5	2	2	2
6	2	2	2
7	1	1	1
7	3	3	3
8	3	3	3
7	3	3	3
5	1	1	1
7	3	3	3
6	1	1	1
7	1	2	2
5	2	1	2
6	3	2	2

Table 2 VAS score before and after treatment with PRP

	Before treatment Mean (SD)	10 Month after treatment Mean (SD)	30 Months after treatment Mean (SD)	60 Months after treatment Mean (SD)
PRP therapy (n ¼ 30)	5.92 (0.76x)	2.11 (1.0x)	2.01 (0.45x)	2.01 (0.452)