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

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Abstract

Introduction: Platelet-rich-plasma is increasingly used in De Quervain's Disease.

Purpose: This study show the clinical outcomes of a single PRP injection in de quervain's disease.

Methods: Study was done between Dec. 2018 and march. 2020, fifty patient received single injection of platelet-rich –plasma .All patients underwent prospective clinical evaluation, including visual analog scale (VAS) for pain for six month follow up.

Results: In most of the patients VAS significantly improved from 6.4 to 1.8 ($p > 0.05$) 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

De Quervain's tenosynovitis is caused by stenosis of the extensor pollicis brevis and abductor pollicis longus tendons within the first extensor compartment. It is generally caused by abuse or an increase in repetitive activity, resultant in 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[1,2,3] Influencing movements enclose powerful grasping with ulnar deviance or repetitive usage of the thumb (sports such as golf, fly-fishing and row sports[2] 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[3,4,5] Nonoperative treatment options include thumb spica splinting, nonsteroidal anti-inflammatory drugs (NSAIDs), therapy exercises, and corticosteroid injections into the first dorsal compartment.[6] Surgical release is the definitive treatment when nonoperative treatment fails. Despite the high prevalence of de Quervain's tenosynovitis, the literature describing the effectiveness of nonoperative treatment in larger study cohorts is limited.[6] There has also been a case report of refractory de Quervain's tenosynovitis treated with an injection of platelet-rich plasma.[7] Due to the invasive nature of surgical treatment, and the associated longer recovery period and potential complications, use of noninvasive treatment such as steroid injection should be better studied to understand maximal benefit.

Methods

Our study was done at the Department of Orthopaedics GMC Srinagar, Jammu and Kashmir. This study was done between Dec. 2018 and March. 2020. After approval from ethical committee fifty patients were included in study after screening & exclusion from diagnosed criteria.

The patients included in the study were greater than twenty years, have pain with thumb movements and tenderness above the first dorsal compartment with positive Finkelstein test.

There are many systems used to prepare the PRP. In our study. 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) 1.51 cc. The blood was then placed into the PRP kit and centrifuged for 43 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 ensured 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. povidone iodine dressing was done at the injection site after the procedurec. Patient was kept under observation for about an hour, and then discharged with advice to give rest to the part for 24 hours.. All patients were assessed with VAS score before the procedure, at 3 weeks & three month interval.

Results

The results were evaluated on the basis of VAS score. We asked the patients to grade their results dependent on the scoring scheme of VAS (Table 1).The patient follow up complete at one month, three & six months.. All patients were examined for any complication at the injection site like infection, loss of function, stiffness and tendon rupture. In our study no one of patient developed complication like mentioned above. After one month of treatment VAS score decreased significantly ($p < 0.0012$) in PRP therapy.VAS score also decreased at three months and remained constant until six months. At one, three and six months those who were on PRP therapy VAS score remained considerably lesser than before the treatment.

Variables

Total No of Patients	Male/Female	Average Age
50	14/36	42.6

Table 1

VAS before PRP Therapy	VAS after 3 weeks (Average)	VAS after 12 weeks (Average)	VAS after 6 months (Average)
6.4	2.3	1.8	2.6

Discussion

These findings are consistent with previous prospective studies that demonstrate benefits conferred by intratendinous PRP insertional tendinopathies.[8] and provides satisfactory results in young subjects recalcitrant non-insertional tendinopathy reducing pain and improving function[9]. 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 of symptoms.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 (GFsx), which can act on many aspects of tendon repair, including angiogenesis, chemotaxis, and cell proliferation by activating intracellular signal-transduction pathways .[10,11]

In the short sterm (1–3 months) effect , GFs can directly stimulate tenocytes to produce extracellular matrix, and promote neofibrils formation and remodeling. Insulin like GF-12 stimulates production of collagen.[11] In long-term (6– 12 months), depends 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. Corticosteroid injections have also been used extensively for this problem, but studies showed that there is controversy about their efficacy.[12]

There is need of long term trials to find PRP as a best of treatment for long term permanent healing of 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 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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