National Journal of Clinical Orthopaedics

ISSN (P): 2521-3466
ISSN (E): 2521-3474

www.orthoresearchjournal.com
2022; 6(1): 31-34
Received: 22-11-2021
Accepted: 25-12-2021

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Role platelet rich plasma in supraspinatus tendinitis

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DOI: https://doi.org/10.33545/orthor.2022.v6.i1a.346

Abstract
Background: The shoulder complex is one of the most mobile joints in the human body allowing a great freedom of motion to the upper limb. The present study was conducted to assess the role platelet rich plasma in supraspinatus tendinitis.
Materials & Methods: 60 grade 1 and grade 2 patients of supraspinatus tendinopathy of both genders. Clinical symptoms, pain, side, history of trauma etc. was recorded. Patients were subjected to USG and MRI of the involved shoulder. PRP was prepared and 2-3 ml of PRP was injected with needle no 24 into site of tendon. Constant Murrey Score was evaluated at baseline, 1 month and 3 months follow up.
Results: Out of 60 patients, males were 43 and females were 17. Side was left in 10% and right in 90%. Etiology was traumatic in 24% and non- traumatic in 76%. Pain intensity was mild in 8%, moderate in 70% and severe in 22%. Investigation for diagnosis was USG in 90% and MRI in 10%. Constant Murrey Score at 0 month was 33.4, at 1 month was 27.5, at 3 months was 21.3, at 6 months was 22.7, at 12 months was 21.4 and at 18 months was 21.1. The difference was significant (P<0.05).
Conclusion: PRP can be considered as treatment modality for supraspinatus tendinitis.

Keywords: constant Murrey score, platelet rich plasma, supraspinatus tendinitis

Introduction
The shoulder complex is one of the most mobile joints in the human body allowing a great freedom of motion to the upper limb [1]. However, enhanced mobility comes at the cost of making joint stabilisers susceptible to injury in extremes of motion. Chronic shoulder pain and weakness is a common cause of a visit to physician's office with its prevalence being as high as 15.4% in men and 24.9% in women with a significant rise in pain and severity in population over 50 years [2]. Rotator cuff tendinopathies are believed to be the most common cause of shoulder pain syndromes with one cross-sectional study reporting that 86% of all clinical diagnoses of shoulder pain were that of rotator cuff lesions. Being responsible for 85% of the cases, rotator r cuff tendinopathy is considered the most common cause of shoulder pain and disability [3, 4]. Platelet-rich plasma (PRP) is a whole blood product containing great concentrations of platelets that release different kinds of growth mediators with restorative properties [5]. These platelet-derived growth factors include transforming growth factor (TGF-B), which is concentrated in collagen synthesis, and vascular endothelial growth factor (VEGF), which aids to induce endothelial cell multiplying and migration and stimulates cell mitosis [6]. The present study was conducted to assess the role platelet rich plasma in supraspinatus tendinitis.

Materials and Methods
The present study comprised of 60 grade 1 and grade 2 patients of supraspinatus tendinopathy of both genders. The consent was obtained from their patients. Data such as name, age, gender etc. was recorded. Clinical symptoms, pain, side, history of trauma etc. was recorded. Patients were subjected to USG and MRI of the involved shoulder. PRP was prepared and 2-3 ml of PRP was injected with needle no 24 into site of tendon. Constant Murrey Score was evaluated at baseline, 1 month and 3 months follow up. Data thus obtained were subjected to statistical analysis. P value < 0.05 was considered significant.

Results

Table 1: Distribution of patients

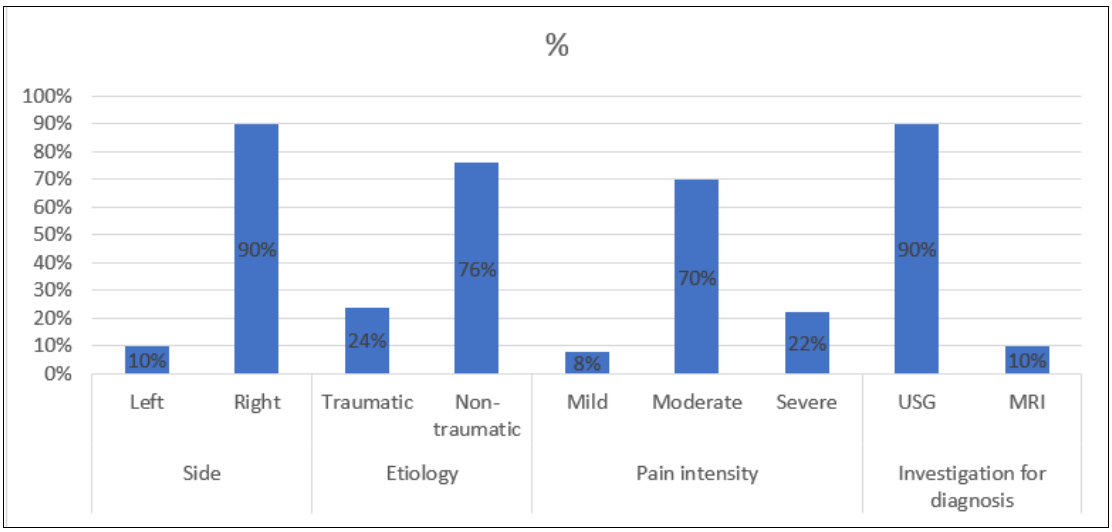
Total- 60		
Gender	**Male**	**Female**
Number	43	17

Table I shows that out of 60 patients, males were 43 and females were 17.

Table 2: Clinical presentation

Parameters	Variables	%	P value
Side	Left	10%	0.01
	Right	90%	
Etiology	Traumatic	24%	0.05
	Non- traumatic	76%	
Pain intensity	Mild	8%	0.04
	Moderate	70%	
	Severe	22%	
Investigation for diagnosis	USG	90%	0.01
	MRI	10%	

Table II, graph I shows side was left in 10% and right in 90%. Etiology was traumatic in 24% and non-traumatic in 76%. Pain intensity was mild in 8%, moderate in 70% and severe in 22%. Investigation for diagnosis was USG in 90% and MRI in 10%. The difference was significant (P<0.05).

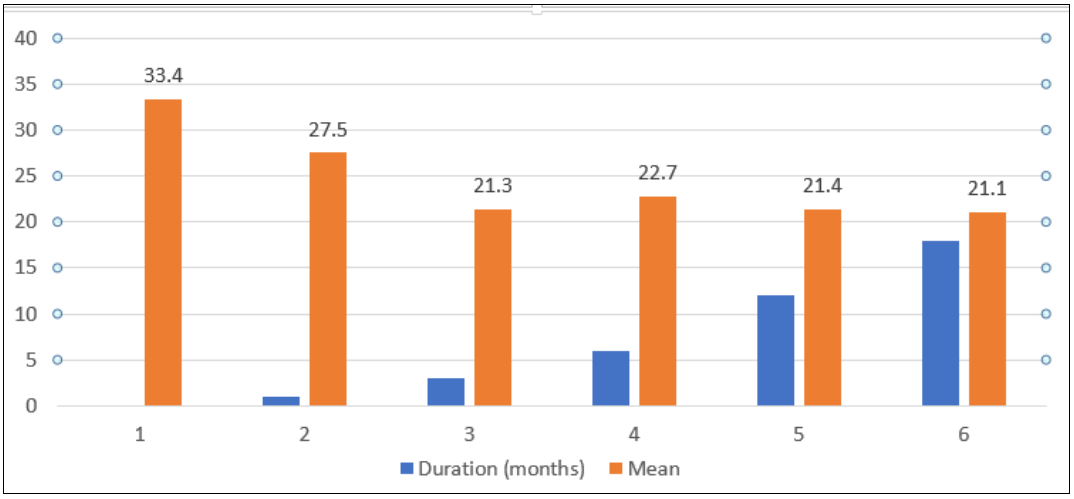


Graph 1: Clinical presentation

Table 3: Assessment of Constant Murrey Score

Duration (months)	Mean	P value
0	33.4	0.05
1	27.5	
3	21.3	
6	22.7	
12	21.4	
18	21.1	

Table III, graph II shows that Constant Murrey Score at 0 month was 33.4, at 1 month was 27.5, at 3 months was 21.3, at 6 months was 22.7, at 12 months was 21.4 and at 18 months was 21.1. The difference was significant (P<0.05).



Graph: 2 Assessment of Constant Murrey Score

Discussion

Rotator cuff tendinopathy has been considered a major cause of shoulder pain and disability that is increasing substantially with age affecting more than half of the general population by the age of 60 years [7, 8]. The supraspinatus muscle is the most commonly injured in rotator cuff tendinopathy, and most of the time, it is accompanied with another rotator cuff muscle tendinopathy [9]. The main risk factors for such cases include overweight, old age, repetitive lifting, or overhead activities [10]. Shoulder ultrasound plays a major role in the diagnosis of rotator cuff tendinopathy having the advantages of being readily available, highly sensitive, relatively inexpensive, and non-invasive. However, it has the disadvantages of being operator dependent and requiring standardized scanning technique [11]. The present study was conducted to assess the role platelet rich plasma in supraspinatus tendinitis. In present study, out of 60 patients, males were 43 and females were 17. Niazi *et al.* [12] assessed the effect of ultrasound-guided injection of platelet-rich plasma on patient symptoms and supraspinatus tendon thickness in cases of rotator cuff tendinopathy on 30 patients with age ranging between 27 and 54 years old. Following US-guided injection of PRP, patients were evaluated clinically using the Shoulder Pain and Disability Index (SPADI) scoring system and radiologically using ultrasonographic supraspinatus tendon thickness measurements at 4, 8, 12, and 24 weeks. Study showed remarkably noticeable changes when comparing the pre-injection and post-injection SPADI scoring system. There is highly statistically significant pain and disability score and percentage improvement, yet on the other hand, the radiological improvement shows no statistically significant difference found between baseline tendon thickness and its follow-up at 4, 8, and 12 weeks while only there was a statistically significant decrease in tendon thickness found at 24 weeks with P value = 0.043. The ultrasound-guided PRP injection for supraspinatus tendinopathy cases is a safe, cheap, and easily prepared outpatient procedure which showed competitive, promising, and well-proved results when compared to other modality outcomes such as conventional surgeries, arthroscopic procedures, and physiotherapy. We found that side was left in 10% and right in 90%. Etiology was traumatic in 24% and non- traumatic in 76%. Pain intensity was mild in 8%, moderate in 70% and severe in 22%. Investigation for diagnosis was USG in 90% and MRI in 10%. Khairi *et al.* [13] assessed the effect of PRP injection under musculoskeletal ultrasound (MSUS) guidance in patients with rotator cuff tendinopathy, and partial thickness tear in comparison with those who received a rehabilitation program only. Baseline assessment and after three months was done using clinical, functional and ultrasonographic evaluation. Methods: Our study included 60 patients with RCT diagnosed both clinically and by MSUS. Patients were divided into two groups (gI, gII); group I included 30 patients who received a Supervised Rehabilitation Program and group II included 30 patients who received PRP injection. Patients in both groups were assessed clinically, functionally [(VAS), (WORC) and (SPADI)] and sonographically at baseline and after 3 months. Rehabilitation Program included: hot packs, (TENS), and (therapeutic ultrasound). The Exercise Programs (supervised and home-based) were applied, including: (ROM, stretching and strengthening exercises of the rotator cuff and scapular muscles). Statistical analysis was made to 60 patients. Intragroup analysis showed statistical significant difference in both groups at follow up compared to baseline regarding clinical, functional and radiological data. Intergroup analysis showed more significant results in PRP group regarding clinical assessment, functional assessment (SPADI (PS, DS and total) and WORC scores (p<0.0001) and sonographic assessment in (subscapularis tendinopathy, supraspinatus tendinopathy, supraspinatus fibrillar tendon disruption and supraspinatus tendon thickness) (p<0.0001) and sonographic subacromial subdeltoid bursitis. We found that Constant Murrey Score at 0 month was 33.4, at 1 month was 27.5, at 3 months was 21.3, at 6 months was 22.7, at 12 months was 21.4 and at 18 months was 21.1. Mautner *et al.* [14] stated that PRP injections almost carry no risk of acquiring a transmitted blood-borne infection or causing any anaphylactic reaction. Randelli *et al.* [15] stated that all his patients had reduction in pain, functional improvement, with no adverse effect when using PRP for the augmentation of arthroscopy in the treatment of cuff repairs. This was shown by the improvement in the constant score at 12 weeks following the repair

Conclusion

Authors found that PRP can be considered as treatment modality for supraspinatus tendinitis.

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