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Research Article

Role of Physiotherapy and Platelet-Rich Plasma (Prp) In Case of Frozen Shoulder

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Abstract:

Physiotherapy and Platelet-Rich Plasma (PRP) are highly effective, non-surgical treatments for frozen shoulder (adhesive capsulitis). Physiotherapy restores movement and strength, while PRP uses your blood's natural growth factors to reduce pain and heal the joint capsule. The combined approach (physiotherapy and Platelet-rich plasma) addresses the structural and biomechanical issues of frozen shoulder. The current study aimed to find effectiveness of this combined approach results in better functional outcomes and higher satisfaction scores compared to utilizing either treatment alone. This was quasi-experimental study conducted among 168 patients attending at Dhaka Pain, Physiotherapy & Rehabilitation Center (DPRC) hospital for treatment. All patients were divided into two separate intervention group and outcome was measured by Chi-square test. Excellent improvement was found twenty two times higher among patients who were given physiotherapy along with Platelet-Rich Plasma than patients were given physiotherapy only and the same scenario was seen in case of very good improvement. Not satisfactory improvement was none who were given physiotherapy along with Platelet-Rich Plasma. The effectiveness of intervention was statistically significant. More center based gold standard randomized clinical trial can be conducted in order to get more accurate result.

keywords: platelet-rich plasma; frozen shoulder; physiotherapy

Introduction

Frozen shoulder is a glenohumeral joint disorder that movement because of adhesion and the existence of fibrosis in the shoulder capsule. Platelet-rich plasma can produce collagen and growth factors, which increases stem cells and consequently enhances the healing.[1] Frozen shoulder is thought to have an incidence of 3-5% in the general population.[2] The prevalence of frozen shoulder in diabetic patients has been reported between 10-20%.[3] No difference was found regarding the level of pain and disability of frozen shoulder patients with or without diabetes.[4] Platelet-rich plasma (PRP) is an autogenous concentration of human platelets in a small volume of plasma. Platelet-rich plasma development via centrifugation has been greatly simplified so that it can be used in office settings as well as operating rooms.[5] The use of PRP has increased, given its safety as well as the availability of new devices for outpatient preparation and delivery.[6]

Methods

This was quasi-experimental study conducted among 168 patients attending at Dhaka Pain, Physiotherapy & Rehabilitation Center (DPRC) hospital for treatment. All patients were divided into two separate intervention group and outcome was measured by Chi-square test. First of all, careful history taking was carried out followed by documents checking and physical examination was done and investigation was done according to patients need. Rapport building and consent taking were ensured. Detail procedure of the study was explained and confidentiality was maintained throughout the study. Statistical Package for Social Sciences version 22.0 was used to data analysis. Improvement was divided into five categories as like excellent, very good, good, satisfactory and not satisfactory considering pain reduction and functional outcome.

Results

Age group (in years)	Physiotherapy and Platelet-Rich Plasma (PRP) group	Physiotherapy group
	Frequency(Percentage)	Frequency(Percentage)
≤20	9(4.6)	3(1.5)
21-40	39(19.9)	50(25.5)
41-60	29(14.8)	34(17.3)
>60	21(10.7)	11(5.6)
Total	98(50.0)	98(50.0)

Table 1: Age distribution of the subjects.

Nearly half of the patients in both group represented from 21-40 years followed by 29.6%-34.6% from 41-60 years and 11.2%-21.4% from >60 years respectively.

Gender	Physiotherapy and Platelet-Rich Plasma (PRP) group	Physiotherapy group
	Frequency (Percentage)	Frequency (Percentage)
Male	53(27.0)	75(38.3)
Female	45(23.0)	23(11.7)
Total	98(50.0)	98(50.0)

Table 2: Gender distribution of the subjects.

Male and female distribution among physiotherapy and Platelet-Rich Plasma (PRP) group were 54% and 46% whereas in physiotherapy group it was 76.6% and 23.4%.

Occupation	Physiotherapy and Platelet-Rich Plasma (PRP) group	Physiotherapy group
	Frequency (Percentage)	Frequency (Percentage)
Day labor	7(3.6)	6(3.1)
Housewife	50(25.5)	28(14.3)
Service	22(11.2)	29(14.8)
Student	11(5.6)	8(4.1)
Business	4(2.0)	10(5.1)
Others	4(2.0)	17(8.7)
Total	98(50.0)	98(50.0)

Table 3: Occupation distribution of the subjects

In case of occupation, housewife, service and student were dominant.

Marital status	Physiotherapy and Platelet-Rich Plasma (PRP) group	Physiotherapy group
	Frequency (Percentage)	Frequency (Percentage)
Single	11(5.6)	8(4.1)
Married	87(44.4)	90(45.9)
Total	98(50.0)	98(50.0)

Table 4: Marital status of the subjects.

Most of the patients were married.

Marital status	Physiotherapy and Platelet-Rich Plasma (PRP) group	Physiotherapy group
	Frequency (Percentage)	Frequency (Percentage)
Single	11(5.6)	8(4.1)
Married	87(44.4)	90(45.9)
Total	98(50.0)	98(50.0)

Table 5: Effect of holistic approach (Physiotherapy and Platelet-Rich Plasma) in case of frozen shoulder

Excellent improvement was found twenty two times higher among patients who were given physiotherapy along with Platelet-Rich Plasma than patients were given physiotherapy only and the same scenario was seen in case of very good improvement. Not satisfactory improvement was none who were given physiotherapy along with Platelet-Rich Plasma. The effectiveness of intervention was statistically significant ($p=0.001<0.05$).

Intervention	Improvement					Total	Chi-square value	p value
	Excellent	Very good	Good	Satisfactory	Not satisfactory			
	n (%)	n (%)	n (%)	n (%)	n (%)			
Physiotherapy and Platelet-Rich Plasma (PRP) group	43(21.9)	27(13.8)	21(10.7)	7(3.6)	0(0.0)	98(50.0)	103.082	0.001
Physiotherapy	0(0.0)	6(3.1)	29(14.8)	50(25.5)	13(6.6)	98(50.0)		
Total	43(21.9)	33(16.8)	50(25.5)	57(29.1)	13(6.6)	196(100.0)		

Discussion

Platelet-Rich Plasma is a concentration of own platelets that contains growth factors and cytokines. When injected into the affected joint, it stimulates angiogenesis (new blood vessel formation) and osteogenesis (new bone formation), which accelerates the healing of necrotic lesions and protects the cartilage. Physiotherapy plays an essential role in optimizing the healing environment and restoring function. It helps prevent muscle atrophy, improves range of motion, and teaches controlled, safe movement patterns that offload stress from the damaged bone. The present study found that excellent improvement was found sixteen times higher among patients who were given physiotherapy along with Platelet-Rich Plasma than patients were given physiotherapy only and the same scenario was seen in case of very good improvement. Not satisfactory improvement was none who were given physiotherapy along with Platelet-Rich Plasma. It is known that PRP therapy delivers growth factors directly to the site of injury. This can stimulate the healing of tendons, ligaments, or joint cartilage. However, healing tissue requires guided movement and strengthening to function properly. Without rehabilitation, even a biologically enhanced structure may remain weak, tight, or unbalanced. Physiotherapy addresses these challenges through: controlled loading of healing tissues, mobility exercises to restore range of motion, strength training to stabilize surrounding muscles, neuromuscular re-education to improve movement patterns, strategies to prevent recurrence or overuse. Together, PRP and physiotherapy form a two-part solution: one addresses biological healing, while the other addresses functional recover. [7-10] The timing of physiotherapy after PRP depends on the treated area and the condition being managed. [7-10] Most patients begin gentle therapeutic exercises within a few days of their PRP injection, once any post-injection inflammation subsides. In some cases, early movement is encouraged to prevent stiffness. Many soft tissue injuries respond well to a combined approach of PRP and physiotherapy. This is especially true for injuries involving repetitive strain or biomechanical imbalances. While many patients experience improvement from combining PRP and physiotherapy, recovery is rarely immediate. It's important to remain patient and committed to rehab plan. Tissue healing is a biological process that unfolds over weeks or months. Physiotherapy helps ensure that healing leads to long-term function, not just pain reduction. In some cases, a single course of PRP and rehab may be enough to return to full activity. In others, especially in chronic conditions or more advanced degeneration, maintenance exercises and occasional follow-up care may be needed.[7-10] Some researchers such as Calis et al. have reported the superiority of physical therapy to hyaluronic acid and corticosteroid injections.[11] Oppositely, Hsieh et al. have reported that intra-articular hyaluronic acid injections did not produce extra benefits for patients with frozen shoulder who were already receiving physiotherapy.[12] The systematic reviews in this field have not yet confirmed the superiority of physiotherapy or those medications.[13] In a comparison study, Rovetta and Montforte reported no major differences between corticosteroid alone and in combination with hyaluronic acid in patients with frozen shoulder after 6 months of treatment. Also, they recommended patients who are receiving regular conventional treatment should be evaluated regularly concerning the side effects. [14]

Conclusion

The study concluded that effectiveness of intervention (physiotherapy and PRP) was statistically significant in case of frozen shoulder. More center based gold standard randomized clinical trial can be conducted in order to get more accurate result.

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