The Effects Of Intra-Articular Platelet-Rich Plasma Injections Versus Corticosteroid Injections On Pain Score And Function In Knee Osteoarthritis

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Background and aims: Osteoarthritis is a chronic joint disease that leads to pain and disabilities (1). The aim of this preliminary study is examine the effects of platelet-rich plasma (PRP) injection and corticosteroid (CS) injections on the level of pain and function of the knee joint in patients with OA.

Methods: The participants who suffered from knee osteoarthritis were randomly divided into two groups: intra articular injection of PRP and CS. Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC), Short Form-36 (SF-36), ranges of motions (ROM) of knee and pain intensity based on Visual Analog Scale (VAS) rest and motion were assessed before the treatment and four weeks after the treatment. Also knee cartilage thickness were measured by ultrasonography in both groups.

Results: Forty participants were involved in this study that group 1 (corticosteroid injections) was included 19 patients and group 2 (PRP injections) was 21 patients. VAS rest - VAS motion and WOMAC scores were significantly decreased and ROM flexion, SF-36 scores and knee cartilage thickness measurement were significantly increased in both groups at first month of clinical outcomes, but there were no significantly difference between the two groups.

Conclusion: Both PRP and CS injections appears to be effective in symptomatic knee osteoarthritis. We found that there were no superiority of PRP treatment to CS treatment at short time follow up measures, but PRP injections may be show superior clinical outcomes to reduce pain and improvement in the quality of life of patients in the long term when compared with CS injections.

References

1. Neogi T. The Epidemiology and Impact of Pain in Osteoarthritis. Osteoarthritis Cartilage. 2013 Sep;21(9):1145-53.

Table 1

Group 1		Pre-treatment		Post-treatment		p
		M ± S.D./n-%	Med(Min-Max)	M ± S.D./n-%	Med(Min-Max)	
VAS-rest		3,5 ± 2,6	5 (0 - 8)	1,4 ± 2,1	0 (0 - 6)	0,005*
VAS-motion		6,3 ± 1,8	7 (2 - 8)	3,2 ± 2,6	2 (0 - 8)	0,001*
ROM-extension	Limited	3	16%	1	5%	0,500
	Not limited	16	84%	18	95%	
ROM-flexion	Limited	12	63%	5	26%	0,016*
	Not limited	7	37%	14	74%	
Group 2						
VAS-rest		3,3 ± 2,7	4 (0 - 8)	1,1 ± 1,8	0 (0 - 8)	0,001*
VAS-motion		8,0 ± 1,1	8 (5 - 10)	3,9 ± 2,1	4 (0 - 8)	0,000*
ROM-extension	Limited	1	5%	1	5%	1,000
	Not limited	20	95%	20	95%	
ROM-flexion	Limited	13	62%	4	19%	0,004*
	Not limited	8	38%	17	81%	
Wilcoxon Test /McNemar Test				*p <0,005 level of significance		

Table 2

		Group 1			Group 2			p		
		M ± S.D./n-%		Med(Min-	M ± S.D./n-%		Med(Min-Max)			
Pre-treatment										
VAS-rest		3,5	± 2,6	5	(0 - 8)	3,3	± 2,7	4	(0 - 8)	0,859
VAS-motion		6,3	± 1,8	7	(2 - 8)	1,1	± 1,8	0	(0 - 8)	0,552
ROM-extension	Limited	3	16%			1	5%			0,331
	Not limited	16	84%			20	95%			
ROM-flexion	Limited	12	63%			13	62%			0,935
	Not limited	7	37%			8	38%			
Post-treatment										
VAS-rest		1,4	± 2,1	0	(0 - 6)	8,0	± 1,1	8	(5 - 10)	0,050
VAS-motion		3,2	± 2,6	2	(0 - 8)	3,9	± 2,1	4	(0 - 8)	0,211
ROM-extension	Limited	1	5%			1	5%			1,000
	Not limited	18	95%			20	95%			
ROM-flexion	Limited	5	26%			4	19%			0,712
	Not limited	14	74%			17	81%			
Chi- square test / Fisher's exact test										

Table 3

	Group 1		Group 2		p
	M ± S.D./n-%	Med(Min-Max)	M ± S.D./n-%	Med(Min-Max)	
Pre-treatment SF-36					
Physical functioning	44,4 ± 24,7	40 (5 - 95)	45,0 ± 20,8	45 (10 - 85)	0,942
Physical Role limitations	32,8 ± 32,3	25 (0 - 100)	38,0 ± 38,4	25 (0 - 100)	0,811
Emotional Role limitations	29,7 ± 39,8	0 (0 - 100)	36,4 ± 40,7	33 (0 - 100)	0,550
Energy/fatigue	35,5 ± 21,2	30 (10 - 90)	39,7 ± 21,2	40 (0 - 85)	0,532
Emotional well-being	44,2 ± 17,0	44 (16 - 72)	50,6 ± 18,4	52 (16 - 80)	0,259
Social functioning	54,1 ± 24,2	50 (25 - 100)	58,0 ± 24,7	63 (13 - 100)	0,611
Pain	33,0 ± 26,1	23 (0 - 90)	28,3 ± 19,4	23 (0 - 78)	0,691
General health	46,5 ± 22,7	45 (0 - 95)	37,8 ± 17,8	35 (0 - 70)	0,184
Pre-treatment USG measurement	1,99 ± 0,39	2,00 (1,43 - 2,96)	1,96 ± 0,44	1,93 (1,06 - 2,76)	0,849
Pre-treatment WOMAC	50,6 ± 19,7	54,1 (3,1 - 77)	59,0 ± 22,0	58,3 (30,2 - 129)	0,212
Post-treatment SF-36					
Physical functioning	66,0 ± 23,8	70 (15 - 100)	53,5 ± 24,1	45 (5 - 100)	0,109
Physical Role limitations	64,4 ± 32,6	75 (0 - 100)	54,7 ± 42,2	50 (0 - 100)	0,529
Emotional Role limitations	59,6 ± 45,2	67 (0 - 100)	55,5 ± 48,7	100 (0 - 100)	0,929
Energy/fatigue	46,0 ± 25,8	40 (5 - 100)	41,6 ± 20,1	40 (0 - 100)	0,551
Emotional well-being	55,7 ± 17,3	56 (20 - 84)	49,1 ± 18,3	48 (0 - 76)	0,248
Social functioning	73,2 ± 19,9	75 (38 - 100)	63,8 ± 25,5	63 (25 - 100)	0,206
Pain	59,3 ± 25,3	68 (10 - 100)	52,0 ± 21,0	45 (10 - 90)	0,325
General health	52,1 ± 25,2	55 (5 - 100)	40,4 ± 14,9	45 (0 - 65)	0,091
Post-treatment USG measurement	2,23 ± 0,56	2,26 (0,96 - 3,16)	2,26 ± 0,33	2,23 (1,80 - 2,96)	0,870
Post-treatment WOMAC	34,4 ± 23,5	35,4 (0 - 77)	33,6 ± 17,8	29,1 (1,7 - 84)	0,912
Mann-whitney u test / Independent samples test					

Table 4

Group 1	Pre-treatment	Post-treatment	p	Group 2	Pre-treatment	Post-treatment	p
	M ± S.D.	M ± S.D.			M ± S.D.	M ± S.D.	
SF-36				SF-36			
Physical functioning	44,4 ± 24,7	66,0 ± 23,8	0,001*	Physical functioning	45,0 ± 20,8	53,5 ± 24,1	0,086
Physical Role limitations	32,8 ± 32,3	64,4 ± 32,6	0,017*	Physical Role limitations	38,0 ± 38,4	54,7 ± 42,2	0,140
Emotional Role limitations	29,7 ± 39,8	59,6 ± 45,2	0,010*	Emotional Role limitations	36,4 ± 40,7	55,5 ± 48,7	0,102
Energy/fatigue	35,5 ± 21,2	46,0 ± 25,8	0,072*	Energy/fatigue	39,7 ± 21,2	41,6 ± 20,1	0,635
Emotional well-being	44,2 ± 17,0	55,7 ± 17,3	0,032*	Emotional well-being	50,6 ± 18,4	49,1 ± 18,3	0,616
Social functioning	54,1 ± 24,2	73,2 ± 19,9	0,001*	Social functioning	58,0 ± 24,7	63,8 ± 25,5	0,365
Pain	33,0 ± 26,1	59,3 ± 25,3	0,000*	Pain	28,3 ± 19,4	52,0 ± 21,0	0,000*
General health	46,5 ± 22,7	52,1 ± 25,2	0,171	General health	37,8 ± 17,8	40,4 ± 14,9	0,205
USG measurement	1,99 ± 0,39	2,23 ± 0,56	0,017*	USG measurement	1,96 ± 0,44	2,26 ± 0,33	0,000*
WOMAC	50,6 ± 19,7	34,4 ± 23,5	0,005*	WOMAC	59,0 ± 22,0	33,6 ± 17,8	0,000*
Paired samples test / Willcoxon test			*p<0,005 level of significance	Paired samples test / Willcoxon test			*p<0,005 level of significance