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Comparison of the Efficacy of Radial and Focused Extracorporeal Shock-Wave Therapy (ESWT) in Myofascial Pain Syndrome: A Double-blinded Randomized Sham-controlled Study

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Background and Aims:

Myofascial pain syndrome is condition characterized by painful trigger points of common muscles, mostly seen in upper part of trapezius muscle. Pain radiates with palpation and autonomic and sensory findings accompanies frequently (1). Myofascial pain syndrome can cause many consequences that effects daily living activities and lead to decrease in quality of life. Pharmacological therapy, stretching exercises, dry needling acupuncture or physical therapy modalities can be utilized (2). Extracorporeal shock-wave therapy (ESWT) is a treatment method performed with the help of acoustic waves created outside the body. Its effectiveness has been demonstrated in calcaneal spur, lateral epicondylitis, calcific tendinitis, fibromyalgia and myofascial pain syndrome (3). There are radial and focused waves commonly used on trigger points, however the effectiveness when comparing two wave types was not shown in myofascial pain syndrome (4). This study aims to compare sham-controlled effectiveness of different ESWT waves in the upper part of trapezius muscle. .

Methods

Total of 59 patients enrolled initially. At the end of 6th month, 54 patients with trigger points in upper part of trapezius muscle completed the study. Randomization was done with closed envelope model. Patients received Radial (R-ESWT), focused (F-ESWT) waves and sham therapy.

Methods-2

All applications were done with the same device; Modus ESWT. In accordance with the literature, the ESWT adjustment is made as 1500 pulses, 0.1 mj/mm, 10-16 Hz for radial applications, and 1500 pulses, 0.056 mj/mm, 6 Hz for focused applications. The sham application was made in such a way that the device was set to 0 frequency and power, making only sound.

Methods-3

All patients received exercise therapy including trapezius stretching exercises and isometric cervical exercises. Each ESWT sessions applied weekly (totally 3 sessions). Pain, functionality and depressive symptoms were evaluated with visual analog scale (VAS), Health assessment questionnaire (HAQ) and Beck Depression Scale (BDI). Patients were assessed before treatment and after 1st month, 3rd month and 6th month from the end of therapy sessions.

Results

Pain scores of R-ESWT and F-ESWT group were found significantly lower than sham group at 3rd month follow-up. However, Pain scores of 6th month follow-up only in R-ESWT group was lower than sham group. There was not significant difference between groups in terms of HAQ and BDI scores. Within group comparisons VAS scores decreased in R-ESWT and F-ESWT groups. Depression scores according to BDI, was not seem to differ in comparison of pre-treatment in R-ESWT and sham group. Health assessment scores were lower than baseline in F-ESWT group.

		N	Mean	Minimum	Maximum	P
Pre-treatment	R-ESWT	20	7.701180	3	10	0.036
	F-ESWT	16	7.221180	3	10	
	SHAM	21	6.811160	4	10	
3th month follow-up	R-ESWT	17	4.410239	0	9	0.004
	F-ESWT	16	4.840239	0	10	
	SHAM	20	6.920221	5	9	
6th month follow-up	R-ESWT	16	4.880238	0	9	0.004
	F-ESWT	16	5.270238	0	10	
	SHAM	20	6.950266	5	9	

Table 1. Comparisons of pains scores according to VAS between groups

		N	Mean	Minimum	Maximum	P
Pre-treatment	R-ESWT	16	12.040119	1	21	0.036
	F-ESWT	16	11.440113	0	20	
	SHAM	21	11.810105	0	20	
3th month follow-up	R-ESWT	17	10.740109	0	16	0.047
	F-ESWT	17	7.490106	0	13	
	SHAM	20	12.050121	0	20	
6th month follow-up	R-ESWT	16	11.020110	0	14	0.002
	F-ESWT	17	16.750116	0	20	
	SHAM	20	11.050125	0	20	

Table 2. Comparisons of BDI scores between groups



Conclusion

Radial ESWT seems to be more effective and long lasting than focused ESWT in terms of pain in patients with myofascial pain syndrome that have trigger points on upper part of trapezius muscle.

References

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