



Comparison between Real and Placebo Extracorporeal Shock-wave Therapy for the Treatment of Chronic Plantar Fasciitis Pain in the Males

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Dear Editor-in-Chief

The treatment of Plantar Fasciitis (PF) is primarily conservative, initially with rest and icing to give pain relief. In about 10% of the cases who do not respond to such treatments, surgical intervention is suggested. An alternative to the surgical treatment of PF is Extracorporeal Shockwave Therapy – ESWT (1, 2). The aim of the study was to compare analgesic effects of ESWT and P-ESWT in males with chronic PF.

Thirty patients were included in the study from September 2012 to October 2014. The study was conducted in Military Hospital in Busko-Zdrój. Exclusion criteria were local soft-tissue infection, skin ulcerations, malignant disease, pacemaker, epileptic disorders, local arthritis, rheumatoid arthritis, ankylosing spondylitis, and Reiter syndrome, previous operation on the heel, patients who had received local corticosteroid injection within 12 weeks, age under 18 years.

Patients were randomized into the ESWT or P-ESWT group. Randomization was done before the first treatment by means of a computer-generated randomization list (MedCalc 11.4.3.0, Kielce). In the ESWT group, patients received either 1000 or 2000 shock waves per treatment of energy levels varying between 0.02 mJ/mm^2 and 0.33 mJ/mm^2 , pulse frequency gradually increased to 240 per minute. In the P-ESWT, treatment con-

sisted of 100 shock waves per treatment, energy level of 0.02 mJ/mm^2 , frequency 60 per minute. Both groups took a series of 5 ESWT. Apparatus used for the treatment was BTL-5000 SWT. The procedure was performed in the area of most intense pain – calcaneal tubercle. The basic method of research was to evaluate pain after normal daily activity according to VAS. The patients of the two groups were tested pretreatment, and 12 months post treatment. In various combinations, the value of the function t was observed. The statistical significant of differences in the intensity of pain assessed was noticed ($P < 0.05$).

Calculations were performed at the Department of Computer Science at Holy Cross College in Kielce with the use of MedCalc software – version 11.4.3.0. The research project was authorized by the Bioethics Committee at Holy Cross College in Kielce – resolutions of 1/10/KB on 20.06.2012.

In the ESWT group and P-ESWT group, a significant decrease of VAS was seen 12 months post treatment after normal daily activity (Table 1). The analgesic efficacy of ESWT was confirmed by the analysis of differences in the frequency of occurrence of pain intensity between groups 12 months post treatment (Table 2).

Metzner et al. (3) used ESWT in patients with chronic PF.

Table 1: The intensity of pain (VAS) in the ESWT group and P-EWST group in the following terms of research

Terms of Research	Mean \pm SD	t Value	P
Pre ESWT	8.0 \pm 0.7	0.962	> 0.17206
Pre P-ESWT	7.7 \pm 0.8		
Post ESWT	3.3 \pm 0.8	17.813*	< 0.00001
Post P-ESWT	4.7 \pm 0.8	7.942*	< 0.00001
Pre ESWT	8.0 \pm 0.7		
Pre P-ESWT	7.7 \pm 0.8		
Post ESWT	3.3 \pm 0.8	3.810*	< 0.00035
Post P-ESWT	4.7 \pm 0.8		

P values represent the results of Student's *t* test

Table 2: The effects of ESWT and P-EWS

Effects	ESWT		P-ESWT	
	n	%	n	%
Excellent VAS > 70% Reducing	3	18.7	—	—
Very good VAS > 50-70% Reducing	8	50.0	1	7.2
Good VAS > 30-50% Reducing	5	31.3	10	71.4
Slight VAS < 30% Reducing	—	—	3	21.4

Each patient received 1000 impulses of shock wave; the density of energy stream was 0.35 mJ/mm². It turned out that pain was reduced in 81% of patients after 6 weeks, in 88% of patients – after 16 months, and in 96% of patients – after 72 months post ESWT. Yalçın et al. (4) used ESWT for analgesic purposes in patients with PF and treated them for 5 weeks with 2000 impulses of shock waves, ranging from 0.05 to 0.4 mJ/mm². Clinical results demonstrated excellent (no pain) in 66.7% of the cases, good (50% of pain reduced) in 15.7% of the cases, and unsatisfactory (no reduction in pain) in 17.6%. Wang et al. (5) evaluated patients with chronic PF, including patients in the shockwave treatment group and patients in the control group. In the shockwave group, patients received 1500 impulses of shockwaves at 16 kV to the affected heel in a single session. Patients in the control group received orthotics, physical therapy, an exercise program, and/or a local cortisone injection. After treatment, the shockwave group showed significantly better pain scores as compared with the control group. The overall results were 69.1% excellent, 13.6% good, 6.2% fair, and 11.1% poor for the shockwave group and 0% ex-

cellent, 55% good, 36% fair, and 9% poor for the control group.

The results of our study showed that pain decreased significantly in both groups, but ESWT reduces pain more effectively than P-ESWT in males with chronic PF. We achieved a significant reduction in pain that persisted for 12 months. Summing up, ESWT effectively reduces pain, which, in turn, reduces mental and physical discomfort in patients with chronic PF.

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The authors declare that there is no conflict of interests.

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