EFFECTIVENESS OF EXTRACORPOREAL SHOCK WAVE THERAPY AND CALF STRECHING EXCERSISES IN THE SHORT-TERM TREATMENT OF PLANTAR FASCIITIS

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Plantar fasciitis is the most common cause of plantar heel pain. In 70% to 80% of patients, it is possible to reduce pain with conservative treatment. Many studies have proven that the use of several types of conservative and physiotherapeutic treatment in the treatment of patients is more effective in plantar heel pain. In this study, 70 patients were randomly divided into 2 groups, active and control groups. Observations show that the best effect was observed in patients included in the active group. Extracorporeal shock-wave therapy and calf muscle stretching exercises for 20-30 minutes a day were performed once a week for 5 weeks.

Keywords: ESWT (extracorporeal shock wave therapy), exercises, plantar fasciitis, stretching.

Introduction. Plantar heel pain is one of the most common musculoskeletal conditions affecting the lower limb, and is known to affect both physically active and sedentary individuals. In athletes, the prevalence of plantar heel pain has been estimated at between five and 18% [3]. Plantar heel pain (PHP) is a term used to describe a prevalent, painful condition localized to the plantar aspect of the heel, which is exacerbated by weight bearing [7].

In active individuals, PF is common. Incidence ranges from 4.5% to 10.0% and prevalence is from 5.2% to 17.5% in runners [3]. Some authors describe the plantar calcaneal spurs as a primary or contributory cause of plantar heel pain in patients with plantar fasciitis [2]. Other investigators have shown that other factors such as plantar fascial thickness and fat pad abnormalities, rather than heel spurs, are more reliably associated with painful plantar fasciitis [9] Some studies reported large numbers of patients with painless plantar heel spurs [4], and others have discussed patients with painful plantar fasciitis that have no plantar heel spurs [6].

Although plantar fasciitis is the most common cause of plantar heel pain, the role of a plantar calcaneal spur and its effect on patient symptoms remain controversial. One study found that those with Plantar calcaneal spur (PCS) were four times more likely to have diabetes than those without PCS; however, it is unclear if this is an independent risk factor [9].

Between 70-80% of patients have reduced pain with conservative treatment alone. Nevertheless, many patients will require a combination of conservative treatment with other therapies [8].

Short-term treatments such as muscle stretching are therefore regularly used during this transition period to relieve symptoms. A recent systematic review of 28 randomized trials examined the effect of calf muscle stretching on ankle range of motion and found that stretching resulted in a small but statistically significant increase in ankle range of motion [1].

For patients with plantar fasciitis pain that does not respond to the previously described treatments, extracorporeal shock wave therapy (ESWT), introduced in the 1990s, may be an option. In this treatment, high-energy sound waves produce injury that promotes neovascularization and healing with local growth factors. The main risk of this treatment is permanent damage of the fascia if excessive pressure is applied [5].

Materials and methods of the research. This scientific study is retrospective, in which were selected patients whose Visual Analogue Scale (VAS) and The American Orthopaedic Foot & Ankle Society (AOFAS) pain scores were almost the same. In this case, 70 patients were selected and then randomly were divided into two groups (active and control). The clinical observations included treatment with a diagnosis of plantar fasciitis and were randomly recruited: 46 women (66%) and 24 men (34%). Patients suffering from PF who applied to the physiotherapy department of the hospital were randomly selected and applied to the 1st active group with random search. In active group were 35 patients with PF, whom directed low-energy Extracorporeal shock wave therapy once a week for 5 week interval using 2000 impulses (pressure 2.5-3.5 bar, frequency 10-15 Hz) with an average energy flux density of 0.10 to 0.28 mJ/mm2 and in an addi-

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tion calf muscle stretching exercises were performed for a stair treadmill. This board will be used to standardize traction techniques between participants. Traction techniques must be developed while standing. Patients are asked to raise their paws upwards until they feel a tightness in the calf muscle while holding the heel. They are advised to stretch the calf muscles for at least 20-30 minutes a day. In control group was given only Extracorporeal shock wave therapy sessions once a week for 5 week interval using 2000 impulses (pressure 2.5-3.5 bar, frequency 10-15 Hz) with an average energy flux density of 0.10 to 0.28 mJ/mm2. No statistically significant difference was also observed between the two groups in age, sex and pain (P>0.05). All patients were notified of the appropriate form of treatment and agreement was received in writing form to conduct a scientific study.

Results. This study included 70 patients who divided into 2 groups: active and control groups, who were divided with random search. Mean age of active group was 54.4±9.39 for control group was 52.3±7.8. To determine the effectiveness of treatment, the VAS and AOFAS scale was used before treatment and 5 weeks after treatment. The scores for pain and function before and after treatment within the same group were compared statistically using a paired t- test. The mean pre-treatment VAS for the entire active group was 7.03±0.8. Five weeks after treatment the VAS decreased to 3.3±1.5. The mean pre-treatment AOFAS for the entire group was 32.7±1.2. Five weeks after treatment it has increased to 65.1±2.9. This difference was statistically significant (P<0.0001).

Conclusion. Extracorporeal shock wave therapy of pain syndrome on the background of plantar fasciitis allows getting a good result in 50% of cases with full restoration of the foot function, professional and daily activity of the patient in control group. The directed influence of shockwaves to the enthesis of the plantar fascia a safe and effective nonsurgical method for treating chronic, recalcitrant heel pain syndrome. Observations showed that the best effect appeared in those people who received ESWT therapy in active group at least 5 times, with the calculation of one time per week and in an addition calf stretching excersises 20-30 minutes a day which perfomed with treadmill desk.

REFERENCES – ƏDƏBİYYAT – ЛИТЕРАТУРА

1. Carlson RE, Fleming LL, Hutton WC. The biomechanical relationship between the tendoachilles, plantar fascia and metatarsophalangeal joint dorsiflexion angle // Foot Ankle Int. 2000 Jan;21(1):18-25. doi: 10.1177/107110070002100104.
2. Johal KS, Milner SA. Plantar fasciitis and the calcaneal spur: fact or fiction? // Foot Ankle Surg. 2012, vol.18, № 1,p.39-41.
3. Lopes AD, Hespanhol LC, Yeung SS, Costa LOP. What are the main running-related musculoskeletal injuries? A systematic review // Sports Med. 2012,vol.42, №10,p.891–905.
4. Moroney PJ, O'Neill BJ, Khan-Bhambro K, O'Flanagan SJ, Keogh P, Kenny PJ. The conundrum of calcaneal spurs: do they matter? // Foot Ankle Spec. 2014, vol.7, №2,p.95-101.
5. Petraglia F, Ramazzina I, Costantino C. Plantar fasciitis in athletes: diagnostic and treatment strategies. A systematic review // Muscles Ligaments Tendons J. 2017, №7,p.107-118
6. Prichasuk S. The heel pad in plantar heel pain // J Bone Joint Surg. 1994,vol.76B, №1,p.140-142.
7. Riel H, Cotchett M, Delahunt E, Rathleff MS, Vicenzino B, Weir A, et al. Is 'plantar heel pain' a more appropriate term than 'plantar fasciitis'? Time to move on // Br J Sports Med. 2017, vol 51, №22, p.1576–7.
8. Thomas JL, Christensen JC, Kravitz SR, et al. The diagnosis and treatment of heel pain: a clinical practice guideline-revision 2010 // J Foot Ankle Surg.2010,vol.49,№3,p1-19
9. Yi TI, Lee GE, Seo IS, Huh WS, Yoon TH, Kim BR. Clinical characteristics of the causes of plantar heel pain // Ann Rehab Med. 2011, vol.35, № 4,p.507-513

XÜLASƏ

PLANTAR FASSİİT XƏSTƏLİYİNİN QISAMÜDDƏTLİ MÜALİCƏSİNDƏ EKSTRAKORPORAL ZƏRBƏ-DALĞA TERAPİYASININ VƏ BALDIR ƏZƏLƏSİNİN DARTINMA MƏŞQLƏRİNİN EFFEKTİVLİYİ

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Plantar fassiit plantar daban ağrısının ən çox yayılmış səbəbidir. Xəstələrin 70%-dən 80%-ə qədərində konservativ müalicə ilə ağrı azaltmaq mümkün olur. Bir çox tədqiqatlar xəstələrin müalicəsində bir neçə konservatik və fizioterapevtik müalicə növlərindən istifadəsinin plantar daban mahmızında daha da effektiv olduğunu sübut etmişdir. Bu tədqiqatda 70 xəstə təsadüfi seçim ilə 2 qrupa ayrılaraq aktiv və nəzarət qruplarına bölünmüşlər. Müşahidələr göstərir ki, ən yaxşı effekt aktiv qrupa daxil edilən xəstələrdə müşayət olunmuşdur. Onlara həftədə 1 dəfə 5 həftə boyunca Ekstrakorporal zərbə-dalğa terapiyası və gündə 20-30 dəqiqə baldır əzələsinin dartınma məşğələləri icra olunmuşdur.
Açar sözlər: EZDT (ekstrakorporal zərbə-dalğa terapiyası), məşqlər, plantar fassiit, dartınma.

РЕЗЮМЕ

ЭФФЕКТИВНОСТЬ ЭКСТРАКОРПОРАЛЬНОЙ УДАРНО-ВОЛНОВОЙ ТЕРАПИИ И УПРАЖНЕНИЙ НА РАСТЯЖКУ ИКРОНОЖНЫХ МЫШЦ ПРИ КРАТКОВРЕМЕННОМ ЛЕЧЕНИИ ПОДОШВЕННОГО ФАСЦИИТА

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Подошвенный фасциит является наиболее распространенной причиной подошвенной боли в пятке. У 70-80% пациентов можно уменьшить боль с помощью консервативного лечения. Многими исследованиями доказано, что применение нескольких видов консервативного и физиотерапевтического лечения в лечении больных более эффективно при подошвенной пяточной боли. В этом исследовании 70 пациентов были случайным образом разделены на 2 группы, активную и контрольную. Наблюдения показывают, что наилучший эффект наблюдался у больных, включенных в активную группу. В этой группе проводилась Экстракорпоральная ударно-волновая терапия 1 раз в неделю в течение 5 недель и упражнения на растяжение икроножных мышц по 20-30 минут в день.
Ключевые слова: ЭУВТ (экстрокорпоральная ударно-волновая терапия), упражнения, плантарный фасциит, растяжение.

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