



Shockwave Therapy: Still Little-Known Issues

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ABSTRACT

Background: In the last few years the development of Extracorporeal shock wave therapy (ESWT) was very fast. Shock waves can help reduce inflammation in musculoskeletal areas of the body. At the first time medical ESWT was used in urologic discipline for lithotripsy therapy later the opportunity of transmit mechanical energy by shock waves led to different technical and medical applications. **Aim:** to evaluate the different indications for ESWT in more or less frequent orthopedic pathologies. **Material and Method:** We enrolled 423 patients: 174 males and 249 females. All people presented orthopedic disease with specific therapeutic indication to ESWT in skeletal segments. **Conclusion:** The therapeutic efficacy of ESWT is still unclear for less frequent orthopedic pathologies. Further studies needed to improve the quality of the health care preventing chronic painful disease.

Keywords: Shockwave therapy, musculoskeletal pathologies. therapeutic indications.

INTRODUCTION

Shock waves are specific acoustic waves that accompany our daily lives without being noticed (1). The therapeutic indication for extracorporeal shock wave therapy (ESWT) has progressively changed over time in relation to the technological evolution of the equipment and scientific studies on the mechanisms of action in various tissues. Initially the ESWT was used in the urological discipline for the treatment of lithotripsy, later the opportunity to transmit mechanical energy through shock waves led to technical and medical applications in the orthopedic, dermatological, vulnology and neurological disciplines (2,3,4,5) October 12 th 2016 International Society for Medical Shockwave Treatment (ISMST) published Consensus Statement on ESWT Indications and Controindications in order to prevent improper treatments (6).

The aim of this study was to evaluate the different indications for ESWT in more or less frequent musculoskeletal pathologies.

MATERIALS AND METHOD

We enrolled 423 patients: 174 males and 249 females with an average age: 60.3 years in the period: June 2019 - March 2021. (Fig. 1) (Fig.2)

SEX		
		%
F	249	58.87%
M	174	41.13%

Fig. 1 Patient enrolled

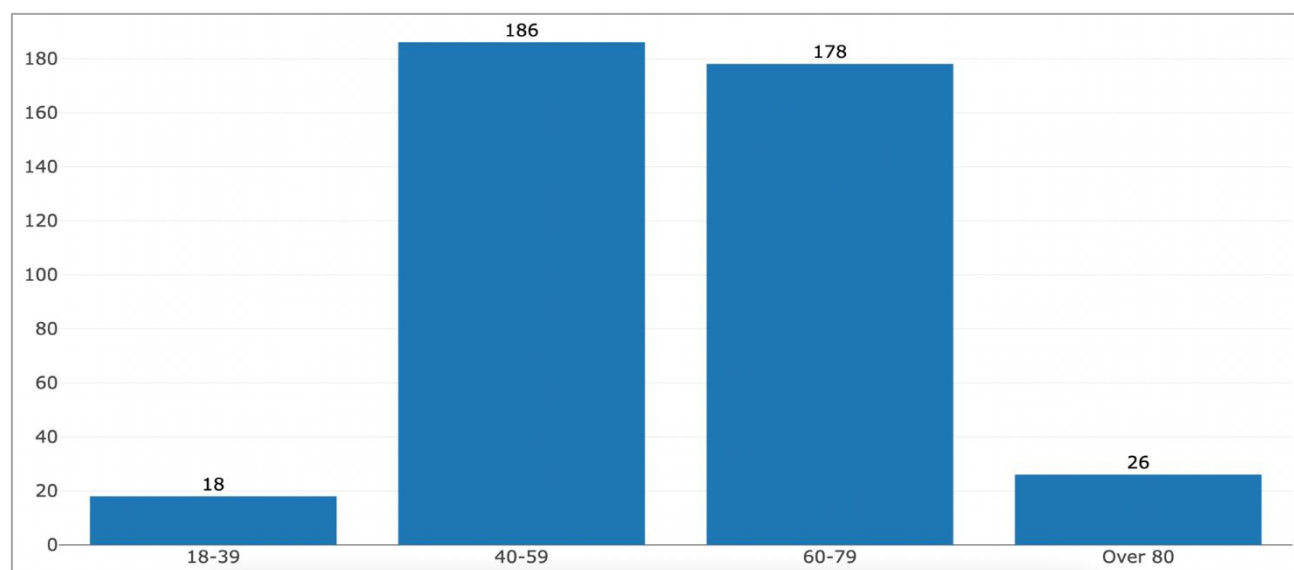


Fig. 2 Range of age in considered sample

All people presented orthopedic disease with specific therapeutic indication to ESWT in skeletal segments: hip, knee, elbow, foot, hand, shoulder, wrist. The application method of each ESWT session responded to the indications of the Guidelines (6) of the International Society for Musculoskeletal Shockway Therapy (I.S.M.S.T) with a weekly frequency and Piezowave 1 device. Patients give their written consent to the ESWT.

1. The treatment is carried out by a medical doctor
2. The shock waves are introduced with an applicator with contrast gel through the skin. The adjustment is made before and during the treatment by means of a clinical examination and pain description of the patient, X-ray. A fixed position is important, an interruption of the treatment e.g., with pain is at any time possible. Usually 1000-2000 single shocks (1-5 impulses per second) are applied during a treatment, with small wounds at least 500 impulses per treatment. The duration of treatment is about 10 min.
3. One or more treatment is necessary, depending on the disease. The treatment data are recordered precisely.

4. The changes of succes are indicated differently in the literature, a listing and exact discussion of the same goes beyond the scope here.

A Microsoft Access database has been developed to input all personal data of the people.

RESULTS

The analysis of the results highlighted:

- heel spur is the pathology most frequently indicated for ESWT: 157 patients of which 107 F and 50 M.
- shoulder calcific tendinopathy is the second pathology in the indication for ESWT: 136 patients of which 69 F and 67 M.
- Rhizarthrosis and Pes Anserine Bursitis are orthopedic pathologies less frequently indicated for ESWT
- 40 patients suffering from epicondylitis
- Average age of onset of orthopedic pathology was 57.6 years, respectively 58 years in women and 56.8 in men. (Fig.3)
- The indication for shock wave therapy was prescribed by 201 general practitioners and 203 and the specialists.

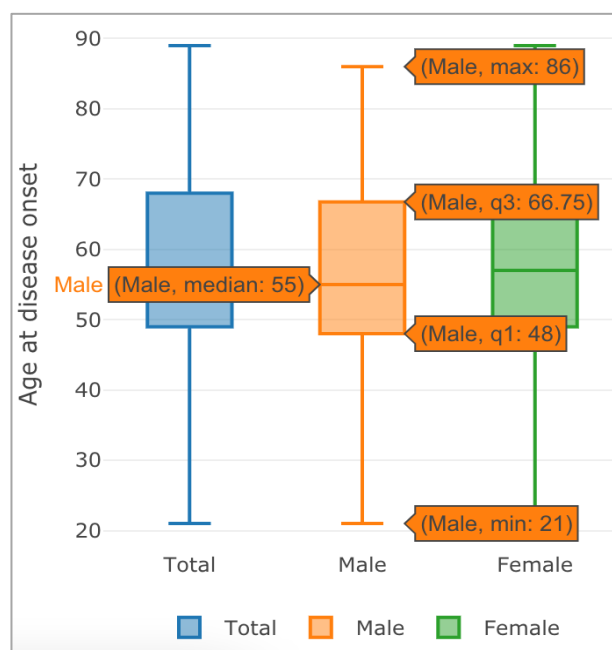


Fig.3 Average age of onset of orthopedic pathology

DISCUSSION

The results showed that heel spur or calcific enthesitis is the prevalent musculoskeletal pathology treated with ESWT. Individuals >50 years of age, spur formation is more strikingly common in women than in men. respectively 107 F and 50M. There was a notable moderate positive correlation between gender and plantar spurs. The term enthesitis was introduced by La Cava in 1959 to describe a process observed in entheses following mechanical injury. Calcific enthesitis can be an adaptive response of the plantar fascia both to the alteration of friction forces during walking and the inflammatory reaction of the surrounding tissues. (7-10) We

suppose that 75% of the patients suffering from heel spur and enrolled in the study showed the development of foot pain as a result of long-term use of commonly made work shoes. This condition may be a direct result of overloading the feet due to excessive strain.

Asymptomatic heel spur is relatively common; an epidemiological American study reports that 11% of the adult population had a random radiographic finding. (11,12).

The shoulder calcific tendinopathy found in 69 F and 67 M evidenced an overlapping gender distribution motivated by different etiopathogenetic events that can involve both sexes. Shoulder tendinopathies are frequently due to repeated movements in elevation of the limb that can occur in many sports: swimming, volleyball, tennis or in work activities such as hairdressing or painting.

The repeated movements and the functional joint stress could make difficult to maintain the correct position of the scapula. That resulting in a reduction of the subacromial space and consequent stress on the subacromial structures due to fatigue.

In considered sample 45 patients suffering from epicondylitis: 19 F and 26 M; they carried out work activities with physical effort and frequent use of the upper limbs: carer, turner, worker or sedentary jobs, with use of the computer and mouse. (13)

Epicondylitis is a progressive inflammatory disease due to overuse of the elbow associated with repetitive microtrauma to the extensor tendon attached at the lateral epicondylar region of the humerus.

Thumb osteoarthritis or Rhizarthrosis affects the surfaces of the joint between the trapezius and the fist metacarpal. We recluted 6 patients with Rhizarthrosis associated to chronic pain at the base of the thumb. Only Specialist prescribed ESWT in the patients affected by rhizarthrosis It shows that expert advice is always necessary to define the correct effectiveness of ESWT in less frequent orthopedic disease.

The pes anserinus is the combined insertion of the three hamstring tendons which attach to the inside of the leg, just below the knee joint. The results evidenced that 1 patient suffered from knee osteoarthritis (14) and 2 pes anserine bursitis; Specialist evaluated these patients and prescribed ESWT. In recent years, ESWT has been introduced in the treatment of knee osteoarthritis and pes anserine bursitis. (15) Pes anserine tendinopathy is an overuse injury which is often aggravated with motor activities that involve bending the knee.

We evidenced that 201 general practitioners and 203 specialists prescribed ESWT. This data showed an equality knowledge of indications to ESWT in outpatient hospital setting and in the community.

The average time between the diagnosed onset of orthopedic disease and the first session of ESWT was 3263.8 days.

The core problem in delay of diagnosis and treatment seemed to be a vicious cycle of repeated visits at the same healthcare level, resulting in nonspecific treatment and failure to access

specialized services. The development of ESWT was very fast only in the last few years, that can explain the long period time delaying the diagnosis and the treatment.

Increase knowledge about the effectiveness of ESWT could be useful to improve the prescriptions in orthopedic pathologies.

Loss of follow-up is most problem in our study. More research is needed to understand the effectiveness of ESWT in less frequent orthopedic pathologies.

CONCLUSION

Most musculoskeletal pathologies present an elective indication to ESWT.

ESWT showed many benefits to treating the patient. It requires a limited number of sessions, minimally invasive. Pain is the only disturbing side effect for the patient. More extensive studies are needed to confirm whether any superiority over other available modalities or not in less frequent orthopedic musculoskeletal dysfunctions.

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Declaration of Conflicting Interests

The authors declared no potential conflicts of interest with respect to the research authorship and/or publication of this article.

Patient consent

Obtained.

The study was approved by the Ethics Committee of our Centre and all patients provided written informed consent before study treatment.

Provenance and peer review

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