



## Efficacy of extracorporeal shockwave therapy for knee osteoarthritis: a randomized controlled trial

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### ARTICLE INFO

#### Article history:

Received 9 May 2013

Received in revised form  
29 June 2013

Accepted 3 July 2013

Available online 30 July 2013

#### Keywords:

Osteoarthritis

Knee

Extracorporeal shockwave therapy

Rehabilitation

### ABSTRACT

**Background:** Extracorporeal shockwave therapy (ESWT) has been widely used for pain relief and treatment of musculoskeletal disorders. We aimed to assess ESWT for knee osteoarthritis (OA) over 12 wk by comparison with placebo treatment.

**Materials and methods:** We randomized 70 patients to receive placebo ( $n = 36$ ) or ESWT ( $n = 34$ ). For ESWT, patients received 4000 pulses of shockwave at  $0.25 \text{ mJ/mm}^2$  weekly for 4 wk. In the placebo group, patients received shockwave at  $0 \text{ mJ/mm}^2$  in the same area. The effect on OA was assessed by pain on a visual analog scale and disability on the Lequesne index, Western Ontario and McMaster University Osteoarthritis Index, and patient perception of the clinical severity of OA. Evaluation was performed at baseline and after 1, 4, and 12 wk.

**Results:** We found no adverse events during and after ESWT. ESWT was more effective than placebo in reducing pain on movement at each period ( $P < 0.01$ ). The mean visual analog scale score with ESWT was 3.83 at 12 wk versus 7.56 at baseline ( $P < 0.01$ ). The Lequesne index and the Western Ontario and McMaster University Osteoarthritis Index score were reduced with ESWT. Moreover, patient perception of clinical severity of OA was significantly greater with ESWT than that with placebo ( $P < 0.01$ ).

**Conclusions:** ESWT is effective in reducing pain and improving knee function, with better results than placebo during the 12-wk treatment. However, further pilot studies are needed to determine whether ESWT should be recommended at an early or later stage of OA or combined with conventional therapies.

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## 1. Introduction

Osteoarthritis (OA) is the most prevalent of the chronic rheumatic diseases and is a leading cause of pain and disability in most countries worldwide [1]. The prevalence of OA is strongly associated with aging and affects women more frequently than men. Furthermore, OA has been associated with heavy physical occupational activity. Most of the OA disability

burden is in the hips and knees [2]. Joint-replacement surgery is common and considered effective and cost-effective for end-stage knee or hip arthritis. The number of replacements has been increasing every year in most countries [3]. However, to ultimately reduce the demand for joint-replacement surgery, new strategies are needed to treat early-stage OA [4].

Pain is the main reason for OA patients to seek clinical services [5]. The management of early-stage OA is

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<http://dx.doi.org/10.1016/j.jss.2013.07.004>