

Effects of Extracorporeal Shockwave Therapy for Mild Knee Osteoarthritis in Elderly patient - a Pilot Study

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INTRODUCTION

- Extracorporeal shockwave therapy (ESWT) has been widely used for various musculoskeletal disorders and also for knee osteoarthritis, which is proven to be a safe treatment in various researches. Although there are some investigations verifying pain relieving effect of ESWT for knee osteoarthritis, the research on objectivity for structural improvements of knee osteoarthritis is insufficient. The aim of this study is to evaluate the mechanism of the treatment effect using clinical symptoms and ultrasound as objective measures in patients with knee osteoarthritis by comparison with placebo treatment.

SUBJECTS & METHODS

- Subjects
 - Eighteen subjects with mild knee osteoarthritis (Kellgren-Lawrence Grade I ~ II) were enrolled.
 - Baseline characteristics

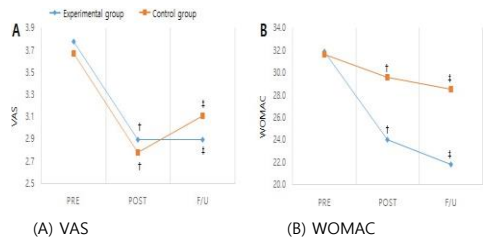
	Experimental group (n=9)	Control group (n=9)	P value
Side (Rt : Lt)	4:5	5:4	
Age (years)	72.7±2.4	72.6±2.3	0.76
Weight (kg)	68.3±8.9	72.7±5.9	0.19
Height (cm)	163.9±5.0	165.7±3.6	0.20
BMI (kg/m ²)	25.6±2.9	26.4±2.0	0.02
K-L grade	1.3±0.5	1.4±0.5	0.41

- Methods
 - Patients were randomly allocated to an experimental group (n=9) receiving ESWT, and a placebo group (n=9) receiving sham ESWT. For ESWT, patients received the total energy of 0.05mJ/mm² with 1000 impulses on proximal medial tibia of the affected knee weekly for 3 weeks. In the placebo group, patients received shockwave at 0mJ/mm² with 1000 impulses in the same area.

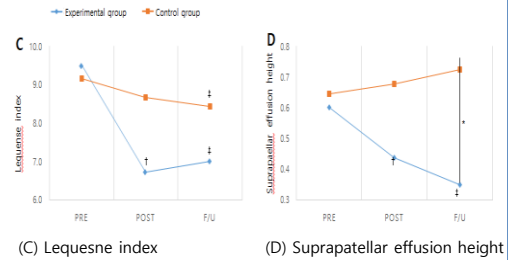
- Outcome measurements
 - Assessments were performed before and after treatment with two domains of clinical symptoms and objective measures of ultrasound using the following measurements ;
 - Clinical symptoms
 - ✓ Pain on a visual analog scale (VAS)
 - ✓ Western Ontario and McMaster Universities Arthritis Index (WOMAC)
 - ✓ Lequesne index
 - ✓ Knee joint range of motion
 - Ultrasongraphic features
 - ✓ Musculoskeletal scoring system for knee OA(MUS)
 - ✓ Joint effusion height at suprapatellar recess
 - ✓ Doppler activity

RESULTS

- Changes of symptom scores, mobility scales and ultrasonographic features
 - Experimental group showed a significant improvement in VAS score (3.8 to 2.9) and Western Ontario and McMaster Universities Arthritis Index(WOMAC)



- There were also significant improvements in the Lequesne index (9.5 to 6.7) and suprapatellar effusion height (0.6 to 0.5).



* p-value<0.05 for intergroup comparison; † p-value <0.05 for intragroup comparison between pre and post-treatment; ‡ p-value<0.05 for intragroup comparison between pre-treatment and one month follow up.

- Changes of knee range of motion and doppler activity
 - We found increase in knee flexion ROM and doppler activity

	Pre-treatment [‡]	Post-treatment [‡]	1 mon f/u [‡]	p-value [‡]
Knee flexion ROM [‡]	112.8±14.2 [‡]	120.6±9.5 [‡]	114.4±8.8 [‡]	0.49 [‡]
DA medial [‡]	0.00±0.00 [‡]	0.67±0.50 [‡]	0.11±0.33 [‡]	0.04 [‡]
DA med para [‡]	0.00±0.00 [‡]	0.47±0.52 [‡]	0.35±0.50 [‡]	0.35 [‡]
DA lateral [‡]	0.00±0.00 [‡]	0.44±0.52 [‡]	0.33±0.50 [‡]	0.35 [‡]

CONCLUSION

- This study demonstrated that ESWT has great effects in reducing pain, improving knee function and showing objective improvements on ultrasonographic features in patients with mild knee osteoarthritis in comparison to placebo group during the 3 weeks treatment and one months follow up after the treatment.