EFFECT OF ERGON IASTM EDEMA REDUCTION TECHNIQUE IN KNEE OSTEOARTHRITIS PATIENTS

Petya Subeva
Neophyte Rilski Southwest University, Bulgaria, petqsubevaa1995@abv.bg
Maria Gramatikova
Neophyte Rilski Southwest University, Bulgaria, mari_gramatikova@swu.bg

Abstract: Knee osteoarthritis (OA) is a persistent and advancing condition that places a substantial socioeconomic strain on both society and healthcare systems (Dantas, Salvini, McAlindon, 2020, p.1). Prevention of this disease is limited due to low health literacy and barriers to lifestyle changes (Messier, et al, 2022). **Objective:** The objective is to follow the effect of the application of the "Ergon IASTM Instrument Assisted Soft Tissue Mobilization" technique to reduce edema in patients with osteoarthritis of the knee joint. Study methodology: 24 patients with X-ray stage II and III arthritic changes in the knee joint were examined. Not everyone's symptoms match the radiological changes. They are distributed as follows: control group (CG) – 10 patients and experimental group (EG) – 14. The study methodology includes functional studies: centimetry of the knee joint to study edema before and after the 10-day treatment. In CG, the following is applied: electrotherapy - low-frequency magnetic pulse field with a duration of 15 min.; ultrasound therapy with a dosage of 0.4 W/cm3 with a duration of 10 min and cryotherapy 2 times for 5 minutes each (once during the kinesitherapy procedure, the second time at home - after the procedure in the evening - before going to bed). The EG applies: electrotherapy - low-frequency magnetic pulse field with a duration of 15 min.; ultrasound therapy with a dosage of 0.4 W/cm3 with a duration of 10 min once a day for 10 days and Ergon IASTM with techniques: rub, wave, snake, razor excav once a day for 3 days (total 3 times for the 10 days. Results: Centimetry of the knee joint before and after the 10-day application of the treatment. Control group (CG) 1 day through the joint gap was 68.6±7.9cm and 68.1±9.4cm on the 10th day. Experimental group (EG) across the joint gap was 61.8±9.49 and 60.5±9.96cm. Statistical data show a reduction in edema in the subjects examined. The differences in the centimetry values in the two measurement periods are statistically significant ($p<0.05$). These data indicate an individual response in the reduction of edema after the application of "Ergon IASTM" technique for reducing swelling in the knee joint in gonarthrosis depending on the injury, accompanying diseases and other factors, which should be further established. Discussion: No data were found in the literature to investigate the effect of the Ergon IASTM technique in reducing edema in patients with osteoarthritis of the knee joint. The methodology applied in the experimental group is more effective than the one applied in the control group, because it leads to a reduction of swelling in the area of the knee joint. Due to the small number of subjects studied and their 10-day treatment, a larger study and a longer treatment period are needed in the future.
Keywords: Ergon Technique, IASTM, Osteoarthritis (OA), kinesitherapy, knee joint

1. INTRODUCTION

Knee osteoarthritis (OA) is a chronic progressive disease that imposes a significant socioeconomic burden on society and health care systems (Dantas, Salvini, McAlindon, 2020, p.1). Prevention of this disease is limited due to low health literacy and barriers to lifestyle changes (Messier, et al, 2022). Knee osteoarthritis still presents a challenge to clinicians. While consensus remains elusive regarding diagnosis and treatment, timely therapeutic intervention during the initial phases can profoundly influence both function and quality of life. Physiotherapy exercises remain the main treatment (Mauro et all, 2021). Contrast bath therapy is effective in reducing pain when administered by different methods compared to individual hot or cold water treatment, and administered using a device will be more effective than the traditional method. Along with this, strengthening the muscles of the hip joint and knees helps stabilize the knee joint, and balance exercises help improve proprioception and improve functional activity. Motor activity and electrotherapy help reduce symptoms and slow the progression of this condition (Fokmare, Phansopkar, 2022). Conservative treatment most often focuses on reducing symptoms with non-steroidal anti-inflammatory drugs (NSAIDs) and analgesics, which can cause side effects (Stonehouse et al, 2022). In the realm of conservative knee osteoarthritis (OA) treatment, intra-articular injections hold significant popularity. Nonetheless, detailed comparative efficacy data concerning these injections are currently insufficient (Tschopp et al., 2023). Notably, both intra-articular platelet-rich plasma (PRP) and hyaluronic acid (HA) have exhibited effectiveness as treatments. Evidence supporting combination therapy is conflicting (Huang et al, 2022). (Messier et al, 2021) stated that the reduction of thigh muscle strength and the formation of joint effusion were associated with the progression of the development of articular degeneration of the knee joint. ERGON IASTM Technique includes specific therapeutic approaches for the diagnosis and treatment of musculoskeletal system disorders which the

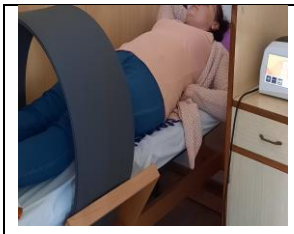
physical therapist performs using specially designed stainless-steel tools (Konstantinos, F., Konstantinos, M., 2015, p.11). This is an innovative therapeutic approach combining static and dynamic manipulations of soft tissues with special tools for the treatment of neuromuscular and skeletal pathologies (Nikolaev, Gramatikova, Mitova, 2021). Research presents preliminary evidence that soft tissue mobilization in combination with specialized therapeutic exercises can offer faster therapeutic results and pain reduction (Fousekis, Mylonas, Angelopoulos, 2017).

2. MATERIALS AND METHODS

Objective: The objective is to follow the role of "Ergon IASTM (Instrument Assisted Soft Tissue Mobilization)" technique in reducing edema in patients with knee osteoarthritis.

Study methodology: 24 patients with X-ray stage II and III arthritic changes in the knee joint were examined. Not everyone's symptoms match the radiological changes. They are distributed as follows: control group (CG) – 10 patients and experimental group (EG) – 14. The research methodology includes functional studies: centimetry of the knee joint (through the joint gap) before and after the 10-day treatment. In CG, the following is applied: electrotherapy - low-frequency magnetic pulse field with a duration of 15 min.; ultrasound therapy with a dosage of 0.4 W/cm3 with a duration of 10 min and cryotherapy 2 times for 5 minutes each (once during the kinesitherapy procedure, the second time at home - after the procedure in the evening - before going to bed). In EG is applied In CG is applied: electrotherapy - low-frequency magnetic pulse field with a duration of 15 min.; ultrasound therapy with a dosage of 0.4 W/cm3 with a duration of 10 min once a day for 10 days and "Ergon IASTM with techniques: rub, wave, snake, razor excav" once a day for 3 days (total 3 times for the 10 days).

Table 1. Methodology of the conducted research

    	In CG and EG, the following is applied: electrotherapy – low-frequency magnetic pulse field with a duration of 15 min. In CG and EG, the following is applied: ultrasound therapy with a dosage of 0.4 W/cm3 and a duration of 10 min. **Only in the control group**, cryotherapy was applied 2 times for 5 minutes (once during the kinesitherapy procedure, and a second time at home - after the procedure in the evening - before going to bed). **Only in the experimental group** was applied Ergon IASTM with techniques (once a day for 3 days (total 3 times for the 10 days). The techniques are performed in one direction of the blood and lymph flow: ***rub, wave***

snake, razor

Excav

2. RESULTS

Centimetry of the knee joint before and after the 10-day application of the treatment. Control group (CG) 1 day through the joint gap was 68.6±7.9cm and 68.1±9.4cm on the 10th day. Experimental group (EG) across the joint gap was 61.8±9.49 and 60.5±9.96cm. Statistical data show a reduction in edema in the subjects examined. The differences in the centimetry values in the two measurement periods are statistically significant ($p<0.05$). The low coefficient of variation (V%) indicates that the sample is homogeneous, but this is also due to the small number of individuals studied.

Table 1: Centimetry through the joint gap of the knee joint before and after 10-day treatment

Signs	**CG** **Centimetry through joint gap of KJ**			**CG** **Centimetry through joint gap of KJ**	
	Day one	Day ten		Day one	Day ten
$\bar{X}$	**68,6**	**68,1**		**61,8**	**60,5**
SD	**7,9**	**9,4**		**9,4**	**9,96**
SErr	**2,51**	**2,52**		**2,53**	**2,66**
V%	12,12	12,16		15,36	16,47

The data indicate an individual response in the reduction of edema following the application of the Ergon IASTM knee edema reduction technique in gonarthrosis depending on the injury, co-morbidities and other factors to be further established. The values of P show that the established difference in the average values of the indicators in the group after the application of the described methodology in EG is statistically significant. More studies are needed to confirm effectiveness.

3. DISCUSSION

The methodology applied in the experimental group is more effective than the one applied in the control group, because it leads to a reduction of swelling in the area of the knee joint. Due to the small number of subjects studied and their 10-day treatment, a larger study and a longer treatment period are needed in the future.

4. CONCLUSION

In the study, we found that there were statistically significant differences in both groups. Despite the good results of patients in CG, we found that the applied methodology in EG has a better effect in reducing edema in patients with osteoarthritis of the knee joint.

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