Effects of exercise compared with ultra sonic and short wave diathermy in osteoarthritis of knee.

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Abstract:
The benefit of short wave diathermy and ultrasound therapy was determined with exercise program for knee osteoarthritis patients. A randomized clinical trial was conducted on 30 patients of osteoarthritis of knee in this study. The patients were divided into two groups. Group A and Group B. The Group A was treated with Short wave, TENS and exercise where as Group B was treated with Ultrasound, TENS, and exercise. Improvements were noted more in Group B, than in Group A, after 5th visits. Highly significant improvement was found in Group B after 10th visits. This study suggests that ultrasound therapy with plays an important role for the treatment of patients with osteoarthritis of knee.

Key Words:
Osteoarthritis, shortwave diathermy, ultrasound therapy, exercise, TENS.

Introduction:
Osteoarthritis (OA) is a clinical syndrome characterized by inflammation and degeneration which generally results in the progressive loss of joint cartilage and in many cases leads to the formation of bone cysts and Osteophytes. In addition to joint alterations, other symptoms may also appear, such as joint pain, reduced or restricted movement of the affected part, crepitation, joint effusion, and deformity¹-².

This disease affects over 60% of the world population over the age of 40, especially women. Among all the joints, the knee is usually the most commonly affected³-⁴. The knee is a complex joint, with three major components: the medial and lateral tibio-femoral joints and the patello-femoral joint⁵. The object of knee osteoarthritis treatment is to alleviate pain, improve function, prevent and correct deformities, and retard its progression⁶-⁷. Many interventions have been suggested for this, including changes in the affected individuals lifestyle, drugs, surgical and physical therapy that use specific techniques such as exercise and other physical means⁸-⁹.

Short wave diathermy is often prescribed and is claimed to be effective. Short wave diathermy is a form of electromagnetic therapy which produces an oscillating electromagnetic field. This causes movement of ions, distortion of molecules and creation of eddy currents, and as a result heat is produced in deep tissue,¹⁰ The mechanism of action includes inducing an anti-inflammatory responce¹¹, reducing joint stiffness,¹² stimulating connective tissue repair ¹³, reducing muscle spasm and pain.

Material and Methods:
Thirty patients having osteoarthritis of knee were selected and were divided into two groups randomly. Group A: consist of 15 patients who were treated with short wave diathermy, exercise and TENS (transcutaneous electrical nerve stimulation).where Group B consisting of 15 patients were treated with ultrasound, exercise and TENS.

Females above 30 years of age hypertensive having no evidence of malignancy and having no evidence of infection on the skin over knee joint were examined.

Males of less than 30 years, having any evidence of malignancy, having osteoarthritis of any other part of the body and having morning stiffness more than 30 minutes, were examined.

Activities of daily living were :1) not to bent the knee more than 90 degree; 2) to use walking stick on the opposite hand of the affected knee during walking; 3) to climb a stair , use the handle of the stair and climb slowly 4) to reduce body weight for overweight person; 5) to use high commode in bathroom; 6) to avoid high healed shoes, prolonged walking and sitting;
7) to bath in standing or sitting position with a shower and not to take water from a pot by kneeling. The nature of the study was discussed with the patients and informed consent of the patients was taken before admission into the trial. History, clinical examination and relevant investigations were done. The findings were recorded at first attendance followed by weekly visits. The following parameters were used for comparing the treatment, such as Visual Analogue Scale (VAS) and Range of Motion (ROM) of the knee joint. The pain VAS presented to patients was a 10 cm horizontal line with an end points of no ‘no pain’=0 and maximum pain ‘= 10. The patients were asked to rate how bad their pain was by placing a mark somewhere along the scale between two extremes.

Results:
A total of 30 patients followed the treatment plan properly, out of which 15 were treated with short wave diathermy, TENS, exercise and 15 were treated by ultrasound, TENS, and exercise.

Before admission into the trial baseline criteria of the patients of the two groups were compared and it was found identical. In comparison between Group A and Group B there was significant improvement after treatment in Group B. In respect to time point improvement, marked improvement was started to occur after 5th visit and the improvement gradually increased day by day. After the end of 10th visit there was a highly significant improvement. This indicates that treatment with ultrasound is more effective. In Group B patient was treated with continous mode of ultrasound, TENS, and exercise. The pain was completely subsided and they could perform their daily activities properly.

Discussion:
While comparing the two groups the significant improvement was noted in the group of patients who received ultrasound, TENS and exercise. In our study 30 female patients with osteoarthritus of knee, were included among these 15 received short wave diathermy, TENS and exercise considered as Group A and the remaining 15 female were treated with ultrasound therapy, TENS, and exercise considered as Group B respectively.

The significant improvement was found in Group B at the end of 10th visit. Patient’s pain, swelling and spasm subsided and improved range of motion, muscles weakness was reduced. They could perform daily activities such as walking, bathing, dressing, use of toilet and house hold activities. Less improvement was found in Group A who were treated with short wave diathermy, TENS, and exercise. Short wave diathermy has been prescribed for various medical conditions without defenate proof of its effect. The effect of short wave diathermy in knee osteoarthritus showed either positive or no effect. The most common uses in US were to decrease soft tissue inflammation, increase tissue extensibility, enhance scar tissue remodeling, increase soft tissue healing, decrease pain, and decrease soft tissue swelling. Other uses were to deliver medication for soft tissue inflammation, pain management and soft tissue swelling.

The purpose of study is to evaluate the benefit of Short wave diathermy supplemented to an exercise program on the reduction of pain and the increment of function in women with knee osteoarthritus.
Conclusion:
From this result it is concluded that ultrasound is effective for decreasing pain and may improve physical function in patients with knee osteoarthritis than that of short wave diathermy.

REFERENCES:


