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Case Report

Compression with active movements in osteoarthritis of knee: a case study

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ABSTRACT

The objective of this case study was to find out the immediate effectiveness of an innovative approach in form of CAM (Compression with Active movements) in a woman with chronic osteoarthritis of knee. Participant was an individual with chronic osteoarthritis of knee participated in this study. The intervention was hands on manual therapy approach called compression with active movements where hamstrings muscle were compressed with therapist hands as if they were splinted or supporting by hand and simultaneously patient was asked to perform the active knee flexion and extension for three bouts of 10 repetitions. Main outcome measured in this case was pain relief in terms of visual analogue scale and active knee flexion. Pain was reduced by 3.1 cm on VAS scale and active knee flexion improved by 16 degree. Compression with active movements may be used for immediate relief of pain in chronic osteoarthritis of knee when it is associated with hamstrings spasm so as to get confidence of patient in performing active movements.

Keywords: Knee pain, Physiotherapy, Compression, Active movements, Manual therapy, Hamstrings spasm

INTRODUCTION

Everyone talks of arthritis but considering its implications; no one wants to suffer from it![1] The term arthritis is derived from Greek arthro meaning joint and its meaning inflammation.[2] Basically, arthritis is a group of disorders, involving damage to the joints of the body. Today, arthritis has become one of the common causes of disability in the world. The disease limits everyday activities, such as getting in and out of bed, dressing, climbing stairs and even walking. Arthritis may lead to reduced mobility, loss of employment, breakdown of social and marital relationships, chronic pain, fatigue and depression.[3,4] It also, obviously, affects the ability of parents or grandparents to enjoy fully children's early years. While most of arthritic patients are benefited with outpatient care, some of them may need full time medical, nursing and physiotherapy and care. There are almost more than 100 forms of arthritis but Osteoarthritis happens to be a common arthritic joint disorder and it's not confined to humans but occurs in most mammalian species.[1] Historically osteoarthritis is an ancient disorder. Egyptian mummies or prehistoric fossils clearly demonstrated that osteoarthritis is as old as mammalian species.[5] This arthritic disorder is also known as degenerative arthritis, degenerative joint disease, osteoartrhosis, arthritis deformans and wear and tear arthritis.[6] Osteoarthritis is a degenerative disease of joint or joints characterized by pain, gradual stiffness and deformity. In simple words, osteoarthritis can be defined as the disease of synovial joints characterized by chondropathy. Chondropathy or cartilage loss and accompanying periarticular response is significant change in this form of arthritis. An estimated incidence of 18 per

thousand has been reported in Indian population.[1] Arthritis foundation of India has cited an interesting Chalo Chalein (come we will move) test that most of us can understand. Four simple questions are asked to the individual and if answer to any one is yes then there is possibility individual suffering from arthritis.

These questions are, is getting up from a seated position or standing for long period of time while cooking, a painful experience? Are climbing stairs and attending prayer meetings being avoided? and is going for family outings becoming more and more difficult?[7] Considering, the radiological changes in the joint, physiotherapy interventions are likely to be targeted to the knee joint but occasionally the source of pain can be accompanying spasm and limited hands on therapy options have been described for this issue and hence in this study, an attempt is made to determine the immediate effectiveness of compression with active movement an innovative approach used by the author in a woman with chronic osteoarthritis of knee.

CASE REPORT

The patient (Mrs. VG) was a 72 year old retired teacher. She was referred for her left knee pain due to chronic osteoarthritis of knee by a physician.

Her medical details reveled that she was a known case of diabetes mellitus type II and hypertension that was classified as class III by the referring physician.

Patient history

Mrs. VG complained left knee pain off and on for last three years and aggravated by walking and stair climbing. She rated her pain as 8.6 on a 0-10 centimeter visual analogue scale[8] and described it as severe at the time of examination. She noted that all knee movements were painful especially at their end and more pain was perceived on walking or standing.

She recalled no specific injury to her left knee, hip or leg pain and told the history of similar problem in the past. Further, she reported that there were no temporal variations but reveled that sleeping with pillow between knee could alleviate her symptoms.

Physical examination

Quick physical examination performed by the investigator revealed medial compartmental tenderness, painful terminal restriction of active knee flexion & extension, aggravation of symptoms on standing, one leg standing on affected side was not possible due to pain and spasm of hamstrings. Functional squat test was positive and X-ray showed classical grade III changes depicting osteoarthritis of tibiofemoral joint that were more noticeable on medial side.

Treatment methods

The patient was treated with moist heat therapy and Maitland's mobilization by a post graduate student for three days but since the patient didn't feel satisfactory relief she was shown to the investigator. On quick examination, the investigator realized that discomfort was basically due to hamstrings spasm and hence attempted the innovative technique called compression with active movement and since this was relatively pain free, it was done for 10 repetitions, then reassessment of discomfort was done and since it was favorable another set of 10 repetitions was done and once again reassessment of discomfort was done; once again there was favorable response and hence the technique was repeated one more time so as to complete a total of 30 repetitions in three bouts. The technique compression with active movement was used here on the basis of investigators experience in low back pain and tennis elbow where with external application of compressive forces could alleviate the discomfort and hence similar intervention was tried here. In order to this technique, on left hamstrings, investigator applied continuous comfortable and firm pressure with palmar cup of left hand at back of lower thigh and supportive pressure from the anterior or top side of lower leg with right hand. In past, we have used this technique to quickly screen the patient so as to find out if he or she will respond to soft knee brace. This patient was treated by the other therapist for few days and then the patients stopped coming for the treatment because of the distance that she had to travel in order to take physiotherapy treatment.

Outcome

Immediately after the completion of the compression with active knee movements procedure, the patient was re-evaluated for pain relief. It was found that her visual analogue scale score for pain got reduced to 3.1 cm on VAS scale and active knee flexion got improved by 16 degree.

Figure 1: Positioning of hands at rest.

Figure 2: CAM at the end range.

DISCUSSION

The results of this study showed that a single session of Compression with Active Movements (CAM) may be useful in reliving the knee pain in chronic osteoarthritis of knee if it's due to the spasm of hamstrings. The author feels that this could be due to the restoration of patient's confidence that if I move, I won't get the pain, it may be due to the temporary splinting/supporting/taping or strapping effect over the spasmodic region, proprioceptive effect, neuro-physiological effect, shunting of the forces and creating so called a temporary false insertion for hamstrings or simply relief of stretch or pressure from spasmodic muscles. This could also be due to muscle relaxation, relief of pain, placebo effect, removal of stretch from spasmodic muscles, reduction in nociceptive stimuli and improved circulation. However, exact cause and effect relationship could not be studied. Since there is hardly any study with similar study design and interventions, the results could not be interpreted with preceding literature. The obvious limitation of this study is generalization to other individuals or situations is difficult. Also, single subject participation in this study limits the conclusion of study for specific person.

CONCLUSION

The results of this study suggest that Compression with Active Movement (CAM) can be used in the treatment of chronic osteoarthritis of knee especially when it is associated with the hamstrings spasm but further studies are needed to determine the clinical utility of this treatment approach in a larger population.

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