

**DIFFERENTIAL REHABILITATIVE APPROACHES TO OSTEO
ARTHRITIS OF KNEE-A CASE REPORT****NARESH BHASKAR RAJ****Department Of Physiotherapy, Faculty of Medicine and Health Sciences ,Universiti Sultan
ZainalAbidin, Kuala Terengganu, Malaysia.***ABSTRACT**

Osteoarthritis is a degenerative joint disease. It affects the weight bearing joint. Osteoarthritis of knee and hip are very common amongst all the other forms of osteoarthritis. This case report explains the treatment of a patient who had symptoms and signs suggestive of osteoarthritis of knee. She complained of pain in both the knees, but more on the right side, early morning stiffness, difficulty in walking and limitation of functional activities. This case report emphasises the role of physical therapy in the rehabilitation of the patient with osteoarthritis of knee. This case report suggests that appropriate treatment techniques will prevent the worsening of the severity of the problem and also avoid or postpone the option of a surgical intervention.

KEYWORDS :Osteoarthritis, Quadriceps femoris, Proprioception,Physiotherapy

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SUBJECTIVE DATA

Mrs Aira (not her real name), 65 years old, came to orthopaedic out-patient department to find a solution for a 5-year history of progressively worsening pain in both knees. After her consultation with orthopaedist, she was referred to physiotherapy department for further management. The chief complaint was deep aching pain in both knees (the right side was more when compared to the left). She had stiffness in her knees for about 20 to 25 minutes after she woke up in the morning and for a few minutes after resting for a long time. She complained of difficulty in walking for more than 30 to 40 minutes because of pain, and her symptoms were increase by activities such as kneeling, squatting, or descending stairs. Sitting, resting, and supine lying relieved her pain but she became stiff if she continued the position for a long time. She complained of increased symptoms during winter, and sometimes she occasionally felt as if her right knee was unstable. When the pain was measured on visual analogue scale, she had a rating of 7/10 on activity and 0/10 at rest. Mrs Aira was an active person in her society. She was a member of Leisure Club, attending most of the club programs but for the past 2 years, she has reduced her participation due to her knee pain. Due to the pain in her knee, walking long distances becomes difficult for her and she could no longer accompany her life partner on his walks. Currently, she was staying with her husband and 3 children in a double storey house. Her bedroom was at the second floor. Patient runs her own business (groceries shop) in which sometimes being a part of staff members and helping in carrying heavy boxes due to lack of staff. As her knee pain becomes worse day by day, housekeeping and helping at her groceries shop activities that involve lifting and carrying heavy objects (e.g. lifting heavy box and carrying the pail with water inside for mopping) were very difficult tasks for her. Above all, she was anxious about losing her friends and happy time with her husband and children as a result of the deterioration of her health and this would possibly lead to depression. Even though patient had pain in the knees for the past 5 years, she never consulted any doctor due to her family and business commitment. Patient did not have history of hypertension, diabetes mellitus, trauma and surgery in the past. She had her menopause at the age of 51.

OBJECTIVE DATA

Mrs Aira was slightly obese and had mild antalgic gait. Tenderness of patellar facet was determined by palpation. She presented with tenderness over the joint line, moderate warmth and soft-tissue swelling. Mrs Aira showed signs of exhibited moderately severe decreased patellar glide both medially and laterally when patella glide was measured on full knee extension. She also had mild genu varum on examination of the lower limb, suggestive medial compartment involvement. Osteoarthritis of the knee often affects the medial compartment, as a result of the natural "bowing" or varus moment present during normal human gait¹. They also stated that isolated lateral compartment OA can result from a valgus knee alignment. The active range of motion for right knee flexion was 120° and the left knee flexion was 130° but for the both of knees, she had loss 8° of extension of normal range of motion. She also had palpable crepitus on passive range of motion of both knees. Mrs Aira presented with mild instability due to laxity of ligaments on the medial side. She didn't have any indications of anterior cruciate ligament insufficiency on Lachman's, anterior drawer testing, and pivot shift manoeuvre. Her distal pulses, skin sensation was normal. No evidence of cyanosis, clubbing, or oedema. No signs of neurovascular problems were found on examination. Mrs Aira's hip joint and low back were also examined to rule out any contribution to the knee symptoms. She had full range of motion (ROM) of the lumbosacral, and all motions were pain free. These findings indicate that neither hips nor back was contributing to this patient's symptoms. She also had no leg length discrepancy, as this can contribute to patient's symptoms and affect the treatment plan. X-ray showed osteophytes on both knees, joint space reduction more on right side, and subchondral bone sclerosis in her medial compartment of right knee suggesting a grade 3 on the Kellgren's Lawrence criteria. After seeing the radiograph of Mrs Aira's knee, the doctor suggested her for knee replacement or tibial osteotomy due to her condition get worsens. According to American Academy of Orthopaedic Surgeons (AAOS) (2004), patient who had varus angulation more than 10° and stable ligamentous support was suggested undergo tibial osteotomy to decrease the symptoms and encourage formation of a new

articular surface. After meeting the specialist and discussed about the intervention, Mrs Aira decided to receive the conservative management only due to worry of the side effects of the surgical management. According to AAOS (2004), there are chances of getting infection, clotting of the blood, damaging of the nerve and circulatory problems for the patients who undergone surgery. AAOS (2004) also stated that there is possible for a total knee replacement patient's clinical results worsen in long term follow up. Although surgical procedures remain an option for this patient if the condition of the patient deteriorates. However, for young patients, the surgery might be postponed or avoided to prevent from the need of multiple knee replacement in future (AAOS, 2004).

TREATMENT PLAN AND INTERVENTION

As a physiotherapist, I had explained what happened to her knees and gave her few materials to educate her about the condition and also the sources of resource regarding her problem like internet and the arthritis foundation of Malaysia. Patient should be educated to promote the behavioural modifications and improve symptoms. This education should be about the pathogenesis of osteoarthritis, clinical course, and treatment. I also advised the patient about the lifestyle modifications that can reduce the pain and make her functioning better. A physical therapy program was recommended, with the aim of reducing swelling and the pain by applying cold packs at the knee joint. This application of cryotherapy involves ice packs which can be used for acute episodes of inflammation and pain¹, to increase ROM and also flexibility, especially in the hamstrings. Improving the strength of the muscle such as quadriceps and hamstrings was advised. Mrs. Aira showed signs of tight hamstrings and this can be one of the causes of the knee pain. Tight hamstrings can increase pain. So stretching of all the muscle around the knee joint was advised. This can also help in the increase of range of motion. Patient with osteoarthritis of knee commonly exhibit muscle weakness as an impairment². Weak quadriceps is positively related to knee pain³. Quadriceps strengthening was found to increase the knee function and reduce pain⁴. Hence a set of quadriceps strengthening exercises were prescribed for her. This includes Quadriceps sets, isometric strengthening exercise and straight-leg raises. Progression of these exercises to closed chain

kinetic exercises were advised based on the severity of pain and also the improvement in the strength of the muscles. The effects of closed kinetic chain are that it causes reduction in patellofemoral joint forces, anterior cruciate ligament strain, and tibial translation by causing co contraction of the thigh muscles in front and back. Closed kinetic chain exercise along with taping is found to be beneficial for patients with osteoarthritis⁵. Mrs Aira was encouraged to use a knee sleeve during her daily activities as this can improve the sense of stability. Proprioceptive retraining was prescribed as well, as this can decrease joint stress. A knee brace is better than no support to reduce the pain and stiffness and improving function. Zhang et al. (2007) stated that a knee brace can reduce pain, improve stability and diminish the risk of falling in patients with knee OA and mild/moderate varus or valgus instability⁶. Reduction of patellar facet compression on the thigh bone was achieved by patellar taping. Obesity is the main risk factor for the development of knee osteoarthritis and also a deciding factor for total knee replacement³. Mrs. Aira was advised to reduce her body weight. This weight loss will decrease joint stress, pain and increase the ability to exercise³. A 12-lb weight loss can decrease the chance of developing osteoarthritis in women by 50%. Messier et al.,⁷ found out that for each pound of body weight lost, the knee experiences a 4 fold reduction in load per step . In addition, Mrs Aira was advised to reduce high-impact activities like running and jumping, and to increase low-impact activities such as swimming and bicycling. This has been found to be effective in knee arthritis. I evaluated the patient periodically to assess the impact of the treatment. By doing a periodical evaluation I was reflecting back on the treatment given by me and its effect on the patient. Mrs. Aira was advised to avoid activities that load the patellofemoral joint, such as squatting and ascending and descending stairs to avoid exacerbation of her patella femoral problem. Patient also was advised not to sit on the floor or a low stool to prevent from the worsening. Other than that, patient was advised to change her bedroom to the ground floor. Since the patient was active in her groceries shop, involving with lifting activities, she was advised to reduce lifting by seeking help from her employees or using a mechanical device for lifting, thereby reducing her joint stress. To improve the aerobic conditioning of Mrs. Aira and also to make her spend more calories she was stressed on the importance of regular work out .This was

achieved by supervised a walking program which also increases the functional status without increasing symptoms⁸. Physiotherapy may postpone the need for surgical intervention. It has been agreed by Deyle et al. (2000)⁹ that physiotherapy treatment including exercise may decrease the necessity for surgical management and intra-articular injection. Mrs Aira is still following the conservative management and able to cooperate with it. There is an evidence stated that exercise increase knee joint function and reduce symptom (Ettinger et al. (1997)¹⁰ and Mrs Aira has proved it by able to take part in leisure activities and maintaining her strengthening exercise program. Within the conservative management, she currently able to

continue her hobbies like gardening and shopping with minimal side effects.

CONCLUSION

This case report describes a holistic rehabilitative approach of a patient with osteoarthritis of knee joint. The impact of evidence based practice and clinical reasoning in physiotherapy have helped the patient to continue her activities of daily living with minimal difficulty and also to delay or may be even avoid any future surgical interventions.

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