Primary Management of Osteoarthritis


1Abdul Latif Jameel Hospital for Medical Rehabilitation, Jeddah, Saudi Arabia
2King Abdullah Medical Complex, Jeddah, Saudi Arabia
3Kafif Primary Healthcare, Saudi Arabia
4King Fahad University, Saudi Arabia
5King Khaled University, Saudi Arabia
6King Fahad Hospital, Saudi Arabia
7Smile Infinity Clinic, Saudi Arabia
8Khafji General Hospital, Saudi Arabia
9Almaarefa University, Saudi Arabia
10University of Sharjah, Sharjah, United Arab Emirates

*Corresponding Author: Mohamad Mohsen Motawea, Abdul Latif Jameel Hospital for Medical Rehabilitation, Jeddah, Saudi Arabia.

Received: January 03, 2020; Published: January 20, 2020

Abstract

**Introduction:** Osteoarthritis is a very common disease and is mostly associated with older age people. It poses a lot of problems, medically and psychologically for the patient. The incident rate of osteoarthritis goes to millions of people around the world. Osteoarthritis is associated with the patient having severe pain, and disability to function properly, the quality of life is lowered and the patient might also have psychological issues. Primary management of osteoarthritis includes self-management and has been tested in many patients worldwide and reports a good result in cases where patients complain of pain and depression. It helps the patients to decrease weight and increase the ability of the patient to handle the condition. It aims at increasing the physical activity of the patients.

**Aim of Work:** This review aims at highlighting the different causes and management techniques of osteoarthritis in the primary care set up and a pharmacological approach for the treatment.

**Methodology:** The review is a comprehensive research of PUBMED from the year 1985 to 2019.

**Conclusion:** Osteoarthritis is an increasing and one of the most potent causes of disability in millions of people throughout the world. A better understanding of the disease in terms of the symptoms and diagnosis through 2D and 3D imaging helps to diagnose the disease in early stages that minimize the risks and complications associated with the disease. Pharmacological and non-pharmacological treatments when used as an adjunct to each other, give the best results in cases of arthritis. The main aim of treatment is to lessen the causing factors and motivation of the patient for self-treatment and physical therapies.

**Keywords:** Osteoarthritis; Tidal Knee Irrigation; Osteoplasty; Arthroscopic LA

Citation: Mohamad Mohsen Motawea,. et al. "Primary Management of Osteoarthritis". EC Orthopaedics 11.2 (2020): 01-08.
Primary Management of Osteoarthritis

Introduction

Osteoarthritis is a very common disease and is mostly associated with older age people. It poses a lot of problems, medically, and psychologically for the patient [1]. The incident rate of osteoarthritis goes up to 8% in the United Kingdom [2]. Osteoarthritis is associated with the patient having severe pain, unable to function properly, the quality of life is lowered and the patient might also have psychological issues [1]. Primary management of osteoarthritis includes self-management and has been tested in many patients worldwide and reports good results in cases where patients complain of pain and depression. It helps the patients to decrease weight and increase the ability of the patient to handle the condition. It aims at increasing the physical activity of the patients [2].

Risks and early signs of arthritis

The early signs of arthritis, as reported by around 40% of the patients, are the limit ability and reduced physical activity. It is also stated as the most significant cause of disability for the population of the united states [3]. The patients who are reported to have osteoarthritis are 7 times more disabled compared to their same age and sex counterparts [4]. The disability related to osteoarthritis is a major cause of the patients losing their job as they are not able to perform the normal household works, thins like gardening etc. It also has been reported to be associated with increased mortality of the patient. In the initial stage of arthritis, the patient may experience stiffness in the joints of the body during the early hours of the day right after the patient gets up in the morning. He may also experience diffuse pain throughout the day. Patients also experience joint pain and swelling that is present in the joints. The joints become tender on palpation and follow asymmetry in the spread [5]. A few questions that can be asked to patients for diagnosis of osteoarthritis are listed in table 1 that makes the diagnosis more predictable and easier. Stiffness and swelling in the joints are not localized, especially to osteoarthritis but maybe a leading symptom and the patient will additionally complain of the pain lasting for almost an hour before he can do some actual work [5].

<table>
<thead>
<tr>
<th>List of questions that can be asked to patients with arthritis</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. If your joints hurt you in the morning when you get out of bed?</td>
</tr>
<tr>
<td>2. When does the pain in your joints become the worst, morning or night?</td>
</tr>
<tr>
<td>3. For how long does the pain last, and how much time does it take for you to come to normal?</td>
</tr>
<tr>
<td>4. Do you have a history of smoking?</td>
</tr>
<tr>
<td>5. Does anyone in the family have a history of arthritis?</td>
</tr>
<tr>
<td>6. What household or normal day to day work are you not able to perform because of the disability.</td>
</tr>
</tbody>
</table>

Table 1: Questions that can be asked to the patient for the diagnosis of arthritis [6].

Diagnosis of arthritis

Early osteoarthritis is a challenge when it comes to diagnosis. Lard and his colleagues concluded that if the treatment of osteoarthritis is delayed by even up to 4 - 6 months, they can result in long term damage which becomes very difficult to treat later [6]. The most common presentation of osteoarthritis is pain and swelling of the small joints like metatarsophalangeal and wrists, pain in knee and hips have also been noticed in a few patients. Figure 1 shows the distribution of joints and occurrence rates in cases of arthritis [6]. The most affected joints are the smaller joints, followed by the knee that has an occurrence of around 80%. The synovial effusions also create swelling and are seen around the affected joint. This effusion is difficult to detect in smaller joints [7].

Structural osteoarthritis is also defined as the loss of cartilage. The loss of cartilage is often seen after the patient has complained of changes within the synovium and the bone, but the loss of cartilage is often the endpoint in all the patients. Osteoarthritis imaging is done mainly through plain film radiographs (Figure 2) radiographic features that are seen include joint space getting narrow, formation of osteophyte and development of sclerosis and cysts. Although joint space is taken as the fixed-parameter for diagnosing osteoarthritis,
joint space is also affected by other parameters like the positioning of the joint, structure of the meniscus and hence cannot be taken as a standard parameter. Because of the decreased sensitivity in parameters of the radiograph, MRI is also suggested for osteoarthritis (Figure 3) and is considered more standard. Since plain film radiography takes the image in only 2 dimensions, it can be misleading and hence MRI being a three dimensional gives a more accurate picture of the disease progression [8].

Management of osteoarthritis

Goals for the management of osteoarthritis

The main aim of the management of osteoarthritis is to decrease the disability, improve the functions of the joint and minimize the pain. The pain assessment tool used for osteoarthritis is the visual pain analog which used for grading the pain levels of the patient. Joint functions are also assessed in different ways and the outcomes are recorded and used to check if the treatment is making a difference to the patient and if a good quality of life is being maintained by the patient.

Non pharmacological therapies

The non-pharmacological treatment has been proven to be very effective in the treatment of osteoarthritis. Non-pharmacological treatment should always be incorporated with pharmacological treatment for the best results. It includes the education of the patient and his family about the disease. Self osteoarthritis help classes have been shown to be very helpful. Lorig, et al. reported that patients who
**Figure 2:** Normal hip in anteroposterior and lateral view (A and C) and same with osteoarthritis lesion with narrowing of joint space (B and D) [8].

**Figure 3:** MRI scan of a patient with no evidence of cartilage loss in plain film radiograph, but depletion of Glycosaminoglycans seen when MRI was done [8].

attended self-help classes of osteoarthritis had a better outcome of the management with a decrease in pain, increased physical activity and their overall quality of life was proven to be better than the other group [9]. Every country has a local osteoarthritis foundation

Primary Management of Osteoarthritis

from which help is derived for self-help osteoarthritis classes. In addition to this, every month, phone calls were made to the patient by non-medical trained helpers to ask and investigate the condition of the patient; this helped to increase the condition of life of the patient without increasing the cost of the management. Although no evidence has been obtained about this, assistive devices have shown some improvement in the physical activity of the patients, like a cane when in used in the contralateral arm of the patient opposite to the knee involved decreases the pain and load on the affected knee [10].

Physical therapy has also shown to decrease the disability of the patient. Physical therapy personnel should be called once in a while, and assessment should be done for the patient. The assessment done should include the physical functions the patient is able to perform, mobility of the patient, strengthen the muscles and his ambulatory capability. Different exercises must be given by physical therapists to improve the range of joint movements. Fischer, et al. in his study, concluded that patients undertaking physical therapy had better strength in their muscles like hamstrings and quadriceps compared to ones who didn’t take physical therapy [11].

Other conditioning exercises like aerobics have also been found to be effective in the patients with arthritis, Kovar, et al. [12] conducted a study in which he grouped the patients in walking therapy and physical therapy; patients with walking after 6 weeks gave a good response, with increased physical strength and decreased dependency on drugs. The countries having osteoarthritis foundations have an exercise program and all the physicians encourage the patients for physical therapies [13]. Obesity has also been linked as an aggravating factor in osteoarthritis pain and hence various weight loss programs are also initiated by the foundations to decrease the weight and it helps in increasing the physical activity of the patient and decreasing disability and pain [14].

Pharmacological therapies

The pharmacological treatment of osteoarthritis has been associated with the use of Non-steroidal anti-inflammatory (NSAIDs) drugs as inflammation has been associated as the main cause of pain. NSAIDS have though been limited for usage because of their high expense and associated complication of Gastric diseases. Analgesics can be used for the management of osteoarthritis and the most commonly used analgesic is acetaminophen that can be used in the dosage of 4 gms/day. In a study conducted by Bradley, et al. [15] he concluded that patients responded equally to drugs like ibuprofen and acetaminophen in cases of arthritis. William, et al. [16] conducted another study in which they divided the patients amongst naproxen and acetaminophen and concluded that the group responded better to naproxen at rest. Chondroitin sulfate and glucosamine have also shown some anticatabolic potency in vitro, in which glucosamine sulfate has given better results than glucosamine hydrochloride [16]. Hyaluronic acid has also been used as Visco supplements as it is a natural lubricant that is found in the joint areas but is reduced in patients with arthritis [17]. Lubricin which is similar to hyaluronic acid, has also been used as a chondroprotective agent and has proven to be efficient [18]. The other strategy to fight osteoarthritis is to target the enzymes that cause degradation of the cartilage and bones. Doxycycline has been used for this purpose as it inhibits the matrix metalloproteinases but has not shown any significant reduction in the symptoms [19], Bisphosphonates have been used as they tend to reverse the bone changes at the subchondral level due to their ability to inhibit osteoclast activity. But results have not been very promising [20].

Intraarticular steroid injection has also been used to improve the symptoms but has not shown any structural change [8]. Anakinra which is an antagonist of IL-1, has also shown to reduce the symptoms. Anti TNF therapy by the name of Adalimumab has shown benefits in patients with inflammatory knee osteoarthritis [21]. The biological options of therapies have been associated with a lot of side effects and hence is justified only when localized joints have to be treated. Systemic treatment is generally given only in cases where multiple joints are involved. Recombinant bone morphogenic proteins and the fibroblast growth factor have also been used to modify the disease since they have the ability to repair cartilage [8]. In a clinical trial where growth factors were used, modification in the structure was seen in patients with growth factors as compared to those where it was not used. Ketogenic has shown promotion in chondrocyte differentiation in cartilage repair in animal models, clinical trials pertaining to this are remaining. Table 2 gives us an evidence-based report on how to manage a patient of Knee Osteoarthritis with pharmacological and non-pharmacological management [22].

The Algorithm to be followed for Management of Pain in the Primary care setting for Osteoarthritis of the knee

1. Take a good history and do a detailed physical examination
2. On the confirmation of Osteoarthritis, the patient is started on acetaminophen upto 4 gm/day and non pharmacological measures like self help classes, reducing weight, physical therapy are done.
3. Topical analgesic in cream form can also be added as and when needed.
4. Patient can then be started on NSAIDs like naproxen and ibuprofen
5. If not much improvement is seen, patient is started on a full high dose of NSAIDs and risk factors are ascertained.
6. Intra articular joint injections of steroids can also be given if required.
7. Adjunctive treatments like tidal knee irrigation and joint arthroscopy can also be done
8. The final treatment option would be surgical treatment with total replacement of joint or osteotomy.

Table 2: Evidence bases treatment plan for Osteoarthritis patient [6].

Adjunctive therapies for arthritis

Patients who do not respond to either pharmacological or non-pharmacological options of treatment and in which surgery cannot be performed are then subjected to adjunctive therapies. Adjunct therapies include irrigation of the tidal knee with saline which helps in dis-tension of the joint capsule and then the fluid is taken back. Tidal knee irrigation has shown to significantly improve the pain and physical functions of the patient [23]. Arthroscopic lavage has also shown good results, and in a study conducted by Chang, et al. it even showed better results than tidal knee irrigation [24].

Surgical treatment

Figure 4: Surgical correction of Osteoarthritis for a patient. The normal concavity near the acetabular rim is made during surgery [8].

Conclusion

Osteoarthritis is an increasing and one of the most potent causes of disability in millions of people throughout the world. A better understanding of the disease in terms of the symptoms and diagnosis through 2D and 3D imaging helps to diagnose the disease in early stages that minimize the risks and complications associated with the disease. Pharmacological and non-pharmacological treatments when used as an adjunct to each other, give the best results in cases of arthritis. The main aim of treatment is to alleviate the causing factors and motivation of the patient for self-treatment and physical therapies.

Bibliography


Primary Management of Osteoarthritis


Volume 11 Issue 2 February 2020
©All rights reserved by Mohamad Mohsen Motawea., et al.

*Citation:* Mohamad Mohsen Motawea., et al. "Primary Management of Osteoarthritis". *EC Orthopaedics* 11.2 (2020): 01-08.