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Research Article

**ROLES OF FAMILY PHYSICIANS IN OSTEOARTHRITIS
DIAGNOSIS AND MANAGEMENT****Alaa Abdulhameed Aziz, Ebtihaj Hamdoon Alqari, Hussain Ali Khubrani, Ahmed
Mosalem Alatawi, Mohamed Abdulhameed Aziz, Malak Eid Albalawi****Abstract:**

Osteoarthritis (OA) is a considerable chronic illness and a common presentation in every day practice. GPs are well placed to supply long term care in patients with OA, including diagnosis, patient training and assistance, stipulation of pharmacological and nonpharmacological treatments and suitable recommendation. In this review we discuss of all of this steps. Comprehensive search method was conducted using several electronic databases including; Medline/PubMed, and Embase, for relevant articles concerning the Osteoarthritis (OA) in family practice, which were published up to June, 2019. Patients with OA should be given with information by general practitioners (GPs) concerning their condition and advised concerning appropriate assistance groups. The advancement of a management strategy should be tailored to the private patient's conditions and preferences, as well as the evidence of performance for specific interventions. Multidisciplinary collaboration enables the patient to access the wide range of nonpharmacological interventions used in OA treatment.

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INTRODUCTION:

Osteoarthritis (OA) refers to a heterogeneous group of conditions that result in joint symptoms and indicators related to loss of integrity of the articular cartilage material, in combination with adjustments in underlying bone and joint margins ^[1]. OA is the leading reason for impairment nationwide, it is the most usual articular ailment worldwide, although regularities differ by country ^[2]. The high frequency of OA makes it one of the primary factors for office visits in the primary care setting. OA causes with both direct and indirect economic costs to culture. Clinician checking, medicines, and medical interventions comprise the direct prices, while comorbidities and time lost from work due to the impacts of ailment make up the indirect costs ^[3]. This situation is more obvious amongst the senior, who might lose their independence and may later require help with their everyday living activities, hence including in the financial burden ^[3].

OA can be subdivided right into primary and secondary kinds, with the primary, or idiopathic, kind occurring in previously intact joints without any inciting agent ^[3]. Aging plays an indispensable part in this type of OA, as the wear and tear on the joints trigger damages to the cartilage material, resulting in an abnormal repair mechanism. Specific diseases consisting of primary generalised OA, erosive OA, and chondromalacia patellae are classified as subsets of primary OA. The additional form of OA is caused by an underlying predisposing variable, such as injury, excessive weight, infection or congenital abnormalities.

Objectives: Osteoarthritis (OA) is a considerable chronic illness and a common presentation in every day practice. GPs are well placed to supply long term care in patients with OA, including diagnosis, patient training and assistance, stipulation of pharmacological and nonpharmacological treatments and suitable recommendation. In this review we discuss of all of this steps.

METHODOLOGY:

Comprehensive search method was conducted using several electronic databases including; Medline/PubMed, and Embase, for relevant articles concerning the Osteoarthritis (OA) in family practice, which were published up to June, 2019. In our search method a Mesh terms were used included "Osteoarthritis (OA)" "primary care", "diagnosis", "family medicine", "family physicians". We further screened references of included studies in this review for more relevant studies to be included in this review.

Restrictions were applied to English language published studies with human subject.

DISCUSSION:

• PATHOPHYSIOLOGY

Biomechanical and biochemical forces are associated with cartilage destruction, which goes to the core of osteoarthritis. Cytokines and development aspects are believed to contribute in the pathophysiology of the disorder. Interleukin-1 and tumor necrosis factor- β might function to activate enzymes associated with proteolytic digestion of cartilage material ^[4]. Growth elements such as tissue growth factor- β and insulin growth factor-1 might contribute in the body's efforts to repair cartilage material with cartilage material synthesis ^[4].

When assimilation exceeds cartilage synthesis, osteoarthritis develops. Collagenolytic enzymes are believed to contribute to the breakdown of cartilage. Collagenase 1 (matrix metalloproteinase-1 [MMP-1]) is a fibroblast collagenase, and collagenase 2 (MMP-8) is a neutrophil collagenase. Collagenase 3 (MMP-13) may be specifically vital due to its very potent collagenolytic activity ^[4].

• DIAGNOSIS

The diagnosis of OA is mainly based upon comprehensive history and physical examination findings, with or without radiographic evidence ^[5]. Although some patients may be asymptomatic initially, one of the most typical signs is pain. Primary OA is generally symmetrical and often tends to originally affect the weight-bearing joints: the knees, hips, and spine. Nonetheless, it is not unusual for the joints of the hands and wrists to also become symptomatic. The discomfort is normally referred to as intense, deep, and "achy," intensified by motion or extensive use and relieved by remainder and basic analgesics. In the future, as joints become more worn, the discomfort comes to be much more obvious and unresponsive to medicines. The discomfort triggers decrease in variety of activity and a decrease in useful ability. Some patients feel stiffness that creates throughout rest, with morning joint stiffness for less than 30 mins (early morning tightness longer than 30 minutes is much more generally associated with rheumatoid arthritis). Some may likewise report crepitus (a grating or cracking sensation) over the joint, which may or may not be related to pain. Those with damaged weight-bearing joints might display an antalgic gait. Illness progression is typically slow, over several years or decades, provoking the patient to come to be much less active and more susceptible to

morbidities associated with reduced physical activity, such as weight gain [6].

Physical examination findings, when present, are mostly located on the affected joints. Most typical are a reduced variety of motion, crepitus, and intra-articular joint swelling, likewise called an effusion [7]. Often malalignment and bone enlargement can be seen as well. Inflammatory adjustments, erythema, or warmth over the area are uncommon. These functions are more probable to be seen in gouty or crystal arthropathies or in inflammatory arthritis, such as rheumatoid arthritis [6] In late stages muscular tissue degeneration around a seriously influenced joint can be seen. In OA of the hand, the distal interphalangeal (DIP), proximal interphalangeal (PIP), and trapeziometacarpal (base of the thumb) joints are affected. Heberden nodes and Bouchard nodes (figure 1), which are palpable osteophytic growths over the DIP and PIP joints, specifically, are extra significant in women. In OA of the spinal column, connected modifications are normally seen in the lumbar region, especially the L3 through L5 levels. Facet arthritic changes create foraminal narrowing, which might cause compression of the nerve roots. The later issue of lumbar spinal column OA is gotten spondylolisthesis [6].



Figure 1. Heberden nodes and Bouchard nodes (arrows) [8].

Inflammatory markers such as the erythrocyte sedimentation rate (ESR), C-reactive protein level, immunologic examinations, and uric acid degrees are typically within their recommendation range and normally do not require to be ordered, unless various other conditions are being ruled out. No specific laboratory problems are associated with OA [7]. Ancillary testing might be necessitated if action to treatment is not as anticipated or the diagnosis continues to be unpredictable. Synovial fluid is classically viscous and clear. Evaluation typically shows a white blood cell (WBC) count of less than 2000/ μL with mononuclear control, negative Gram stains and cultures, along with the lack of crystals when the fluid is seen under a polarized microscope. Ongoing research study on the use of monoclonal antibodies, synovial fluid markers, and urinary system pyridinium cross-links (ie, breakdown items of cartilage) as osteoarthritic indications are in progress. Exploration of a marker for early OA will certainly help in the medical diagnosis, monitoring, and targeted treatment of OA in the future [6].

Plain radiography can assist establish the diagnosis, is readily available, and is affordable [7]. Common findings are joint space narrowing or loss, subchondral bony sclerosis, osteophyte formation, and cyst formation. Figure 2 show these radiographic findings. Computed tomography (CT) or magnetic resonance imaging (MRI) is rarely utilized, unless other problems are being ruled out. CT may be used to assist in the diagnosis of patellofemoral malalignment of the patellofemoral joint. Findings on MRI include chondral thinning, subchondral osseous modifications, and osteophytes. Furthermore, straight visualization of the articular cartilage material and other joint cells (eg, meniscus, tendon, muscle mass, or effusion) is possible with MRI. Ultrasonography is currently being checked out as a device for checking cartilage degeneration and for help with joint injections for treatment. Bone scans can assist to differentiate OA from osteomyelitis and bone metastases, although these are not usually used in routine diagnosis.



Figure 2. Radiographs of knee osteoarthritis ^[9].

As the frequency of OA raises with age, it is usually associated with comorbidities. The evaluation of a patient with OA must for that reason concentrate not just on the bone and joint system but likewise include analysis of excessive weight (a danger factor for both development and progression of OA) 3,4 and various other conditions that may impact on the management of OA. These problems are outlined in Table 1.

Table 1. Conditions impacting on osteoarthritis ^[10].

| |
|--|
| • Cognitive impairment |
| • Cardiovascular disease |
| • Peptic ulcer disease |
| • Renal disease |
| • Diabetes |
| • Asthma |
| • Allergies |
| • Liver disease |
| • Depression and anxiety (more common in patients with chronic conditions) |
| • Falls risk |
| • Medications (especially polypharmacy and potential drug interactions) |

• TREATMENT

Therapy options fall under four primary classifications: nonpharmacologic, pharmacologic, complementary and alternative, and surgical. In general, therapy needs to begin with the safest and the very least intrusive treatments before proceeding to even more intrusive, expensive treatments. All patients with osteoarthritis must receive at least some therapy

from the first 2 classifications. Surgical management ought to be scheduled for those that do not improve with behavioral and pharmacologic treatment, and that have intractable pain and loss of function.

Nonpharmacologic

Nonpharmacologic treatment frequently begins with exercise. A randomized clinical trial compared

supervised home-based exercise without workout in 786 patients with osteoarthritis of the knee. The exercise program consisted of muscle strengthening and variety-of-motion workouts. The researchers found statistically considerable improvements in a validated arthritis symptom score at six, 12, 18, and 24 months^[11]. A Cochrane evaluation of workout for osteoarthritis of the knee wrapped up that land based exercise can cause short-term reduction of discomfort and improvement in physical function^[12]. A comparable Cochrane evaluation of water-based workout for knee and hip osteoarthritis showed improvement, however the outcomes were not as robust^[13]. A randomized regulated test of 200 persons compared education by a primary care physician to work out supervised by a physiotherapist. The supervised workout program had far better temporary results, but the distinctions were no more noted at 36 weeks^[14].

Restorative ultrasound is a physical therapy method commonly used in osteoarthritis treatment. A Cochrane evaluation of this method concluded that although statistically significant improvements were noted in visual analog pain scales adhering to restorative ultrasound for knee osteoarthritis, the medical significance of these modifications is questionable^[15]. The writers located that the research studies were underpowered to properly figure out the effectiveness of therapeutic ultrasound for knee or hip osteoarthritis. A Cochrane review on transcutaneous electrical nerve stimulation located no medically significant improvement in knee osteoarthritis pain^[16].

Since obesity is thought about a significant danger element for osteoarthritis, studies have investigated whether weight reduction enhances patient end results. A meta-analysis of weight reduction and knee osteoarthritis wrapped up that weight loss of 5 percent from standard sufficed to decrease impairment^[17]. Additionally, pain and impairment were reduced if patients shed more than 6 kg (13.2 lb)^[17]. Cardio workout is essential for weight-loss, however, can be challenging personallies with osteoarthritis of weight-bearing joints. Swimming, elliptical training, biking, and upper body workout may help in such cases.

Various other nonpharmacologic treatments include bracing and splinting to aid support uncomfortable or unsteady joints. A cane can help reduce the weight load in persons with hip or knee osteoarthritis, but it needs to be properly fitted and used on the side contralateral to the affected joint^[15].

Pharmacologic

The mainstay of therapy for mild osteoarthritis is acetaminophen^[18]. It is affordable, secure, and reliable. A 2006 Cochrane review wrapped up that acetaminophen is better than placebo for dealing with mild osteoarthritis, and equal to nonsteroidal anti-inflammatory drugs (NSAIDs), however with fewer gastrointestinal unfavorable results^[18]. Patients should be instructed to take 650 to 1,000 mg of acetaminophen approximately four times per day to relieve osteoarthritis signs and symptoms. The U.S. Food and Drug Administration recommends no more than 4,000 mg of acetaminophen per day to avoid liver toxicity. Its further cautions patients to be familiar with coincident use other over-the-counter or prescription drugs that may consist of acetaminophen^[19].

When acetaminophen stops working to manage signs and symptoms, or if symptoms are modest to extreme, NSAID therapy is recommended. NSAIDs as a class are superior to acetaminophen for treating osteoarthritis^[18]. Patients taking NSAIDs must be warned about adverse effects, which may consist of gastrointestinal bleeding, renal dysfunction, and blood pressure elevation (number needed to harm = 12)^[18]. There have not been lots of head-to-head studies comparing nonsteroidal agents, so more economical, common items are appropriate (e.g., ibuprofen, naproxen, diclofenac). Cyclooxygenase-2 inhibitors, such as celecoxib (Celebrex), have an improved safety profile for gastrointestinal adverse effects, but are pricey and give an enhanced cardiovascular risk^[20]. Opioids are often used to deal with discomfort and are an alternative for osteoarthritis pain. Due to the potential for abuse, opioids should be a choice only if the patient has not responded to acetaminophen or NSAID treatment or cannot tolerate them because of negative results. Opioids need to be suggested first at reduced dosages and very carefully kept an eye on to evaluate for prospective dependency. Opioids also might create chronic constipation and can put older patients at risk of falls^[20].

Intra-articular injections of corticosteroids or hyaluronic acid are one more choice for treating osteoarthritis. The use of intraarticular corticosteroids largely offers temporary relief lasting four to eight weeks. It has actually proven effectiveness in osteoarthritis of the knee, however, might not be as efficient for osteoarthritis of the shoulder or hand^[21]. Lots of physicians inject a corticosteroid and an anesthetic, such as lidocaine (Xylocaine). The lidocaine can give some instant alleviation, which confirms that the

medicine was injected into the proper area. Patients should be warned of a possible flare-up of symptoms within the very first 24 hours, adhered to by an improvement from baseline at 48 hours. Repeat injections are possible in the same joint, but usual practice is limited to 4 shots yearly [21].

Intra-articular hyaluronic acid injections, likewise, referred to as viscosupplementation, are widely used by orthopedic surgeons to treat osteo arthritis of the knee. There has been some dispute regarding the efficiency of viscosupplementation in earlier studies, most of which were manufacturer-sponsored researches. However, a Cochrane testimonial of 76 professional trials concluded that viscosupplementation worked for dealing with knee osteo arthritis [22]. The therapy effect commonly lasted

for approximately 4 months and led to improvements suffering and function [22]. The greatest drawback of hyaluronic acid injections is the cost.

There have been head-to-head trials of corticosteroid injections versus hyaluronic acid. A meta-analysis of knee injections found that corticosteroids had a much better temporary action rate and amounted to hyaluronic acid in the intermediate 4- to eight-week range but were inferior to hyaluronic acid after eight weeks from the moment of injection [23]. Consequently, in stable patients with an acute flare-up of osteoarthritis signs and symptoms, corticosteroids might be favored. For patients experiencing chronic osteo arthritis pain, hyaluronic acid should be taken into consideration. The technique of injection is the same for either medication.

Table 2. Pharmacological therapy in osteoarthritis [18-23].

| | Mild to moderate persistent symptoms | Moderate to severe persistent symptoms |
|---|--|---|
| Simple analgesia | Regular paracetamol (maximum 4 g/day) | |
| Topical therapy | Short term NSAIDs or capsaicin | |
| Viscosupplementation (knee only) | | Synthetic hyaluronic acid or hylan products via intra-articular injection. No benefit for hip osteoarthritis |
| Opioid therapy | | Consider for severe symptoms if surgery contraindicated or delayed; commence at low dose, titrate dose and monitor for adverse events |
| Intra-articular corticosteroid injection | Acute flare of symptoms when trial of NSAIDs contraindicated or not effective | |
| Other agents | Role of glucosamine hydrochloride and glucosamine sulphate remains uncertain; chondroitin sulphate no clear evidence of benefit; vitamin, herbal and other dietary therapies of little or no benefit | |

Complementary and alternative medicine

A meta-analysis on the efficiency of acupuncture for osteo arthritis of the knee discovered only short-term benefit, which the writers called clinically unimportant [27]. Acupuncture can be of benefit in chronic low pain in the back, but researches do not differentiate the etiology of the back pain [27]. One of the most extensively made use of supplements for osteoarthritis are glucosamine and chondroitin. The literature included tiny professional trials up until the release of the Glucosamine/ Chondroitin Arthritis Intervention Trial (GAIT), which included more than 1,500 patients. The test had 5 arms contrasting glucosamine alone, chondroitin alone, a mix of glucosamine and chondroitin, celecoxib, and sugar pill. The results were favorable only for the mix of glucosamine and chondroitin, which seemed reliable for modest to

extreme osteoarthritis of the knee [24]. Chondroitin alone did disappoint benefit for osteo arthritis of the knee or hip in a meta-analysis [24]. Balneotherapy is a heterogeneous group of treatments additionally called spa treatment or mineral baths. A Cochrane review wrapped up that mineral baths were of some benefit to patients with osteoarthritis, but the writers addressed methodologic flaws in the researches and advised caution in analyzing the findings [25]. Capsaicin lotion is a topical analgesic originated from chili peppers. It has been discovered to be above placebo in dealing with osteo arthritis discomfort. It is commonly readily available, is reasonably affordable, and can be used as an adjunct to conventional osteo arthritis therapies [26]. There also is evidence assisting making use of the supplement S-adenosylmethionine (SAM-e) to decrease practical restriction, yet not compared with

placebo in patients with osteoarthritis pain. The efficiency of SAM-e approaches that of NSAIDs in some studies however with fewer adverse impacts ^[26].

Surgical

If traditional treatment stops working, surgical methods to the treatment of OA can be considered. One of the most common indicators for surgical treatment are intractable pain and intensifying disability ^[27]. Mechanical symptoms may likewise bring about surgical intervention. Surgical approaches to OA include fusion and joint lavage, osteotomy, arthroscopy, and arthroplasty.

CONCLUSION:

Osteoarthritis, characterized by joint pain and rigidity, is a usual and considerable chronic illness, reducing mobility and leading to considerable effect on quality of life. Numerous evidence-based management alternatives are available. Diagnosis is typically based on patient history and exam. Weight bearing radiographs might be made use of to verify the medical diagnosis however the findings are often nonspecific.

Patients with OA should be given with information by general practitioners (GPs) concerning their condition and advised concerning appropriate assistance groups. The advancement of a management strategy should be tailored to the private patient's conditions and preferences, as well as the evidence of performance for specific interventions. Multidisciplinary collaboration enables the patient to access the wide range of nonpharmacological interventions used in OA treatment. These can be supplied by healthcare providers such as physio therapists, occupational therapists, massage therapy and hands-on therapists, personal trainers, exercise physiologists, dieticians and nurses. Providers involved in pharmacological management consist of GPs, pharmacists, rheumatologists, and orthopaedic surgeons.

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