

## Osteoarthritis: Step by Step

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Osteoarthritis (OA) is the most common joint disorder worldwide, affecting one third of those aged  $\geq 65$  years and in about 80% of persons aged  $> 75$  years [1]. Several risk factors are well recognized including female gender, previous joint trauma, playing sports, older age and obesity. However, genetic factors have been found to be the strongest determinant of this disease [2]. OA can affect any joint, but it occurs most often in knees, hips, spine and hands (Figure 1). Clinical symptoms of OA vary, according to the joint involved. The predominant symptoms of OA in most patients are: pain, morning stiffness and locomotor restriction. Other symptoms include crepitus, joint deformity and joint swelling [2].



**Figure 1:** Radiographic osteoarthritis of the hips showing (1) subchondral sclerosis of the bone, (2) joint space narrowing and (3) osteophyte formation.

The diagnosis of OA may be suspected after a medical history and physical examination. Pain in range of motion and limitation in range of joint movement was predictive of the presence of OA. Plain radiography may be used to support primary clinical diagnosis of OA and rule out other conditions [3]. Advanced imaging techniques, such as computed tomography or magnetic resonance imaging can be used to help the diagnosis of OA when plain radiographs are still normal and can also help when there is a strong suspicion for another etiology [2,4]. Several conditions should be considered in the differential diagnosis, with the most common rheumatoid arthritis, septic arthritis, tendonitis, bursitis and gout [5].

Treatment for OA aims to alleviate pain, improve joint function and slow progression of the disease [1]. There is a range of treatment options for OA including non pharmacological, pharmacological, alternative/complementary medication and surgical treatment. Optimal management of patients with OA requires a combination of non pharmacological and pharmacological treatment. In general, non phar-

macological interventions consist of a wide spectrum with patient education, weight reduction, aerobic exercise, muscle strengthening exercises, joint protection and physical/occupational therapy [2,5].

Acetaminophen is recommended as first-line pharmacological treatment and is described as the mainstay of treatment for mild OA. Acetaminophen is inexpensive, safe, effective and well tolerated by older persons with mild and moderate OA [2]. If acetaminophen and non pharmacological treatments fail to control symptoms or symptoms (e.g. pain) are moderate to severe, a course of nonsteroidal anti-inflammatory drugs (NSAIDs) can be used. NSAIDs therapy is among the most widely used by patients with OA [6,7]. There are two main types of NSAIDs, nonselective NSAIDs (e.g. ibuprofen, naproxen, diclofenac) or COX-2 selective NSAIDs (e.g. celecoxib). Between these two types, there are clinically important differences in the efficacy, tolerability and safety. Although the efficacy between nonselective NSAIDs and COX-2 selective NSAIDs is similar, nonselective NSAIDs therapy is associated with adverse cardiovascular effects [8], increased risk of gastrointestinal events [6] and acute renal failure [9]. Standard treatment should be performed with the lowest dosage COX-2 selective NSAIDs for the shortest time possible.

Intra-articular (IA) injections of corticosteroids, hyaluronic acid, platelet rich plasma (PRP), glucosamine and/or chondroitin are other options for treating OA and can be tried if patients do not respond favorably to systemic therapy [2,10]. IA corticosteroid injection provides short-term pain relief lasting up to two months. Physicians typically inject both corticosteroid and local anesthetic, such as lidocaine, in order to provide immediate relief. However, corticosteroid injections should be limited to 3 - 4 injections within a year [2]. Many physicians consider IA hyaluronic acid injections after failure or intolerance of corticosteroid injection and/or failure of traditional anti-inflammatory medication because of gastrointestinal problems. The clinical effect is rapid and may last for 4 months or more, though cost remains the biggest drawback [2,10]. Nowadays, the use of PRP in the treatment of severe OA is a promising therapeutic application because of being well tolerated, relieving pain, improving function and quality of life [10]. The use of glucosamine and/or chondroitin sulfate for OA indicates that the positive results are for short-term improvement in pain and in function, while favorable results can be obtained with a combination of them [2,5].

Total joint replacement/arthroplasty is the definitive treatment for OA in patients whose symptoms have not responded to non-operative interventions [2]. In contrary, the decision to proceed with joint replacement can sometimes be difficult for the patient to make. There have been several attempts to develop guidelines to determine the appropriate time to perform joint replacement surgery. The indications for a joint replacement are an advanced disease (severe OA) and intractable pain, with joint limitation and functional disability [2]. However, there is another option, which patients should be referred for possible joint replacement surgery before they have prolonged and established functional limitation and severe pain. It is obvious that not everyone is a candidate for joint replacement and the main contraindications are the presence of an active infection, severe obesity and significant deformities.

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