

# Osteoarthritis

## *A primary care approach for physicians in 2000 and beyond*

*Roderick G. Kerr, CCFP, FAAFP, Rashed H. Al-Kawan, MD.*

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### **ABSTRACT**

Osteoarthritis is one of the most common disorders presented to the primary care physician in the over 50 years age group in the Kingdom of Saudi Arabia. The diagnosis is made by history, typical x-ray findings and non-contributory laboratory investigations. The understanding of the pathogenesis of the condition is undergoing change. The development of osteoarthritis is dependent on age, sex, genetic predisposition, and previous trauma to the joint and abnormal mechanical forces caused primarily by obesity. Biochemically, there is an imbalance in the enzymes of cartilage degradation and cartilage regeneration. Management in 2000 focuses on patient education, appropriate exercise, relief of pain through judicious combination of capsaicin cream, acetaminophen in appropriate dose, and nonsteroidal anti-inflammatory drug therapy. The latter is undergoing revolutionary change with the introduction of the Coxiella-2 specific inhibitors, Rofecoxib and Celecoxib in the autumn of 2000 to the Kingdom. With these agents the primary care physician has an effective analgesic therapy, once a day dosing and a dramatic reduction in nonsteroidal anti-inflammatory drug gastropathy across all groups of patients. Finally, when the conservative management by the primary care physician is of benefit no longer, judicious referral to an experienced Orthopedic Surgeon for the modern surgical approaches should be given.

**Keywords:** Osteoarthritis, primary care, education, weight loss, exercise, capsaicin, coxiella-2 specific inhibitors, surgical referral.

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The first decade of the new millennium has been designated "Decade of the Bone and Joint" by World Health Organisation, United Nations and other organizations involved with musculo-skeletal disorders.<sup>1</sup> Using the recent literature and consensus treatment in a Saudi Arabian context, this paper aims to update contemporary approaches to osteoarthritis in primary care. Osteoarthritis is a very common disorder presenting to the primary care physician in the Kingdom of Saudi Arabia, and is a leading cause of morbidity and reduced quality of life. Ahlberg et al<sup>2</sup> estimated the incidence to be 3.5% in a Primary Health Care Center in Eastern Province. The ratio of hip to knee osteoarthritis being 1:80. These results were approximately corroborated by Rajapakse C<sup>3</sup>

and Agunwa W.<sup>4</sup> In North America, data from the Framingham study suggests an incidence of 6% in adults over 30 years of age, who have symptoms. The economic burden in the United States is estimated to be close to \$20 billion in 200.<sup>5</sup> The prevalence will increase as the population of the Kingdom ages, especially if the incidence of obesity remains at over 50% in the 45+ age group.<sup>6,7</sup> Other systemic factors include sex, grandmultiparity, genetics, bone density, hormone replacement therapy, and racial characteristics. Biomechanical factors previous trauma involving the joint, joint deformity and obesity. The way of sitting in Saudi Arabia may be contributive. There is then, an interplay between

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From the Department of Family Medicine, (Al-Kawan), King Faisal Specialist Hospital & Research Center, Jeddah, Department of Family Medicine (Kerr), King Faisal Specialist Hospital & Research Center, Riyadh, Kingdom of Saudi Arabia

Address correspondence and reprint request to: Dr. Rashed H. Al-Kawan, Director, Department of Family Medicine, King Faisal Specialist Hospital & Research Center, PO Box 40047, Jeddah 21499, Kingdom of Saudi Arabia. Tel. +966 (2) 667 18888 Ext. 7717/7795. Fax. +966 (2) 667 18888 Ext. 7038.

all of these, with the resultant development of osteoarthritis.<sup>5</sup> Radiologically, there is loss of joint space, loss of articular cartilage, and sclerosis of bone. This is followed by subchondral pseudocyst formation, development of new bone at joint margins (osteophytosis) and intra-articular loose "osseous bodies". Pathophysiologically, current evidence suggests that osteoarthritis is a dynamic disease, in which biochemical and biomechanical factors are involved in the focal destruction of cartilage, as a result of an imbalance between the "wear and tear" losses and the replacement of the cartilage by chondrocytes of the specialized matrix. The biochemical factors include cytokines, growth factors and collagenolytic enzymes such as matrix metalloproteinases 1, 2 and 3 (matrix metalloproteinases 1, 8 & 13).<sup>8</sup> The heterogeneity of osteoarthritis leads to a wide spectrum of clinical expression. The clinical sub-groups include 1. Generalized nodal osteoarthritis. This is characterized by polyarticular interphalangeal involvement with Heberden's and Bouchard's nodes. There is a striking familial, female preponderance with a peak onset during the perimenopausal years. Involvement of knees, hips and spine is common; 2. Large joint osteoarthritis involves the knee and hip; 3. Other joints include the entire spine, first metacarpo-phalangeal; 4. Erosive osteoarthritis. This is rare. Both proximal and distal intraperitoneal involvement marked inflammatory changes with erosion on x-ray. Hand function is often much more compromised than in nodal osteoarthritis.

**Laboratory investigation.** Complete blood count (CBC)/D/ESR, RA, ANA, and CRP are all normal. Joint fluid aspiration usually reveals a clear, straw colored fluid with <200wbc/micro-ml and of these <25% polymorphs.

**Culture is negative.** The diagnosis is made on the history, radiological findings and non-contributory laboratory investigations. The joint pain, which is ill defined, mild, moderate or severe and is accompanied by joint stiffness especially in the morning that lasts less than 15 minutes.<sup>9</sup> Stiffness is also a symptom after performing prayer. Eventually there is limitation of movement resulting in muscle wasting. It is this chronic pain and loss of function that is responsible for the morbidity and reduction in the activities of daily living and quality of life that are seen so commonly in these patients in primary care.

**Management.** 1. The aims of the primary care physician should be improved quality of life through education and exercise; 2. Effective pain management. In Saudi Arabia, patients and their families want to know the extent of the disease, its prognosis and therapy. The milieu here in the Kingdom is conducive to primary care management of osteoarthritis because of the extended family, availability of the primary care physician at the

Health Center, Physiotherapy services, Occupational Therapy services and the relevant medications.

**Non-pharmacological approaches.** Education of patients requires counseling by the primary care physician regarding the osteoarthritis disease process in each individual patient and how it will affect them and their families. It is important to emphasize that in 2000 there are many good treatment options and that quality of life can be improved.<sup>9</sup> Often an Occupational Therapy consultant can be helpful. This will reinforce the education process and assess the need for aids to help the ADLs. These aids include canes, shoes, walkers and orthotics, many of which could be purchased locally. Now with availability of the World Wide Web throughout the Kingdom, HYPERLINK "[http:// www.arthritis.org](http://www.arthritis.org)", is a good site for patients or family to surf. Here there are many educational materials that help patients and families understand and cope with the burden of quality of life. It is very important to counsel regarding weight loss.<sup>10</sup> Even with modest losses there is considerable symptomatic improvement. Empathy, patience and gentle coaxing are important in this regard, until the patient is ready to make the desired lifestyle change.<sup>11</sup> Primary care physician, should include aerobic conditioning and resistance exercises. The usual cautioning caveats, such as severe coronary heart disease or emphysema, for the elderly and chronic cardio-respiratory illness should apply. This will result in increased muscle strength, joint mobility and a feeling of increased well-being.<sup>13</sup> Family members must encourage participation in exercise programs and not allow patients to sit immobile all day long. Spa therapy has been shown to have a benefit lasting six months.<sup>14</sup> There is limited evidence that heat may be helpful. The same applies to other physical modalities such as cold, transcutaneous nerve stimulation.<sup>12</sup>

**Pharmacological approaches. Local.** The evidence that regular application of Capsaicin cream over the affected joint is beneficial is counting.<sup>15,16</sup> Repeated application of the cream results in analgesia secondary to depletion of neuropeptides from the nerve fiber endings. Patients need to be warned that the initial flare causes some burning and discomfort to which they become tolerant.

**Systemic.** ACR as first line pharmacotherapy is acetaminophen in appropriate dose (up to 1G qid).<sup>17</sup>

**Most patients prefer to take a nonsteroidal anti-inflammatory drug rather than acetaminophen.**<sup>18</sup>

Nonsteroidal anti-inflammatory drugs have been core pharmacotherapy for osteoarthritis for many years. Unfortunately the burden of NSAID side effects including gastropathy is becoming increasingly apparent, especially in the elderly and the chronic user.<sup>19,20</sup> To date the management of NSAID gastropathy has been to use the drugs such as ibuprofen, diclofenac SR, tenoxicam and nambutone which have a lesser effect on the GI mucosa. The

addition of a proton-pump inhibitor or of misoprostol has also been associated with a better GI side effect profile.<sup>21,22</sup> The good news for osteoarthritis sufferers in Saudi Arabia is that a new group of drugs, the Cox-2 specific inhibitors, is going to be introduced to the Kingdom in the autumn of 2000. Until then the usual NSAID therapy should continue in appropriate cases. The principal action of NSAIDs is the inhibition of cyclo-oxygenase enzymes, which are involved in the production of prostaglandins.<sup>23</sup> There are 2 isoforms of cyclo-oxygenase known as Cox-1 and Cox-2. 1. Cox-1 is constitutively expressed in all tissues, playing a key role in the synthesis of prostaglandins in the gastric mucosa, platelets and kidneys. 2. Cox-2, on the other hand, is induced by inflammation and expressed accordingly. Recent evidence suggests that Cox-2 inhibition is responsible for anti-inflammatory and analgesic effects of the NSAIDs; whereas Cox-1 inhibition is responsible for the GI side effects. Therefore a drug with a predominately Cox-2 inhibitory effect would have an analgesic and anti-inflammatory effect without the GI side effect profile.<sup>23</sup> The two Cox-2 specific inhibitors are rofecoxib and celecoxib. Pharmacokinetically they are well absorbed from the GI tract, with good bioavailability and long half-life enabling once a day dosage. Metabolism occurs in the liver with a small amount being excreted in the urine unchanged.<sup>24</sup> Both of these drugs have equi-analgesic and anti-inflammatory properties compared to other NSAIDs and are superior to placebo.<sup>25-27</sup> Dosage in OA is: 12.5 or 25 mgs. od for rofecoxib. 100 or 200 mgs. od for celecoxib. Adverse reactions are uncommon but include diarrhea, nausea, headache and peripheral edema. Celecoxib should be used with caution if a history of sulpha allergy exists. The evidence for a markedly reduced incidence of GI perforations, ulcers or bleeds is compelling.<sup>28-31</sup> These two drugs represent a significant advance in the drug therapy of osteoarthritis for the primary care physician.<sup>32</sup>

**Intraarticular injection.** (i.a.) of glucocorticoids has been shown to be of benefit, albeit short lived (<3 weeks). The injection should not be repeated in < 3 months because of the risk of damage to the intra-articular structures by residual corticosteroid crystals.<sup>33</sup> The i.a. injection of hyaluronic acid has not been shown to have a significant long lasting benefit.<sup>34</sup>

**Surgery.** The role of surgery in the management of osteoarthritis is expanding. Procedures range from arthroscopic debridement, osteotomy, to total joint arthroplasty.<sup>35-37</sup> The ever changing materials used in cements and joint prostheses, combined with good surgical technique and safer anesthesia makes orthopedic referral an effective option for the primary care physician faced with a patient who has severe pain, reduced mobility and otherwise good health.

In conclusion, if the primary care physician is to

improve the management of the osteoarthritis patient in 2000 and beyond, more emphasis must be placed on: 1. Quality of life issues including education; 2. An exercise prescription, 3. Use of capsaicin cream; 4. Cox-2 inhibitors to reduce the burden of GI gastropathy; 5. Increasing the role of the orthopedic surgeon.

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