



CODEN [USA]: IAJ PBB

ISSN: 2349-7750

**INDO AMERICAN JOURNAL OF
PHARMACEUTICAL SCIENCES**<http://doi.org/10.5281/zenodo.886338>Available online at: <http://www.iajps.com>

Review Article

**THE ROLE OF MRI IN PATIENTS WITH OSTEOARTHRITIS
–A REVIEW ARTICLE**Razieh Behzadmehr¹, Morteza Salarzaei^{2*}¹ Assistant Professor, Department of Radiology, Faculty of Medicine, Zabol University of Medical Sciences, Zabol, Iran² Student of medicine, Student Research Committee, Zabol University of Medical Sciences, Zabol, Iran.**Abstract:**

Introduction: Osteoarthritis is the most common disease that affects human joints. This disease is one of the major causes of joint pain and also the most important cause of rheumatoid disability. Despite its high prevalence, the definition of illness is less consensual among scholars. However, what all definitions have in common is that osteoarthritis involves several scaling disorders that may have several etiologies, but have similar biological and clinical outcomes.

Findings: Since osteoarthritis affects all individual components of the joints, and given that MRI has the power to show all the components of the joint, consequently, MRI has become quite common in the attempt to detect this bone disorder. This feature helps to discover the connection between building components and pain, as well as the source of pain. A precise and accurate scoring system was considered necessary to assess the accuracy of arthroplasty and the severity of osteoarthritis through MRI findings.

Discussion and conclusion: The majority of studies conducted in this area have used MRI techniques as a modern and complete method for evaluation. MRI imaging technique is quite effective in examining cartilage damage in patients with osteoarthritis.

Key words: MRI , osteoarthritis , review article

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Please cite this article in press as Morteza Salarzaei et al, *The Role of MRI in Patients with Osteoarthritis*
–A Review Article, *Indo Am. J. P. Sci*, 2017; 4(09).

INTRODUCTION:

Osteoarthritis is the most common disease that affects human joints. This disease is one of the major causes of joint pain and also the most important cause of rheumatoid disability(1). Despite its high prevalence, the definition of illness is less consensual among scholars. However, what all definitions have in common is that osteoarthritis involves several scaling disorders that may have several etiologies, but have similar biological and clinical outcomes(2). Age is the strongest risk factor in osteoarthritis, the incidence of which increases in all joints with aging. Radiographic evidence of osteoarthritis has been observed in 80% of patients aged 70 years and older. In clinical examinations, joints which are afflicted with osteoarthritis turned out to be different from normal ones in terms of tenderness and osteoporosis, thickening of fat and corpus luteum, and synovial effusion(3). In advanced cases, there is a clear deformity of the joint and a half dislocation. Patients with osteoarthritis often complain of Kerpitus and the feeling of scratching and rubbing of the joints against each other while moving(4). Cryptosis is often heard and is more common in patients with knee osteoarthritis. Common features used in radiography to determine the severity of osteoarthritis include narrowing of the articular space, formation of osteophytes, subcondral sclerosis, cysts and irregularities of the bone marrow(5). However, the widespread explanation of these features in the common population and their weak correlation with the severity of the disease has questioned their validity. Hence, the use of more modern imaging techniques, such as MRI, to explore soft tissue has opened new insights into the analysis of osteoarthritis.

FINDINGS:

Magnetic Resonance Imaging (MRI) is an effective and useful method in the diagnosis of Cartilage damage(6). Although this method is highly sensitive in diagnosing malignant bone abnormalities and advanced cartilage thickness damage, it has low sensitivity to investigate minor lesions and disorders(7). The most advanced MRI techniques show a multi-page view of the detailed view. In terms of signal strength, 3-Telsa MRI has a higher diagnostic sensitivity and capability in comparison with 1.5 Tesla MRI. Although this non-invasive technique is used for the diagnosis and treatment of cartilage damage, it is currently struggling with diagnostic limitations(8). Many studies have examined knee cartilage damage in patients with osteoarthritis. First, attention was drawn to the role of knee MRI in focal pathologies, such as meniscal rupture, discolored osteochondritis, avascular necrosis and Ligament damage(9). Since osteoarthritis affects all individual components of the joints, and given that

MRI has the power to show all the components of the joint, consequently, MRI has become quite common in the attempt to detect this bone disorder (10). This feature helps to discover the connection between building components and pain, as well as the source of pain(11). A precise and accurate scoring system was considered necessary to assess the accuracy of arthroplasty and the severity of osteoarthritis though MRI findings.

DISCUSSION AND CONCLUSION:

The incidence of osteoarthritis causes pain, swelling, joint stiffness, articular deformity and reduction of the motion range of the joint(11). Knee joint is of the most common joints in the body that develops osteoarthritis, mostly caused by displacement of the abdomen, change of momentum of the spinning center, abnormal weight transfer and several other mechanical factors(12). One of the major disadvantages associated with osteoarthritis is the destruction of joint cartilage in various degrees(13). The main part of the articular cartilage consists of a network of type II collagen in which proteoglycans and macromolecules are located(14). Collagen type II, which is seen in the cartilage of the joint, is arranged as a network of subtle fibrils which resists against imposed external forces(15). This feature allows the cartilage to act as a shield and protector against the load and pressure applied(16). The thickness of the cartilage in the joint surface is heterogeneous, and this difference in cartilage thickness is related to its biomechanical function(17). Cartilage thickness is located in the areas of cartilage, which increases the amount of load involved(18). Articular cartilage disorders are caused by weight transfer in the involved joint and stimulation of the nerve terminals in the under-cartilage bone(19). Therefore, the evaluation and assessment of joint cartilage damage has been a source of interest in scientific, clinical, biomechanical, and histological research for decades (20). Considering the timely evaluation of these injuries and the design of a therapeutic program and preventing further damage and disease progression is essential. The majority of studies conducted in this area have used MRI techniques as a modern and complete method for evaluation. MRI imaging technique is quite effective in examining cartilage damage in patients with osteoarthritis.

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