New Taipei Journal of
Medicine

Review

MR Imaging in Musculoskeletal Disorders: Current Status, Future Directions

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Key Words
MR imaging
Sports medicine
Spine
Joints
Muscle

ABSTRACT

Musculoskeletal disorders constitute the most common non-neurologic applications of magnetic resonance (MR) imaging. Super tissue contrast, high spatial resolution, and multiplanar imaging capabilities are unique advantages for evaluation of the musculoskeletal system. The evolution of newer MR imaging techniques to identify and quantify many disorders in joints and the spine enable us to diagnose and monitor treatment planning and outcome more accurately and effectively. The present study details how MR imaging can assist to solve clinical problems in the fields of orthopedics, rheumatology, neurology, and rehabilitation. Emphasis is given to diagnostic advantages, limitations, and future directions in evaluating common clinical problems using MR imaging.

(N. Taipei J. Med. 2000; 3:155-166)

INTRODUCTION

Magnetic resonance (MR) imaging has been established as the most important approach in musculoskeletal disorders. The major strength of MR imaging over other imaging methods is its ability to provide high contrast between tissues and to offer high-resolution multiplanar imaging capability. Cortical bone, bone marrow, articular cartilage, ligament, tendon, fibrocartilage, muscle, fat, nerve, vessel, and fluid each has different MR characteristics allowing their distinction with optimized imaging protocols (Table 1).[1,2]

MR imaging has been widely accepted as a substitute to arthrography and as an alternate to arthroscopy for many joint disorders. The popularity of MR imaging has reduced the demand for myelography in spinal investigations. It detects radiographic and even scintigraphic occult bone marrow abnormalities.

This study reviews the current status in musculoskeletal MR imaging. Special emphasis is given to diagnostic advantages and limitations. Future directions are addressed.

THE SHOULDER

Shoulder Impingement Syndrome

The supraspinatus tendon slides beneath the anterior acromion and the acromioclavicular (AC) joint during normal abduction and external rotation of the arm. Narrowing of the supraspinatus outlet frequently causes repeated impingement of the tendon. The narrowing may be due to anatomic variations of the acromial shape and slope, subacromial spurs, and hy-

Received: March 11, 2000
Accepted: August 10, 2000

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