ROLE OF MAGNETIC RESONANCE IMAGING VERSUS ULTRASOUND IN CHRONIC HIP JOINT PAIN IN ADULTS

Essay

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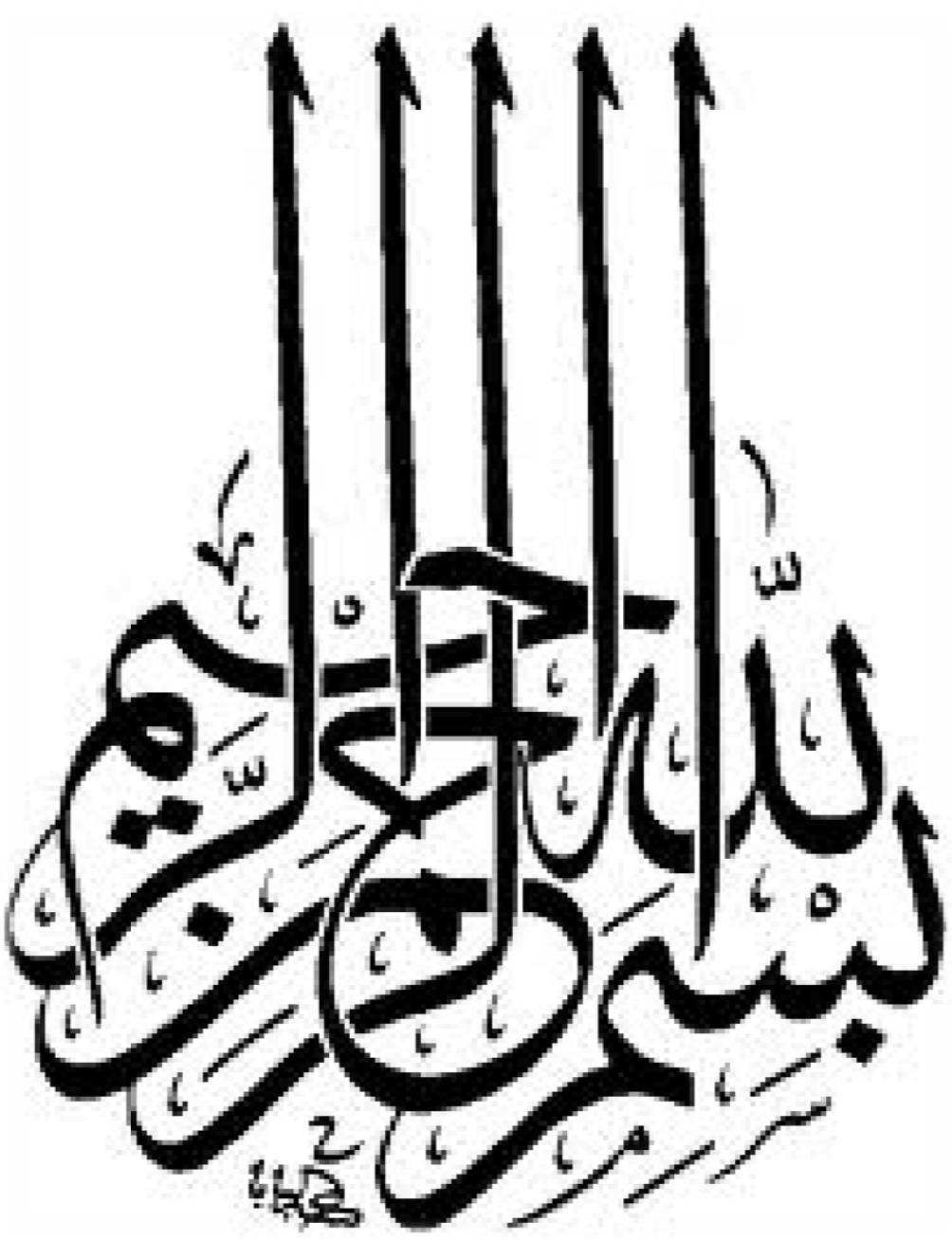
بسم الله الرحمن الرحيم

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DEDICATION

TO MY FATHER, MY MOTHER`S SOUL,

MY FAMILY AND TO MY QUITE

LOVELY CHILDREN

List of Contents

LIST OF ABBREVIATIONS

AVN: A VASCULAR NECROSIS

CDUS: COLOUR DOPPLER ULTRA SOUND

FOV: FIELD OF VIEW

FSE: FAST SPIN ECHO

MRI: MAGNETIC RESONANCE IMAGING

MSUS: MUSCULOSKELETAL ULTRASOUND

PVNS: PIGMENTED VILLONODULAR SYNOVITIS

SOC: SYNOVIAL OSTEOCHONDROMATOSIS

T FL: TENSOR FASCIA LATA

US: ULTRASOUND

List of Figures

List of Tables

ABSTRACT:

Magnetic resonance imaging is the method of choice in characterizing the various disorders and assessing the full extent of osseous, chondral and soft tissue involvement. MR imaging can exquisitely demonstrate joint effusions, synovial proliferations, articular cartilage abnormalities, subchondral bone, ligaments, muscles and juxta articular soft tissues. It has been successfully used in imaging disease processes of the hip because of its optimal spatial resolution.

We concluded that MRI has become the imaging study of choice for diagnosing most hip disorders when the plain radiographs are non diagnostic.

The real-time imaging feature of sonography is of particular interest because some disorders of muscles, tendons and joints are better- or in some cases, only-seen dynamically, that is, during motion of the extremity, muscle contraction, probe compression, or position change of the patient. Sonography should be the first imaging modality used to evaluate snapping hip. Dynamic sonographic studies can help to identify the structure involved in extra-articular snapping hip by showing the abnormal displacement of this structure with hip motion.

KEY WORDS:

MRI, US, HIP JOINT

Introduction:

Chronic hip pain is a perplexing clinical problem. Symptoms may be related to numerous etiologies,including trauma, neoplasms, and arthropathies. Pain may be due to osseous, intra-articular, periarticular, or softtissue pathology. Referred pain from the lumbar spine, sacroiliac joints, or knee may add to the potentially confusing clinical picture **(Taljanovic, 2011).**

The hip is a primary weight-bearing joint. Disorders of the hip are a potential source of debility to patients of all ages. In the absence of known acute trauma, hip pain is a common diagnostic problem **(Hamer, 2004).**

In patients who have hip complaints, the source of pain often involve surrounding structures (the lower back and pelvis) rather than the hip joint. therefore, it is important to maintain an awareness of these neighboring structures as well as of the articular hip **(Seidenberg, 2010).**

Causes of chronic hip pain include avascular necrosis, transient osteoporosis, inflammation, osteoarthritis, traumatic and neoplastic causes **(Laslett et al, 2005).**

Clinical data is essential for selecting the most appropriate imaging techniques in patients with chronic hip pain. Range of motion, gait abnormalities, locking or snapping, duration of symptoms, and pain patterns (e.g., worse at night increased with exercise, relieved by aspirin) can be very useful for reducing the potentially long list of differential diagnoses. Radiographs should be obtained first in most, if not all cases and may provide specific information for common disorders such as osteoarthritis (OA) or less common disorders such as primary bone tumors. Whether the radiographs are normal or not, they are often of considerable value for the selection of additional techniques and for comparison

with studies such as magnetic resonance imaging (MRI) examinations and radionuclide bone scans **(Taljanovic, 2011).**

MRI is frequently performed after initial radiographs to detect osseous, articular, or soft-tissue abnormalities. It is both highly sensitive and specific for detecting many abnormalities involving the hip or surrounding soft tissues and should in general be the first imaging technique used following radiographs **(Taljanovic, 2011).**

MRI has become the imaging study of choice in diagnosing most hip disorders when the plain radiographs are non diagnostic. Also, it is method of choice in characterizing the various disorders and assessing the full extent of osseous, chondral and soft tissue involvement. MRI can exquisitely demonstrate joint effusions, synovial proliferations, articular cartilage abnormalities, subchondral bone, ligaments, muscles, and juxta articular soft tissues **(Lievense et al, 2005).**

It has been successfully used in imaging disease processes of the hip because of its optimal spatial resolution, multiplanar acquisition capability, increased soft tissue contrast, and lack of ionizing radiation **(Hayem, 2001).**

For diagnosis and treatment planning, MRI of the hips should be performed early in patients with persistent pain and negative radiographic findings **(Lequesne and Maheu, 2003).**

Sonography is a useful technique for the investigation of a number of musculoskeletal disorders. Advances in sonographic technology, including higher resolution probes, power Doppler sonography, extended field-of view imaging, and compound imaging, have contributed to expand its clinical applications. Sonography has the well-known advantages of low cost, accessibility, portability,

non-invasiveness, and multiplanar imaging. But perhaps one of its most important diagnostic advantages over other techniques is its real-time imaging capability, allowing for dynamic evaluation. The real-time imaging feature of sonography is of particular interest because some disorders of muscles, tendons, nerves, and joints are better— or in some cases, only—seen dynamically, that is, during motion of the extremity, muscle contraction, probe compression, or position change of the patient **(Khoury et al, 2007).**

The conventional sonographic study of the hip is an important part of the examination because it can allow identification of structural abnormalities. Sonographic findings of tendinitis, bursitis, synovitis, or local tenderness over the course of a tendon, for example, may orient the clinician toward the appropriate diagnosis. Based on the premise that these structures are symmetric on the left and right sides of a given patient, structural abnormality is suspected when corresponding tissues are asymmetric or when they have an abnormal echogenicity **(Pelsser et al, 2001).**

Musculoskeletal ultrasonography is becoming a more commonly used imaging modality in the hands of appropriately trained sonographers. This tool provides excellent static and dynamic views of the local anatomy. Bony pincer and Cam lesions often can be visualized. Areas of tendinopathy can be elucidated. Dynamically, tendinous culprits for snapping hip are easily demonstrated. This modality also is enabling physicians to perform ultrasonography-guided diagnostic and therapeutic injections in the outpatient setting **(Mulvaney, 2009).**

The obvious advantages of US such as portability, relatively low cost relative to other imaging, lack of radiation risk and no known contraindications are good reasons to consider using this modality **(Pinzon and Moore, 2009).**