Role of Ultrasound imaging in diagnosis of shoulder pain in spondyloarthropathies and rheumatoid arthritis.

Thesis

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Summary

Ultrasound (US) is one of the best imaging techniques in musculoskeletal radiology because it is low in cost, has high spatial resolution, wide availability in hospitals, is well-tolerated by patients and is not biologically invasive, as it uses sound waves and non-ionizing radiation, as in conventional radiology or computed tomography (CT). These features make ultrasound the ideal technique for the diagnosis and follow up of many pathologies and rheumatic syndromes and for the evaluation of the effects of therapy. The high diagnostic value of ultrasound is strictly related both to the operator's knowledge of normal anatomy and to the effectiveness of ultrasound equipment to depict anatomical details.

Rheumatoid arthritis (**RA**) is an autoimmune disease of unknown cause that results in a chronic, systemicinflammatory disorder that may affect many tissues and organs, but principally attacks synovial joints. It can be a disabling and painful condition, which can lead to substantial loss of functioning and mobility if not adequately treated. The hallmark feature of this condition is persistent symmetric polyarthritis (synovitis) that affects the hands and feet, though any joint lined by a synovial membrane may be involved. Extra-articular involvement of organs such as the skin, heart, lungs, and eyes can be significant.

Spondyloarthropathies are group of diseases affecting the axial skeleton (sacroilitis and spondylitis). They include ankylosing spondylitis, reactive arthritis, psoriatic arthritis and enteropathicarthritis. The group often being termed specificallyseronegativespondylarthropathies, they have an increased incidence of HLA-B27, as well as negative rheumatoid factor and ANA.

The present study was performed to assess musculoskeletal ultrasound features of painful shoulder in spondyloarthropathies and rheumatoid arthritis patients and to assess the diagnostic value of ultrasonography in the diagnosis of shoulder pain in comparison to physical examination.

We studied fourty (40) patients (twenty R.A & twenty SpA patients) compered to fourty (40) age and sex matched healthy control persons. Diagnosis of RA was based on the ACR/ EULAR 2010 Rheumatoid Arthritis Classification Criteria for diagnosis of rheumatoid arthritis. While diagnosis of SpA was based on fulfillment of ASAS peripheral and axial criteria for SpA ***(Rudwaleit et al., 2011)***, modified New York criteria for AS ***(Van der Linden et al., 1984) and*** CASPAR criteria for psoriatic arthritis ***(Taylor et al., 2006)*** (Appendix 2, 3&4).

Patients with history of previous trauma, chronic inflammatory diseases, extrinsic causes of shoulder pain and malignancy were excluded.

Demographic data were collected from both patients and controls. All patients underwent a complete history review, clinical examination according to the standard protocol and laboratory investigation (ESR, CRP, and RF).

Ultrasound shoulder evaluation was bilaterally performed in SPA and RA patients and in control subjects. Ultrasound images are used to help diagnosis of tendon tears or tendinitis of the rotator cuff, muscle tears or masses or fluid collection, Ligament sprain or tears, Inflammation or fluid effusion within the joint or bursa and bone & cartilage lesions (erosions and osteophytes).

There was no significant value as regard physical examination between R.A and SpA patients.

There was a significant difference between rheumatoid arthritis and seronegativespondyloarthropathies patients detected in glenohumeral joint effusion (P value= 0.025)

There was no significant relation between duration of disease & duration of shoulder pain and ultrasonographic findings in rheumatoid arthritis patients.

Median duration of disease was significantly higher in SpA patients with positive SSP tendinitis (12.5) in comparison to those with negative SSP tendinitis (4.5) (P value was 0.008). Median duration of pain was significantly higher in SpA patients with SA-SD bursitis (24) (P value was 0.04).

There was a significant relation between ultrasound and examination in R.A patients, but no significant relation between ultrasound and examination in SpA patients.

As regarding sensitivity of ultrasound, it was about 80% and specificity was about 90- 100%. The positive predictive value was 67- 100 % while negative predictive value was about 68-100 %.