The Role of Ultrasound and Power Doppler in Assessment of Inflamatory Activity of Shoulder and Hip Joints in Patients with Rheumatoid Arthritis

THESIS

Submitted in Partial Fulfillment of the Requirement for the

M.Sc.

Degree in Internal Medicine

By

Rasha Sobh Mohamed

M.B.B.Ch

Supervised by

Prof. Dr. Ebtesam Zakaria

Professor of Internal Medicine

Faculty of Medicine - Cairo University

Dr. Manal Adly Aziz

Lecturer of Internal Medicine

Faculty of Medicine - Cairo University

Dr. Manal Halim Wahba

Lecturer of Radiology

Faculty of Medicine - Cairo University

Faculty of Medicine

Cairo University

2010

The Role of Ultrasound and Power Doppler in Assessment of Inflammatory Activity of Shoulder and Hip Joints in Patients with Rheumatoid Arthritis

Abstract:

Objective:

To compare the clinical assessment of overall inflammatory activity of the shoulder and hip joints being hidden joints and cannot be assessed clinically in patients with rheumatoid arthritis (RA) with ultrasonography (US) and power Doppler ultrasonography (PDUS).

Methods:

Thirty patients diagnosed as RA in addition to ten normal controls age and sex matched will be subjected to full history taking, thorough clinical evaluation and lab assessment for: .CBC .ESR .CRP .Liver and kidney functions then Ultrasound and power Doppler study of the shoulder and hip joints done by a rheumatologist.

Results:

High frequency ultrasonography (US) has greatly improved musculoskeletal imaging in rheumatology; several studies have demonstrated that high frequency US is accurate for detecting joint effusion and synovitis compared with magnetic resonance imaging (MRI) and direct arthroscopic visualization. US are more sensitive and reproducible than clinical evaluation in assessing joint inflammation.

Power Doppler (PD) US is a new technique of colour Doppler that improves the sensitivity to detect flow from small vessels and low velocity flow at the microvascular level. The PD signal correlates highly with local clinical evaluation of joint inflammatory activity in the knee, metacarpophalangial (MCP) and interphalangeal joints of patients with RA and other inflamatory arthropathies. Recent studies have shown that PD synovial vascularity correlates highly with histologically proved knee pannus and with the degree of synovial vascularisation of the knee and hip.

Conclusion:

PDUS detects indirect signs of increased vascularization associated with soft tissue musculoskeletal inflammatory and infectious diseases and enthesitis and spondyloarthropathies.

KEY WORDES

Ultrasound _ assessment _ activity

Contents

Dedication

I give this presentation as a gift to the souls of my mother and father for their great support and love and they were wishing this day so much and I am sure they are so happy now... May God bless them both.

Also I want to thank my husband and children for their patience and support.

Great thanks to my sisters for their encouragement.

Acknowledgment

- It's a great honor for me to be supervised by my great prof. Dr. **Ebtesam Zakaria** and many thanks for her support
- Iam honored to be supported by Dr. **Manal Adly** and many thanks for her great help and following for this progress.
- Iam honored to work with Dr. **Manal Halim** and many thanks for her time and technical support.
- And thanks to all the staff member of Internal Medicine and Rheumatology clinics for allowing us to study their patients.

List of abbreviations:

⇒ **RA** rheumatoid arthritis.

⇒ **PDUS** power Doppler ultrasonography.

⇒ **ESR** erythrocyte sedimentation rate.

⇒ **CRP** C reactive protein.

⇒ **MRI** magnetic resonance imaging.

⇒ **TNF-α** tumor necrosis factor alpha

⇒ **MHC** Major histocompatibility complex

⇒ **ACPA** anti-citrullinated protein antibodies

⇒ **ANA** antinuclear antibody

⇒ **DMARD** disease-modifying anti-rheumatic drug

⇒ **VEGF** vascular endothelial growth factor

⇒ **SI** signal intensity

⇒ **DIP** distal interphalangeal joint

⇒ **PIP** proximal interphalangeal joint

⇒ **MCP** Metacarpophalangeal joint

⇒ **RF** Rheumatoid factor

⇒ **Anti-CCP** cyclic citrullinated peptide

⇒ **SLE** Systemic lupus erythematosus

⇒ **EBV** Epstein-Barr virus

⇒ **HHV-6** Human Herpes Virus 6

⇒ **CTS** carpal tunnel syndrome

⇒ **CW** continuous wave

⇒ **OMERACT** Outcome Measures in Rheumatology Clinical Trials

⇒ **VEGF** vascular endothelial growth factor

List of Figs:

List of Tables: