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AB1166 SUBCLINICAL ENTHESEAL INVOLVEMENT IN LOWER LIMBS IN PATIENTS WITH TYPE 2 DIABETES MELLITUS: AN ULTRASOUND STUDY

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Background: Diabetes mellitus (DM) is a group of metabolic diseases characterized by hyperglycemia, which results from defects in insulin secretion, insulin action, or both (1).

DM impacts the connective tissue and causes various changes in peri-articular and articular structures. An increase in enthesopathic complications in diabetic patients such as patellar tendinitis bursitis, achilles tendinopathy and plantar fasciitis, was observed in many studies.

Objectives: This study aims to detect subclinical lower limb enthesitis in type 2 DM by musculoskeletal ultrasonography & its relation to poor glycaemic control & disease duration

Methods: This study was carried out on 80 persons. Diabetic group forty patients diagnosed as diabetes according to ADA diagnostic criteria. Control group Forty apparent healthy volunteers both groups was matched at age and sex. Sonographic evaluations and scoring were performed according to Glasgow Ultrasound Enthesitis Scoring System (GUESS) on the entheses of both lower limbs.

Results: At the diabetic group the Musculoskeletal Ultrasound findings was as following. The Quadriceps tendon enthesitis in 30 patients (75%), proximal patellar enthesitis was in 28 patients (70%), Distal patellar enthesitis in 22 patients (55%), Achilles enthesitis in 27 patients (67.5) & planter aponeurosis enthesitis in 25 patients (55%). There is a statistically significant difference between age and Ultrasound findings p. value <0.05. There is a statistically significant correlation between disease duration and (proximal patellar ligament, Achilles tendon, quadriceps tendon and plantar fascia) thickness p. value <0.05.

Conclusion: Enteseal abnormalities can be documented by ultrasonography in clinically asymptomatic patients with Diabetes. These findings could be related to a subclinical enteseal inflammation.

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AB1167 RELIABILITY AND VALIDITY OF ULTRASOUND PATHOLOGIES IN KNEE OSTEOARTHRITIS FOR SEMI-QUANTITATIVE AND QUANTITATIVE METHODS WITH MRI AS A REFERENCE

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Background: Ultrasound can visualize both structural and inflammatory changes of osteoarthritis (OA) with greater accessibility. Therefore, the Outcome Measures in Rheumatology (OMERACT) Ultrasound Task Force

recently proposed a semi-quantitative knee ultrasound scoring system¹ which requires further validation.

Objectives: To investigate inter-rater reliability (IRR) of ultrasound pathologies between three raters with varying experiences and examine construct validity of these features against magnetic resonance imaging (MRI) using OMERACT semi-quantitative ultrasound image atlas and quantitative ultrasound measures.

Methods: According to standardized OMERACT scanning protocol, 20 participants with symptomatic and radiographic knee OA were scanned dynamically with a multi-frequency linear transducer (6-18MHz) of Aplio Platinum 500 machine, Toshiba, Japan.

Following an initial calibration of ultrasound scores using the image atlas, three raters with varying experience (a physician operator certified with RhMSUS, a musculoskeletal ultrasonographer and a medical student) independently obtained semi-quantitative scores (0-3) for synovitis and power Doppler activity in suprapatellar recess, medial osteophytes and medial meniscal extrusion, as well as quantitative measurements (mm) of synovitis, effusion, synovial hypertrophy, medial osteophyte and meniscal extrusion (maximal measures).

Semi-quantitative MRI Osteoarthritis Knee Score (MOAKS) scores of effusion-synovitis, osteophyte and meniscal extrusion were independently calculated by an experienced researcher. 3-T Sagittal proton-density (PD) weighted fat-suppressed turbo spin-echo (TSE) non-contrast MRI sequences were used for quantitative effusion-synovitis, and coronal plane for osteophyte and meniscal extrusion.

Weighted kappa coefficient (Kw) or intra-class correlation coefficient (ICC) were calculated for IRR, Spearman's rank (rs) and Pearson (rp) correlation coefficients for construct validity and Bland-Altman plots for extent of agreement between ultrasound and MRI.

Table 1. Inter-rater reliability of three operators of ultrasound pathologies in OA

Weighted Kappa (95% CI)	Meniscal Extrusion grade	Osteophyte grade	Power Doppler grade	Synovitis grade	Intra-class Correlation Coefficient (95% CI)	Effusion (mm)	Meniscal extrusion (mm)	Osteophyte (mm)	SH (mm)	Synovitis-effusion (mm)
PO vs MU	0.55 (0.25 to 0.84)	0.88 (0.72 to 1.00)	0.52 (0.17 to 0.87)	0.55 (0.36 to 0.75)		0.85 (0.15 to 0.95)	0.90 (0.39 to 0.97)	0.96 (0.84 to 0.98)	0.84 (0.59 to 0.93)	0.86 (0.18 to 0.96)
PO vs MS	0.27 (0.06 to 0.49)	0.73 (0.50 to 0.96)	0.14 (-0.36 to 0.63)	0.42 (0.21 to 0.64)		0.85 (0.16 to 0.96)	0.93 (0.83 to 0.97)	0.90 (0.55 to 0.97)	0.72 (0.25 to 0.89)	0.88 (0.31 to 0.97)
MU vs MS	0.28 (-0.01 to 0.56)	0.75 (0.56 to 0.94)	-0.11 (-0.21 to -0.01)	0.66 (0.43 to 0.90)		0.89 (0.73 to 0.96)	0.90 (0.75 to 0.96)	0.95 (0.88 to 0.98)	0.68 (0.22 to 0.87)	0.86 (0.66 to 0.95)

MU= Musculoskeletal Ultrasonographer; MS= Medical Student; PO= Physician operator; SH= Synovial Hypertrophy; mm= Millimeter

Value of K Strength of agreement

<0.20 Poor

0.21 - 0.40 Fair

0.41 - 0.60 Moderate

0.61 - 0.80 Good

0.81 - 1.00 Excellent

Figure 1

Table 2. Correlation of ultrasound pathologies with MRI for semi-quantitative and quantitative methods

Ultrasound vs MRI (correlation)	Synovitis grade	Meniscal extrusion Grade	Osteophyte Grade	Synovitis (mm)	Meniscal extrusion (mm)	Osteophyte (mm)
Spearman (rs)	0.48 P=0.03	0.27 P=0.26	0.36 P=0.12			
Pearson (rp)				0.51 P=0.02	0.67 P<0.001	0.54 P=0.02

Significant test is denoted in bold.

Figure 1

Figure 1 Bland-Altman plots to illustrate the agreement between ultrasound and MRI quantitative measures (a) osteophyte, (b) Synovitis-effusion, (c) Meniscal extrusion

Figure 1