DOI: 10.1136/annrheumdis-2019-eular.2181

AB1128

SENSITIVITY AND SPECIFICITY OF THE AUTOMATED SQUEEZE TEST (GAENSLER'S MANEUVER) FOR IDENTIFYING METACARPOPHALANGEAL SYNOVITIS BY MAGNETIC RESONANCE IMAGING

Diana Daniela Castañeda Martínez, David Vega Morales, Jorge Antonio Esquivel Valerio, Mario Alberto Garza Elizondo, Brenda Roxana Vázquez Fuentes, Dionicio Ángel Galarza-Delgado. Hospital Universitario "Dr. José Eleuterio González" Universidad Autónoma de Nuevo León, Servicio de Reumatología, Monterrey, Mexico

Background: It is well known that an early diagnosis and treatment for Rheumatoid Arthritis (RA) prevents its complications, therefore there are many efforts to identify individuals at risk to develop RA. The Squeeze test has been used to detect synovitis in metacarpophalangeal joints, even though it is used in daily practice, there is a great variability in their performance among rheumatologists. [2]

Objectives: The aim of this study is to determine the diagnostic performance of the automated squeeze test (AST) on the metacarpophalangeal (MCP) joints to detect the presence of synovitis, edema, or erosions by magnetic resonance imaging (MRI) using the rheumatoid arthritis magnetic resonance imaging score (RAMRIS) in first-degree relatives (FDR) of RA patients, of whom clinically suspect arthralgia (CSA) in hands was suspected, as well as in RA patients.

Methods: It is an observational and cross-sectional study for a diagnostic test. A total of 60 patients, older than 18 years, were included and divided in three groups: CSA group: 22 with less than 1 year with arthralgia and required to be FDR of RA patients; early RA group: 22 patients who met ACR/EULAR 2010 Classification Criteria with less than 1 year with the disease; and late RA group: 16 patients who met ACR/EULAR 2010 Classification Criteria, with more than 1 year with the disease. The AST was performed in the 60 participants' dominant hand. The device was evaluated by MRI, which examined the same hand in the 60 patients.

Results: A total of 240 MCP joints were evaluated. The AUC for the total RAMRIS score >10 was [0.480 (95% CI 0.301-0.617) $P=0.597$], for synovitis RAMRIS score > 7 was [0.459 (95% CI 0.331-0.669) $P=0.791$], and for the presence of any synovitis by RAMRIS was [0.575 (95% CI 0.428-0.723) $P=0.331$]. For the RAMRIS synovitis score, the most sensitive and specific cut-off of the force by AST was 4.645 kg with a 66.7% sensitivity and 50% specificity.

Abstract AB1128 Table 1. Baseline characteristics

	TOTAL	CSA n=22	ERA n=22	LRA n=16
Age mean (SD)	44.7 (13.7)	37.6 (10.9)	49.05 (11.9)	47.5 (16.2)
Female n (%)	50 (83.3)	18 (81.8)	18 (81.8)	14 (87.5)
TJC median (IQR)	4 (12)	0.5 (4)	5 (13)	10 (11)
SJC median (IQR)	3 (8)	0 (3)	5 (12)	7.5 (9)
DAS28-ESR median (IQR)			4.8 (1.5)	5.4 (1.4)
HAQ median (IQR)			0.64 (0.75)	1.47 (0.94)
CDAI median (IQR)			18.07 (16.8)	23.8 (15.5)
Married n (%)	41 (68.3)	12 (54.5)	15 (71.4)	14 (93.3)
Smoker n (%)	19 (31.7)	2 (22.7)	10 (45.5)	4 (25)
Morning stiffness n (%)	31 (51.7)	4 (18.2)	16 (72.7)	11 (68.8)
RF IgM positivity n (%)	46 (76.7)	9 (40.9)	12 (70.6)	4 (25)
ACPA positivity n (%)	25 (41.7)	19 (86.4)	20 (90.9)	7 (43.8)

Clinically suspect arthralgia, **CSA**; Early Rheumatoid Arthritis, **ERA**; Late Rheumatoid Arthritis, **LRA**; Tender Joint Count, **TJC**; Swollen Joint Count, **SJC**; Disease Activity Score – Erythrocyte Sedimentation Rate, **DAS28-ESR**; Health Activity Questionnaire, **HAQ**; Clinical Disease Activity Index, **CDAI**; Rheumatoid Factor, **RF**; Anti-citrullinated peptides antibodies, **ACPA**.

Figure 1

Conclusion: The application of AST with a force of 4.645 kg, to exert pain in the dominant hand, is a sensitive and specific technique to establish MCP joint inflammation, compared with other automated methods that had been recently tested.

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Disclosure of Interests: None declared

DOI: 10.1136/annrheumdis-2019-eular.4182

AB1129

ULTRASOUND MEASUREMENT OF MUSCLE THICKNESS AT THE PROXIMAL FOREARM: VALIDITY ISSUES

Sonia Castell¹, Gianluca Smerilli², Edoardo Cipolletta², Fausto Salaffi², Emilio Filippucci², Walter Grassi². ¹Hospital del Mar, Rheumatology, Barcelona, Spain; ²Università Politecnica delle Marche, Rheumatology Unit, Ancona, Italy

Background: The term *sarcopenia* defines the muscle strength loss and muscle mass loss due to aging, and it is one out of three criteria for the diagnosis of frailty in the elderly. A number of studies have related the handgrip strength with muscle thickness (MT) in the forearm measured by ultrasound (US)¹, but a standardized scanning protocol has not been described and its interobserver reliability has not been investigated yet.

Objectives: The aims of this study were to provide detailed description of the scanning protocol to measure the MT in the forearm and to test its feasibility and interobserver reliability.

Methods: A total of 27 consecutive subjects were enrolled at Ospedale "Carlo Urbani", in Jesi (Ancona, Italy): 2 healthy volunteers recruited from among our staff, and 25 patients referred to the Rheumatology Department affected by rheumatoid arthritis (5), psoriatic arthritis (4), spondyloarthritis (3), polymyalgia rheumatica (2), systemic lupus erythematosus (1), systemic sclerosis (1), overlap SLE/SSc (1), Sjögren syndrome (1), anti-synthetase syndrome (1), undifferentiated connective tissue disease (1), osteoporosis (1), small vessels vasculitides (2) and fibromyalgia (2). The female to male ratio was 19/7, the mean age was 52.1 years (SD ± 13.7), and the mean Body Mass Index was 27.4 Kg/m² (SD ± 4.2). Four rheumatologists (SC, EC, GS, EF) trained in musculoskeletal US, with a different degree of experience, performed the examinations using a MyLab ClassC (Esaote SpA) equipped with a broadband linear probe (frequency range 4-13 MHz). All subjects sat in front of the sonographer with their hands supinated and the forearm resting on the examining table. First, the coronoid process was imaged according to the "longitudinal scan of the coronoid recess" as indicated by the 2017 EULAR US guidelines. Then the probe was moved distally following bony cortex until the ulnar tuberosity was identified. Immediately distally to the ulnar tuberosity the bone turns flat and hyperechoic and this was taken as the anatomical reference for the measurement. Afterwards the probe orientation was changed to obtain a transverse view. During the rotation, the proximal third of the diaphysis of the radius was imaged. Two MT were measured, the ulnar MT (UMT) and the radial MT (RMT), between the subcutaneous tissue-muscle interface and the muscle-bone interface of each bone respectively. The measurement of UMT and RMT of both arms were registered, as well as the scanning time of all the examiners.

Results: We found an excellent interobserver reliability of this scanning protocol, with an interclass correlation coefficient (ICC) among the four sonographers of 0.975 (CI 0.955 - 0.987) for the right UMT, an ICC of 0.968 (CI 0.942 - 0.984) for the left UMT, an ICC of 0.932 (CI 0.878 - 0.966) for the right RMT and an ICC of 0.949 (CI 0.908 - 0.974) for the left RMT. The mean time required to acquire all measurements in each subject was less than five minutes (SC 4.4 min; EC 4 min; GS 4.2 min; EF 4.5 min).

Conclusion: The results of this study provide evidence in favour of both feasibility and interobserver reliability of US measurement of the forearm MT.

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Disclosure of Interests: Sonia Castell: None declared, Gianluca Smerilli: None declared, Edoardo Cipolletta: None declared, Fausto Salaffi: Grant/research support from: Abbvie, Roche, Novartis, BMS, Pfizer, Sanofi, Speakers bureau: Abbvie, Roche, Novartis, Pfizer, Sanofi, BMS, Emilio Filippucci: None declared, Walter Grassi: None declared