

Table 1. Results of ocular Doppler ultrasound over right (RT) and left (LT) sided arteries

		RT sided arteries				LT sided arteries				
		Range	Mean	S.D	P-value	Range	Mean	S.D	P-value	
OA-PSV	P	6.7-57	27.5	13.5	0.001	P	7.7- 65	26.37	12.26	0.000
	C	34-40	36.9	2.04		C	32-43.8	38.73	3.17	
OA-EDV	P	0.0-16.3	6.9	4.06	0.000	P	0.4-22.4	6.69	4.17	0.002
	C	9-12.3	10.6	1.33		C	7.6-12.3	10.36	1.52	
OA-RI	P	0.63-1	0.76	0.08	0.020	P	0.62-0.95	0.75	0.08	0.123
	C	0.67-0.79	0.72	0.72		C	0.67-0.78	0.73	0.03	
CRA-PSV	P	6.5-37.4	13.2023	6.53	0.288	P	4.3-37.1	12.61	7.68	0.949
	C	9.4-14.9	11.8467	1.52		C	8.5-14.9	12.51	1.91	
CRA-EDV	P	1.6-11.8	4.4297	2.13	0.200	P	1.6-25.8	4.84	4.95	0.466
	C	2.9-14.1	5.5347	3.57		C	2.6-5.9	4.13	0.913	
CRA-RI	P	0.45-0.79	0.6590	0.07	0.917	P	0.27-0.80	0.66	0.096	0.883
	C	0.61-0.72	0.6573	0.03		C	0.61-0.71	0.67	0.037	
PCA-PSV	P	6-45.7	13.82	8.35	0.352	P	6.1-21.6	13.4	4.22	0.872
	C	9.9-17.3	13.53	2.02		C	10-15.4	13.5	1.57	
PCA-EDV	P	2.2-11.4	4.96	2.67	0.408	P	1.9-7.32	4.7	1.65	0.386
	C	3.5-6.1	5.16	0.99		C	3.2-6.1	5.04	0.96	
PCA-RI	P	0.49-0.76	0.63	0.06	0.409	P	0.53-0.68	0.87	1.16	0.435
	C	0.6-0.68	0.63	0.02		C	0.59-0.69	0.63	0.029	

C = Control, LT = Left, P = Patients, RT = Right, S.D = Standard Deviation.

**Conclusions:** Behçet's disease patients with ocular involvement have lower CRA, PCA and OA blood flow velocities than healthy control. CDU is helpful in early diagnosis of ocular Behçet's disease activity as it is a widely used, easy-to-perform and accurate method.

#### References:

- [1] Kaçmaz O., Kempen J.H., Newcomb C., Gangaputra S., Daniel E., et al.(2008): The Systemic Immunosuppressive Therapy for Eye Diseases: Cohort Study Group. *Am J Ophthalmol*; 146(6): 828-836.
- [2] Nagaoka T. (2006): Physiological mechanism for the regulation of ocular circulation: *Nippon Ganka Gakkai Zasshi*. 110 (11): 872-8.
- [3] The International Study Group for Behçet's disease (1990): Criteria for diagnosis of Behçet's disease. *Lancet*; 335:1078-1080.

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#### FRI0648 CONCORDANCE BETWEEN THE TUBERCULIN SKIN TEST AND INTERFERON GAMMA RELEASE ASSAY FOR DIAGNOSING LATENT TUBERCULOSIS INFECTION IN PATIENTS WITH CHRONIC INFLAMMATORY ARTHRITIS

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**Background:** Biologic therapies have led to a dramatic change in the management of rheumatologic diseases. Although biologic agents provide profound clinical benefits, various adverse events are associated with their use particularly an increased risk of the reactivation of latent tuberculosis. Therefore, screening for latent tuberculosis infection (LTBI) is imperative before initiating biologic agents<sup>1</sup>. Although tuberculin skin test (TST) is the most common test for detecting LTBI, Bacillus Calmette-Guérin (BCG) vaccination and non-tuberculosis Mycobacterium infections, can lead to false positive TST results. Interferon-gamma release assay (IGRA) measures the immune response to tuberculosis specific antigens that do not cross react with BCG, and therefore, do not cause false positive reactions in BCG recipients. Its positiveness indicates the presence of tuberculosis infection either latent or active<sup>2</sup>.

**Objectives:** We aimed to prevent the unnecessary anti-tuberculosis prophylaxis in patients whom biologic therapy is planned by evaluating the concordance between the TST and IGRA.

**Methods:** Patients who have been receiving biologic therapy due to chronic inflammatory arthritis were enrolled in this study. Demographic and clinical data, TST and IGRA results were recorded. The agreement between IGRA and TST results was evaluated by Kappa coefficient.

**Results:** A total of 35 patients were included; 15 (42.8%) were male and mean age was 43.74±12.72 years. Of the 22 TST positive patients, 13 (37.1%) were IGRA negative. Of the 13 TST negative patients, 3 (8.6%) were IGRA positive. Nine (25.7%) patients were positive for either of the two tests and 10 (28.6%) patients were negative for both tests. There was statistically significant discordance between two tests (p:0.021; p<0.05) (Table 1). While positive rate of TST was 62.9%, positive rate of IGRA was 34.3% and Kappa consistency coefficient between two tests was 15.4% (p:0.283; p>0.05).

Table 1. Agreement between IGRA and TST results

IGRA	TST		Total n (%)	p
	Negative n (%)	Positive n (%)		
Negative	10 (28.6)	13 (37.1)	23 (65.7)	0.021
Positive	3 (8.6)	9 (25.7)	12 (34.3)	
Total	13 (37.1)	22 (62.9)		

**Conclusions:** It is very common in rheumatology practice to administer anti-tuberculosis prophylaxis according to the TST. IGRA may reduce the number of

patients in whom tuberculostatics are prescribed, especially in BCG recipients in endemic populations, resulting in a benefit of avoiding possible side effects. Furthermore, IGRA is also important for detecting the cases of LTBI that would be missed by TST. Confirmation in larger studies is necessary.

#### References:

- [1] Costantino F, de Carvalho Bittencourt M, Rat AC, et al. Screening for latent tuberculosis infection in patients with chronic inflammatory arthritis: discrepancies between tuberculin skin test and interferon-γ release assay results. *J Rheumatol*. 2013 Dec;40(12):1986-93.
- [2] Ruan Q, Zhang S, Ai J, et al. Screening of latent tuberculosis infection by interferon-γ release assays in rheumatic patients: a systemic review and meta-analysis. *Clin Rheumatol*. 2016 Feb;35(2):417-25.

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#### FRI0649 STANDARDIZED PROCEDURES FOR ULTRASOUND IMAGING IN PAEDIATRIC RHEUMATOLOGY: PROGRESS OF A EULAR TASK FORCE

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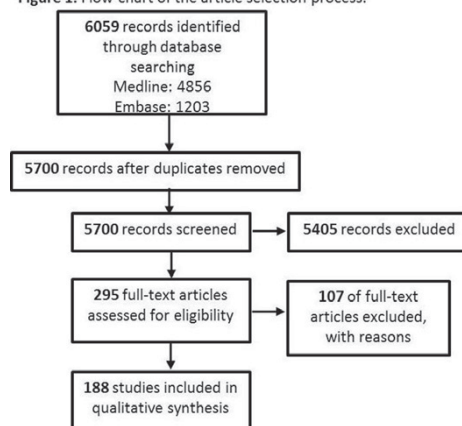
**Background:** Musculoskeletal ultrasound (MSUS) is a useful imaging technique in paediatric rheumatic diseases (PRD). US has several advantages over other imaging techniques: it is non-invasive, radiation free, rapid, highly accepted by the patients and does not require sedation for scanning in younger children. However, MSUS examination is incriminated to be an operator dependent technique. Moreover, the variability of normal sonoanatomy in children, due to ossification, makes the acquisition and interpretation of MSUS images difficult. The variability in background and experience of ultrasonographers in different countries requires an international multidisciplinary effort for an optimal standardization of MSUS performance in PRD.

**Objectives:** To perform a systematic literature review on guidelines for MSUS for children published by international societies and articles on how to perform MSUS scanning in children. This represents the first step for an EULAR taskforce, which objective is to develop EULAR Standardized Procedures for Ultrasound Imaging in Pediatric Rheumatology through a consensus process among rheumatologists, paediatric rheumatologists, and radiologists highly experienced in the performance, teaching and research in paediatric MSUS in rheumatologic disease.

**Methods:** The objective was reformulated according to the PICO-adapted approach, as follows: body parts, ultrasound, and scanning procedures. For each component several synonyms were used. Search limits were applied for animal studies and age. The literature search was performed in Medline and Embase from databases inception to 1st June 2016. References identified were imported into a bibliographic manager and duplicates were removed. To identify eligible studies the remaining articles were assessed by title and abstract. Only articles in English were retained. From the selected studies, data about the examined area, patient position, probe placement, scanning method, landmarks and pathologies using a predefined data collection form.

**Results:** The literature search resulted in 6059 articles, of which 4856 were captured in Medline and 1203 in Embase. Figure 1 shows the the study flow-chart for article selection. After removing duplicates and scanning titles and abstracts, 295 articles remained for detailed review. After full-text review, 107 articles were excluded. The main reason for article exclusion after full-text review was the lack of standardized examination. Of the remaining articles, 2 described shoulder structures, 14 elbow structures, 5 wrist structures, 9 hand structures, 25 hip

Figure 1. Flow-chart of the article selection process.



structures, 41 knee structures, 14 ankle structures and 2 foot structures. The number of structures described for each joint part was as follows: 3 shoulder, 13 elbow, 2 wrist, 4 hand, 7 hip, 25 knee, 14 ankle, 1 foot.

**Conclusions:** Several anatomical structures are lacking standardized MSUS examination in children.

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**FRI0650 NON OMERACT -EXPERT RHEUMATOLOGISTS SONOGRAPHERS AND INTER-ULTRASOUND MACHINE RELIABILITY OF THE OMERACT ULTRASOUND SCORING IN RHEUMATOID ARTHRITIS IN A CLINICAL-BASED SETTING: A BELGIAN STUDY**

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**Background:** The OMERACT Ultrasound scoring system (USSS) of joint in RA has been shown to be reliable and sensitive to change when used in clinical trial setting. However it is unclear whether this reliability is also achieved in clinical daily practice among Rheumatologists performing US in a non-research setting and using different machines.

**Objectives:** To assess agreement between non-research sonographers in scoring synovitis using the OMERACT USSS and using the scoring of an OMERACT expert as gold standard. To assess the reliability of the USSS by using different US machines.

**Methods:** First an OMERACT US expert presented the scoring method and supervised a training session. The wrist, MCP 2 and 3 joints of the left hand (dorsal aspect) of 3 RA patients were then successively evaluated by 9 Rheumatologists with 3 different US machines: Hitachi Arietta = H, GE Logic E9 = G, Esaote MyLab 7 = E. The USSS included B-mode acquisition of synovial hypertrophy (SH), joint effusion (JE) and bone erosion (BE), and Power-Doppler (PD) activity. JE, SH and BE were scored binary; SH and PD were score semi quantitatively (0 to 3), by both the 9 participating Rheumatologists and the OMERACT US expert. The agreement between each participant with the scoring of the OMERACT US expert was quantified by proportions. The inter-US machine reproducibility was assessed by kappa statistics for discrete variables and weighted kappa's for ordinate.

**Results:** The 3 joints of 3 patients each were evaluated on the 4 US items (SH, JF, BE, PD) on a different US machine. So 27 values were obtained for each joint within each item. The percentages of exact agreement (PEA) between these 27 values and the scores of the OMERACT US expert were calculated and ranged between 33% (9/27) for SH-MCP3, 37% for JF-MCP2 and PD-Wrist, 41% for SH-wrist, 48% BE-MCP3, 52% PD-MCP3, 56% PD-MCP3, 59 JF-wrist and BE-MCP2, 63% JF-MCP3, 67% SH-MCP2 and 78% (21/27) for BE-wrist. For the inter-US machines reproducibility, kappa between the 3 machines was calculated on 9 data (3 patients x 3 joints). The reliability was low for detecting JE  $\leq 0.211$ . Acceptable reliability among machines was found for SH, BE and PD (table 1).

Table 1

		H/G	H/E	E/G
Kappa values	JF	0,211	0,143	0,211
	SH	0,529	0,602	0,584
	PD	0,455	0,709	0,434
	BE	0,628	0,615	0,550
Corresponding P-values	JF	0,357	0,588	0,357
	SH	<0,001	<0,001	<0,001
	PD	0,001	<0,001	<0,001
	BE	0,002	0,003	0,004

**Conclusions:** Non OMERACT-expert Rheumatologists can apply the USSS, and this score works well across different machines. The difference among machines

Abstract FRI0651 – Table 1

	Inter-observer reliability		Intra-observer reliability		
	ICC (95% CI)		Observer 1 ICC (95% CI)	Observer 2 ICC (95% CI)	Observer 3 ICC (95% CI)
UCOASMI	0.99 (0.98–1.00)		0.99 (0.98–1.00)	0.97 (0.94–1.00)	0.97 (0.93–1.00)
Conventional Metrology					
BASMI	0.50 (0.11–0.89)		0.78 (0.54–1.00)	0.61 (0.21–1.00)	0.99 (0.97–1.00)
Right lateral flexion	0.83 (0.64–1.00)		0.94 (0.87–1.00)	0.91 (0.80–1.00)	0.96 (0.91–1.00)
Left lateral flexion	0.88 (0.75–1.00)		0.96 (0.92–1.00)	0.93 (0.85–1.00)	0.97 (0.94–1.00)
Right tragus-wall distance	0.97 (0.95–1.00)		0.96 (0.91–1.00)	0.91 (0.81–1.00)	0.99 (0.98–1.00)
Left tragus-wall distance	0.97 (0.95–1.00)		0.96 (0.91–1.00)	0.90 (0.78–1.00)	0.98 (0.97–1.00)
Schöber test	0.68 (0.39–0.97)		0.64 (0.27–1.00)	0.98 (0.97–1.00)	0.95 (0.89–1.00)
Intermaleolar distance	0.87 (0.73–1.00)		0.93 (0.85–1.00)	0.82 (0.61–1.00)	0.98 (0.97–1.00)
Right cervical rotation	0.65 (0.33–0.96)		0.82 (0.61–1.00)	0.94 (0.87–1.00)	0.98 (0.97–1.00)
Left cervical rotation	0.58 (0.22–0.94)		0.91 (0.81–1.00)	0.75 (0.47–1.00)	0.98 (0.97–1.00)

and sonographers is mostly captured by the low reliability of JE. The OMERACT USSS could be used by sonographers in their everyday clinical practice to evaluate the activity of RA patients. Further studies in clinical-based settings will allow to define more precisely the applicability of this scoring system.

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**FRI0651 OBSERVATIONAL REPRODUCIBILITY STUDY OF UCO-TRACK®, AN AUTOMATIZED MEASUREMENT OF MOBILITY, IN PATIENTS WITH AXIAL SPONDYLOARTHRITIS**

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**Background:** The classical measures of spinal mobility for the assessment of patients with axial spondyloarthritis (SpA), such as BASMI, are subject to inter-observer variability.

**Objectives:** We assessed the reproducibility of the UCOASMI index (University of Córdoba Ankylosing Spondylitis Metrology Index), a composite index of cervical and spinal mobility obtained with the UCOTrack® motion analysis system (an innovative 3D motion capture system based on video-images) [1], in patients with axial SpA.

**Methods:** An observational study of repeated measures was carried out in 3 Spanish centers with the technology available (H. Reina Sofia, Córdoba, H. Puerta de Hierro, Madrid and H. Fundación Alcorcón, Madrid). For the assessment of intra-observer reliability, 30 patients (10 per center) were evaluated twice, 3–5 days apart. For the inter-observer reliability, 9 patients were evaluated in the 3 centers by 3 observers (window 3–7 days). The Intraclass Correlation Coefficients (ICC) for UCOASMI and classical metrology measurements were calculated.

**Results:** We included 30 patients (73% men, mean age 52 [SD 9], mean BASDAI 3.3 [SD 2]). The table shows the intra- and inter-observer reliability values. The reproducibility of UCOASMI was very high, with inter-observer ICC 0.99, and intra-observer ICC 0.97, 0.97 and 0.99, higher than most conventional measurements. The Schober test and cervical rotation showed lower reproducibility (inter-observer ICC between 0.58 and 0.68) and variable intra-observer ICC.

**Conclusions:** The reproducibility of the UCOASMI, obtained through the UCOTrack® motion analysis system in the 3 centers, was very high, in contrast to the lower reproducibility of the Schober test and other measures of classical metrology. The reliability of this system opens the door to using this technology to monitor SpA patients and in future research studies.

**References:**

[1] Garrido-Castro JL, Escudero A, Medina-Carnicer R, et al. Validation of a new objective index to measure spinal mobility: the University of Cordoba Ankylosing Spondylitis Metrology Index (UCOASMI). *Rheumatol Int* 2014;34:401–6.

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**FRI0652 MEDIAN NERVE ULTRASOUND FINDINGS AND CLINICAL CORRELATIONS IN PATIENTS WITH SYSTEMIC SCLEROSIS: A COMPARATIVE ANALYSIS WITH MATCHED CONTROL SUBJECTS**

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**Background:** Median nerve (MN) entrapment in the carpal tunnel seems to be common in patients with Systemic Sclerosis (SSc). Ultrasound (US) evaluation of MN in SSc patients was performed in some previous studies but conclusions were not linear (1).

**Objectives:** To compare specific MN US parameters of patients with SSc and a group of age and sex matched controls. To understand if specific clinical variables correlate with US parameters assessed in the group of SSc patients.