PATIENT PREPARATION	1-3	4-6	7-9	Median (rating 1-9)
Patients should undergo a period of acclimatization	4	8	73	8
Patients should be asked to remove nail polish prior to procedure	10	14	61	9
Patients should be asked to remove artificial or gel nails prior to procedure	9	13	63	9
Patients should be asked to avoid manicure prior to procedure	0	10	75	9
Patients should be asked about their job and hobbies	4	10	71	9
Patients should be asked about their sport and physical activities (i.e. outdoor/indoor activities)	10	14	61	8
Patients should be asked about their dominant hand	6	14	65	8
Patients should be asked about specific medications (i.e. beta-adrenergic blockers, vasodilators, anticoagulants and antihypertensive drugs) and other agents with vasoactive effects (i.e. cannabis, cocaine, amphetamines)	2	6	77	9
Patients should be asked about their comorbidities	5	3	77	9
Patients should be asked about recent finger trauma, nail biting (onychophagy) and/or habit of self-injuring the cuticles	2	4	79	9
Patients should be asked to provide a detailed description of digital colour changes (to ascertain the diagnosis of Raynaud's phenomenon)	2	9	74	9
Specify whether the exam is performed during a Raynaud's attack	13	15	57	8
Patients should be asked about their age	3	8	74	9
Patients should be asked about history of digital ulcers	6	5	69	9
Capillaroscopy should not be performed during RP attack	13	12	55	8
DEVICE DESCRIPTION				
The make and model of the nailfold capillaroscopy device should be reported	1	12	72	9
Details of magnification should be reported	0	2	83	9
The use of automated grid should be reported	0	10	75	8
The use of oil should be reported	14	13	58	8
Details of computer software for image analysis should be reported	8	11	66	9
EXAMINATION DETAILS				
Details of experience or qualification of personnel responsible for image acquisition and interpretation should be reported	9	16	60	8
In case of more than one examiner, training for each examiner should be specified	10	15	60	8
The number of fingers examined should be reported	1	0	84	9
It should be reported which fingers have been examined	2	2	81	9
Each finger should be analyzed and reported separately or together based on the study design	18	17	50	7
Images of each finger should be coded, numbered and stored in order to allow comparative/prospective studies	2	14	69	8
Reasons for finger exclusion should be reported	2	6	77	9
Number of images collected at each nailfold should be reported	6	17	62	8
Details of image quality (and missing data) should be reported	2	15	68	8
Details of global condition of the hands (e.g. flexion contractures) should be reported	6	15	64	8
Details on image reading (e.g. blind reading) should be reported	7	8	70	9
Report the overall pattern (i.e. normal: stereotype normal and non-specific abnormalities versus abnormal: scleroderma patterns)	1	8	76	9
Report the validated scleroderma patterns (i.e. early, active, late or scleroderma-like)	0	8	77	9

Conclusion: On the basis of the available literature the description of NVC methods was highly heterogeneous and individual published studies differed markedly. These practical suggestions developed using a Delphi process among international participants provide a guidance to improve and to standardize the NVC methodology in future clinical research studies.

Disclosure of Interests: Francesca Ingegnoli: None declared, Tommaso Schioppo: None declared, Ariane Herrick: None declared, Alberto Sulli Grant/research support from: Laboratori Baldacci, Francesca Bartoli: None declared, Nicola Ughi: None declared, John Pauling: None declared, Maurizio Cutolo Grant/research support from: Bristol-Myers Squibb, Actelion, Celgene, Consultant of: Bristol-Myers Squibb, Speakers bureau: Sigma-Alpha, Vanessa Smith Grant/research support from: The affiliated company received grants from Research Foundation - Flanders (FWO), Belgian Fund for Scientific Research in Rheumatic diseases (FWRO), Boehringer Ingelheim Pharma GmbH & Co and Janssen-Cilag NV, Consultant of: Boehringer-Ingelheim Pharma GmbH & Co, Speakers bureau: Actelion Pharmaceuticals Ltd, Boehringer-Ingelheim Pharma GmbH & Co and UCB Biopharma Srl

DOI: 10.1136/annrheumdis-2020-eular.2415

THU0529 CAPILLAROSCOPIC ALTERATIONS IN PATIENTS WITH IDIOPATHIC INFLAMMATORY MYOPATHIES

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Background: Nailfold capillaroscopy (NFC) is a useful, noninvasive, widely available diagnostic tool in rheumatology practice. We commonly use it to describe patterns of abnormalities in systemic sclerosis however we have enough data which proves NFC usefulness for monitoring idiopathic inflammatory myopathies (IIM) considering it as diagnostic tool, monitoring of disease activity and

treatment efficiency. Despite evident clinical relevance of NFC in IIM patients we still do not have clear capillaroscopic images for IIM definition.

Objectives: That's why, the goal of our research was aimed to analyze capillaroscopic peculiarities among IIM patients and find possible associations with clinical and activity data.

Methods: 69 patients with IIM were examined and 47 IIM patients with capillaroscopic alterations were included in the study, 26 patients with dermatomyositis (DM) and 21 patients with polymyositis (PM) according to the Targoff Criteria (1997). NFC we performed using *Dino-Lite* CapillaryScope with 200 magnification. We assessed nailfold capillary density (NCD), presence of microhemorrhages, giant, dilated and ramified capillaries, scleroderma patterns (defined as an early, active or late pattern) and neovascular pattern (defined as an active and late scleroderma patterns). To assess disease activity we use Manual Muscle Testing 8 (MMT8), Health Assessment Questionnaire (HAQ), Myositis Disease Activity Assessment Tool (MDAAT), Cutaneous Dermatomyositis Disease Area and Severity Index (CDASI), physician's VAS, patient's VAS, serum muscle enzymes levels. We divided patients into 4 groups: 1st group – 17 DM patients with active disease (8 of them with newly onset disease), 2nd group included 9 DM patients with inactive disease, 3rd group – 11 PM patients with active disease (5 of them with newly onset disease) and 4th group included 10 PM patients with inactive disease.

Results: The most common finding was low NCD, 70% of all patients had NCD lower than 6 per 1 mm. NCD for the 1st group was 4.4±1.12, 2nd group – 6.0±1.0, 3rd group – 5.8±1.1, 4th group – 9.2±2.1 (F=26.27, p<0.001). Hemorrhages were significantly more common among DM patients and active disease and were observed among 47.1% (p=0.036, $\chi^2=8.574$) with no significant difference with regard to the disease onset. Analyzing scleroderma patterns, among 1st group of patients – 17.6% had early, 47.1% – active, 35.3% – late pattern, in the 2nd group – 66.7% had early pattern, in the 3rd group – 27.3% patients with early and 18.2% with active pattern and in the 4th group – 50% of patients presented with early pattern (p=0.001, $\chi^2=31.87$). Neovascular pattern was found significantly more often among patients with active DM (p=0.001) with no regard to the disease onset. No statistically significant difference in giant and ramified capillaries distribution was found.

Conclusion: According to our results, we can admit that the most common capillaroscopic finding was decreased NCD, which were significantly lower among patients with active DM, the same as microhemorrhages and neovascular scleroderma pattern. This data suggests that NCD, microhemorrhages and neovascular scleroderma pattern could be considered as biomarkers of DM activity but not PM, therefore more detailed research with larger numbers of patients are required.

Disclosure of Interests: None declared

DOI: 10.1136/annrheumdis-2020-eular.3139

THU0530 HIGHLY-SENSITIVE CARDIAC TROPONIN I AND BETA-2-GLYCOPROTEIN-I IGA ANTIBODIES INFORM THE UTILITY OF SCREENING AND FOLLOW-UP NON-INVASIVE CORONARY ATHEROSCLEROSIS EVALUATION AND OPTIMIZE CARDIOVASCULAR RISK ASSESSMENT IN RHEUMATOID ARTHRITIS

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Background: Occult coronary atherosclerosis burden predicts mid-term cardiovascular disease (CVD) events in rheumatoid arthritis (RA) above and beyond Framingham D'Agostino cardiac risk score (FRS-DA). Highly-sensitive cardiac troponin I (hs-cTnI) levels in blood associate with coronary plaque burden and event risk in RA. Moreover, IgA antibodies against beta2-glycoprotein-1 (a-b2GPI-IgA)- an atherosclerotic plaque antigen- in RA promote coronary plaque progression and moderate the effect of inflammation on CVD events. It is currently unclear when to recommend a screening, non-invasive coronary atherosclerosis evaluation in asymptomatic RA patients and whether such an assessment should be repeated.

Objectives: To explore whether either biomarker alone or their combination improved prediction of plaque presence on an initial coronary CT angiogram (CCTA) beyond FRS-DA score; to evaluate whether either biomarker predicted progression to extensive or obstructive plaque on a follow-up evaluation.

Methods: One hundred fifty RA patients underwent a baseline CCTA; 101 had repeat evaluation within 6.9±0.3 years. Hs-cTnI and a-b2GPI-IgA were assessed at baseline; the latter were confirmed 12 weeks later, if positive. Lesions rendering greater than 50% luminal stenosis were considered obstructive. Extensive plaque was defined as >5 coronary segments with plaque, or stenosis score>5, or coronary artery calcium score (CAC)>100. The diagnostic accuracy of FRS-DA alone vs. with hs-cTnI or a-b2GPI-IgA individually or combined for plaque or CAC at baseline was evaluated as area under the curve (AUC). Improvement

in prediction accuracy between constructs was further assessed as integrated discrimination improvement (IDI). Similar AUC and IDI constructs evaluated the transition to obstructive or extensive atherosclerosis at follow-up in patients with baseline non-extensive or non-obstructive disease.

Results: High hs-cTnI (>1.5pg/ml) added to FRS-DA increased AUC from 0.717 to 0.731 (Figure 1A) and improved prediction accuracy for baseline plaque [IDI=0.041 (SE)=0.017, p=0.015]. In contrast, a-b2GPI-IgA did not [IDI=0.005 (0.006), p=0.47] and the combination offered no added benefit to the hs-cTnI model alone. Similar observations were made for CAC. Presence of a-b2GPI-IgA independently associated with coronary plaque progression (IRR=1.67 [95%CI 1.04-2.67]), whereas hs-cTnI did not. Likewise, a-b2GPI-IgA associated with transition to extensive or obstructive disease independently of FRS-DA (OR=13.48 [95%CI 2.09-86.99]). Notably, 71.4% of a-b2GPI-IgA positive patients with high hs-cTnI progressed to extensive or obstructive disease compared to 7.7% of a-b2GPI-IgA negative subjects with high hs-cTnI (p=0.008). Addition of a-b2GPI-IgA to FRS-DA in patients with prevalent non-extensive non-obstructive plaque increased AUC from 0.785 to 0.900 (Figure 1B) and significantly improved the prediction for development of obstructive or extensive atherosclerosis at follow-up [0.387, (0.13), p=0.003].

Figure 1. (A) Diagnostic accuracy for prediction of occult coronary atherosclerosis at baseline. FRS-DA alone is the base model followed by addition of hs-cTnI or a-b2GPI-IgA individually or combined. **(B)** Diagnostic accuracy for progression from non-obstructive and non-extensive plaque at baseline to obstructive or extensive atherosclerosis at follow-up.

Conclusion: High hs-cTnI improved the risk of baseline plaque presence beyond clinical risk score and may trigger an initial non-invasive coronary atherosclerosis evaluation. A-b2GPI-IgA presence may justify a follow-up evaluation in patients with non-extensive, non-obstructive plaque at baseline.

Disclosure of Interests: George Karpouzas Grant/research support from: Pfizer, Consultant of: Sanofi-Genzyme-Regeneron, Janssen, Speakers bureau: Sanofi-Genzyme-Regeneron, BMS, Sarah Ormseth: None declared, Elizabeth Hernandez: None declared, Matthew Budoff: None declared

DOI: 10.1136/annrheumdis-2020-eular.5037

THU0531 **A PROSPECTIVE STUDY EVALUATING THE ROLE OF ⁶⁸GA-RGD2 PET/CT ANGIOGENESIS IMAGING IN ASSESSING DISEASE ACTIVITY AND TREATMENT RESPONSE IN RHEUMATOID ARTHRITIS AND ITS COMPARISON WITH DAS28**

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Background: PET/CT imaging of synovial angiogenesis using ⁶⁸Ga-RGD (cyclic tripeptide agent targeting $\alpha_v\beta_3$ integrin) to study disease activity in rheumatoid arthritis (RA) has been demonstrated earlier in a few patients. However, post treatment changes in disease activity on ⁶⁸Ga-RGD₂ PET/CT imaging have not been adequately assessed.

Objectives: To compare the performance of ⁶⁸Ga-RGD₂ PET/CT with disease activity score (DAS) 28 in assessing disease activity and treatment response in RA.

Methods: Thirty patients (24F, 6M) aged 43±12 years with clinically diagnosed RA were prospectively studied. After calculation of DAS28 by a rheumatologist, all 30 patients underwent ⁶⁸Ga-RGD₂ PET/CT scan. Of these, 27 patients underwent a second ⁶⁸Ga-RGD₂ PET/CT scan and clinical assessment after at least 3 months of treatment. Total body and regional images of the upper limbs were acquired and interpreted by two nuclear medicine physicians blinded to the clinical findings. Joints showing focally increased tracer uptake compared to the background were considered positive and joints showing uptake equal to or less than background were considered negative.

Data of 30 patients were used for inter-observer and inter-modality agreement calculations. Changes in PET parameters and DAS28 were compared in 27 patients to assess treatment response.

Results: Out of 1560 joints examined in the initial scan, 394 were positive on PET/CT compared to 348 on clinical evaluation. Inter-observer agreement between nuclear medicine physicians was excellent (Cohen's kappa 0.92, p<0.05) and inter-modality agreement between PET and clinical examination was moderate (Cohen's kappa 0.55, p<0.05). The DAS28 and SUVmax values (highest and average) of 27 patients showed significant reduction on follow-up compared to the initial evaluation. There was significant correlation between percentage change in DAS28 and percentage change in scan parameters like PET positive joint counts (0.689, p<0.001), average SUVmax (0.712, p<0.001) and highest SUVmax values (0.558, p=0.003) of scan-positive joints in 27 patients. Additional advantages of ⁶⁸Ga-RGD₂ PET/CT included objective assessment, whole body evaluation of all small and large joints, and greater reproducibility.

Conclusion: ⁶⁸Ga-RGD₂ PET/CT is a promising tool for objective assessment of disease activity and treatment response in patients with RA.

Table 1. Clinical and PET parameters of the patients

Parameter	Initial data (n=27) Mean (SD)/Median (IQR)	Follow-up data (n=27) Mean (SD)/Median (IQR)
TJC(28)	10 (5-13)	3 (2-4)
SJC(28)	6 (3-7)	1 (0-2)
ESR	25 (20-41)	24 (18-35)
PtGA	6.0 (5.0-6.0)	3.0 (2.0-4.0)
DAS28(3)	5.14 (0.85)	3.74 (0.88)
DAS28(4)	5.60 (0.90)	3.80 (0.96)
PET positive Joints	12 (7-8)	4 (2-9)
aSUVmax	2.08 (1.68-2.52)	1.79 (1.00-2.06)
hSUVmax	3.45 (2.71-4.70)	3.34 (1.95-4.25)

TJC/SJC: tender/swollen joint counts; ESR: erythrocyte sedimentation rate; PtGA: patients global assessment scale; DAS: disease activity score; aSUVmax/hSUVmax: average/highest SUVmax (maximum standardized uptake value); SD: standard deviation; IQR: interquartile range

Figure 1. ⁶⁸Ga-RGD₂ PET scan of a 26-year female RA patient on treatment. **A.** Initial scan shows increased tracer uptake in multiple joints of upper and lower limbs and tendon sheaths of hands and ankle region (arrows); DAS28 was 4.56 (moderate disease activity) and ESR 12mm/1st hour. **B.** Follow-up scan after 4 months shows resolution of tracer activity in the previously involved joints with only a mild focus persisting in the left knee joint; DAS28 was 1.73 (clinical remission according to ARA) and ESR 08mm/1st hour.

Acknowledgments: This study was supported by Indian Council of Medical Research, New Delhi [grant no.3/2/June-2017/PG-Thesis-HRD (23)]

Disclosure of Interests: None declared

DOI: 10.1136/annrheumdis-2020-eular.3276

THU0532 **SEMIQUANTITATIVE ANALYSIS OF BONE SCINTIGRAPHY TO PREDICT SPINAL PROGRESSION IN EARLY AXIAL SPONDYLOARTHRITIS: A PILOT STUDY**

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Background: Axial spondyloarthritis (axSpA) is a chronic inflammatory disease that typically affects the axial joint and entheses. Abnormal hyperplasia of osteoblasts in the vertebral corner is the underlying pathogenesis of syndesmophyte