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THU0535

ARE THERE DISCRIMINATING FEATURES BETWEEN "SCLERODERMA" AND "SCLERODERMA-LIKE" CAPILLAROSCOPIC PATTERN?

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Background: The "scleroderma" type capillaroscopic pattern is a diagnostic criterion of the EULAR/ACR scoring system for systemic sclerosis (SSc). In addition, the validated staging system of Cutolo et al. is used that categorizes the capillaroscopic changes into an "early", "active" and "late" phase. A "scleroderma-like" capillaroscopic pattern can also be observed in a number of rheumatic diseases, i.e., dermatomyositis (DM), systemic lupus erythematosus (SLE), undifferentiated connective tissue diseases, overlap syndromes, and rheumatoid arthritis (RA).

Objectives: To evaluate the categories "early", "active" and "late" in "scleroderma-like" pattern in rheumatic diseases different from SSc and to assess the presence of discriminating features between "scleroderma" and "scleroderma-like" capillaroscopic pattern.

Methods: 544 capillaroscopic images that showed a "scleroderma" and "scleroderma-like" pattern have been analysed from the following groups: 405 images from 42 SSc patients, 66 images from 4 patients with DM, 37 images from 9 RA patients and 36 images from 5 SLE patients.

Results: 30 of the images obtained from SSc patients demonstrated an "early" phase capillaroscopic pattern, 284 an "active" phase, and 29 a "late" phase. In 62 images, neoangiogenesis could be observed in images from an "active" phase capillaroscopic pattern that could be classified as "active-to late stage of transition." Among the 66 images from DM patients, 43 capillaroscopic pictures revealed an "active" phase and 23 - neoangiogenic capillaries with giant capillary loops, capillary loss and derangement ("active neoangiogenic" pattern). An "early" and "late" phase capillaroscopic pattern was not present in this group. The images from SLE patients (n=36) could be classified into the following groups: 3 images "early" phase, 29 images "active" phase, and 4 images with neoangiogenesis during the active phase. A "late" phase capillaroscopic pattern was not observed. In the group of capillaroscopic pictures from RA patients (n=37), an "early" phase changes could be observed in 11 images (8 out of 9 patients) and an "active" phase in 3 images (2 patients). 23 of the images from RA patients demonstrated evidence of neoangiogenesis associated with mild capillary derangement, moderate capillary loss, and single giant capillaries ("advanced neoangiogenic" pattern).

Conclusion: In conclusion, an "early" phase "scleroderma" pattern is present in RA and SLE patients, but obviously not in DM patients. An "active" phase "scleroderma" pattern was found in all three patients groups other than SSc i.e., DM, SLE and RA. In DM, profound neoangiogenesis is also a characteristic finding. In RA, advanced neoangiogenesis with moderate devascularization and single giant capillaries could also be documented. A classic "late" phase "scleroderma" pattern was found only in SSc patients and was not observed in other rheumatic diseases i.e., SLE, RA, DM. The results of the current study suggest presence of differences between "scleroderma" and "scleroderma-like" capillaroscopic pattern that may reflect different pathogenic mechanisms of microvascular damage.

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THU0536

ASSOCIATION BETWEEN OVERWEIGHT/OBESITY AND DISEASE ACTIVITY ON BONE SCINTIGRAPHY IN PATIENTS WITH RHEUMATOID ARTHRITIS

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Background: In previous studies, obesity is highly prevalent in patients diagnosed with rheumatoid arthritis and it is positively associated with disease

activity¹. Although Tc-99m-labeled bone scintigraphy has been widely performed to evaluate the disease activity of the joints involved in this disease²; the effect of body mass index (BMI) on the results of bone scintigraphy is yet to be accessed.

Objectives: In the present study, we evaluated the relationship between BMI and uptake intensity of the joints that was measured using bone scintigraphy in patients with rheumatoid arthritis.

Methods: A total of 80 patients (21 men and 59 women; mean age 56±14 years) with rheumatoid arthritis who underwent Tc-99m methylene diphosphonate bone scintigraphy before treatment were enrolled in this study. Data were collected for baseline BMI and disease activity score for the 28 joints using erythrocyte sedimentation rate (DAS28-ESR) of these patients. Uptake intensity of these 28 joints was automatically measured for each patient using an in-house software, expressed as joint uptake-to-background normal bone uptake ratio (joint uptake ratio). The correlation of BMI with DAS28-ESR and joint uptake ratio on bone scintigraphy was assessed.

Results: Mean BMI of the enrolled patients was 24.4±3.7 kg/m² and 50 patients (62.5%) were classified as overweight/obesity. BMI was significantly positively correlated with the sum of 28 joint uptake ratios on bone scintigraphy (p=0.021, correlation coefficient=0.358) as well as DAS28-ESR (p=0.030). Patients with overweight/obesity (39.2±9.5) had significantly higher values of the sum of 28 joint uptake ratios than the other patients (33.9±9.5; p=0.025). In correlation analysis with each joint uptake ratio of 28 joints, BMI more significantly positively correlated with uptake ratios of shoulder, elbow, and knee joints than those in wrist and hand joints. In subgroup analysis of patients having low (DAS28-ESR ≤3.2) and high (DAS28-ESR >3.2) disease activity, BMI still showed significant positive correlation with the sum of 28 joint uptake ratio on bone scintigraphy in both subgroups (p<0.05 for all).

Conclusion: The Baseline BMI in patients with rheumatoid arthritis had significant positive correlation with joint uptake intensity measured on bone scintigraphy, especially for large joints. The results of our study might provide an evidence that supports an association between BMI and disease activity of rheumatoid arthritis.

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THU0537

VALIDITY AND DIAGNOSTIC PERFORMANCE OF FLUORESCENCE OPTICAL IMAGING MEASURING SYNOVITIS IN HAND OSTEOARTHRITIS. RESULTS FROM THE NOR-HAND STUDY.

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Background: Fluorescence Optical Imaging (FOI) demonstrates enhanced microcirculation in finger joints as a sign of inflammation.

Objectives: We wanted to assess the validity and diagnostic performance of FOI measuring synovitis, comparing it with Magnetic Resonance Imaging (MRI)- and ultrasound-detected synovitis in persons with hand osteoarthritis (OA).

Methods: Two hundred and twenty-one participants (88% female, age (SD) 60.6 (6.2) years) with hand OA from the Nor-Hand study underwent FOI and grey scale (GS) and power Doppler (PD) ultrasound of the bilateral hands and contrast-enhanced MRI of the dominant hand. The FOI scan was performed after the administration of an intravenous fluorescence dye (indocyanine green, ICG) and 360 images (1/second) were produced in 6 minutes. One reader scored the bilateral distal interphalangeal (DIP), proximal interphalangeal (PIP), metacarpophalangeal (MCP) and first carpometacarpal (CMC-1) joints for FOI enhancement, blinded for clinical information and other imaging data. Images were scored according to the 'FOI activity score' (FOIAS) where four out of 360 images are assessed, defined as phase 1, 2, and 3, based on the inflow and washing out of the fluorescence dye, and a composite image (Prima Vista Mode; PVM) of the 240 first images. Two readers evaluated separately the severity of

MRI-defined synovitis (grade 0-3) in the DIP, PIP, MCP and CMC-1 joints of the dominant hand and the severity of GS synovitis (grade 0-3) and PD activity (grade 0-3) in the same joints of the hands bilaterally. Spearman's rho was calculated for correlations between sum scores of all joints for FOI, MRI and ultrasound and sensitivity, specificity, negative predictive value (NPV), positive predictive value (PPV) and area under the curve (AUC) for FOI using MRI and ultrasound as reference.

Results: Despite frequent MRI and ultrasound findings in the CMC-1 joint, no FOI enhancement was detected in the thumb base, and CMC-1 was excluded from the analyses. FOI had poor to fair correlations with MRI and GS synovitis and PD activity. The strongest correlation with MRI was found for PVM in the PIP joints with Spearman's rho of 0.32, while the DIP joints had consistently the weakest correlations ranging from 0 to 0.14 (Figure 1). None of the FOI phases or PVM demonstrated both good sensitivity and specificity, and AUC remained low with both MRI and GS synovitis as a reference (table 1). The NPVs of FOI were consistently higher when GS synovitis was used as reference rather than MRI, due to higher frequency of low degree MRI-defined synovitis. However, when changing cut-off for MRI synovitis as reference from grade 1 to grade 2 the diagnostic performance of FOI increased to the level of GS synovitis. The diagnostic performance for FOI was similar with both GS synovitis and PD activity as reference.

Table 1. Diagnostic performance of FOI measuring synovitis in hand OA using MRI and GS synovitis as reference

FOI	Reference	Sensitivity	Specificity	PPV	NPV	AUC
PVM	MRI	0.48	0.72	0.61	0.61	0.61
Phase 1		0.02	0.99	0.61	0.53	0.50
Phase 2		0.58	0.62	0.58	0.62	0.60
Phase 3		0.24	0.90	0.67	0.57	0.57
PVM	GS	0.59	0.64	0.17	0.93	0.62
Phase 1		0.02	0.99	0.28	0.89	0.51
Phase 2		0.69	0.56	0.17	0.94	0.63
Phase 3		0.23	0.86	0.17	0.90	0.56

FOI; Fluorescence optical imaging, PVM; Prima Vista Mode, GS; Grey scale, PVM; Prima Vista Mode, PPV; Positive Predictive Value, NPV; Negative Predictive Value, AUC; Area under the curve

Conclusion: FOI sum scores showed poor to fair correlations with MRI- and ultrasound-detected synovitis in persons with hand OA. These findings might be explained by the low-grade inflammation with minor vascularization in the majority of inflamed joints. None of the FOI phases or PVM demonstrated both good sensitivity and specificity and the method was not able to detect CMC-1 synovitis.

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THU0538

IN PSORIATIC ARTHRITIS PATIENTS CONSIDERED IN REMISSION BY THEIR RHEUMATOLOGIST, CAN DISCORDANCE IN DISEASE ACTIVITY ASSESSMENT BETWEEN PATIENT AND RHEUMATOLOGIST BE EXPLAINED BY RESIDUAL INFLAMMATION AS MEASURED BY ULTRASONOGRAPHIC EXAMINATION?

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Background: Psoriatic arthritis (PsA) is a heterogeneous disease and its assessment is sometimes difficult. Perception of disease activity by patient and physician is frequently discordant in patients in clinical remission. Ultrasound (US) is an imaging technique, which can detect inflammation in PsA.

Objectives: The aim of our study was to assess whether persistence of disease activity evaluated by the patient, considered in remission by his rheumatologist, was associated with inflammation measured by US.

Methods: We performed a transversal monocentric study. PsA patients were included if they met the CASPAR criteria and were considered in remission by their rheumatologist. Demographic data, characteristics of the disease and treatments were collected. Discordance was defined by a difference between patient's and rheumatologist's global assessment $\geq 30/100$ on a Visual Analogic Scale. An US examination was performed on 50 joints, 28 tendons and 14 entheses by an independent investigator. Synovial or tendon sheath hypertrophy and PD signal were evaluated on a semi-quantitative scale, B Mode and PD signal abnormalities on entheses were searched, according to the EULAR-OMERACT scoring system. US remission was defined by no power Doppler (PD) signal on joints, tendons and entheses and minimal US activity by maximum one PD signal on the same sites. Univariate and multivariate analyses were performed to evaluate factors associated with US abnormalities.

Results: Sixty-two PsA patients were included. 40.3% were women, the mean (SD) age was 55 (14) years, 42% were in US remission and 71% in minimal US activity (Table 1), 19.4% had ≥ 1 PD synovitis and 88.7% had a B mode synovitis, 95.2% had a B mode abnormality on entheses and 51.6% had ≥ 1 PD signal on entheses. Thirty nine percent had a discordant disease activity assessment with their rheumatologist. In univariate analysis, discordance was not associated with US remission (OR=1.71 (95%CI 0.61-4.83), $p=0.224$) or US minimal disease activity (OR=0.99 (95%CI 0.32-3.05), $p=0.602$). In multivariate analysis, US remission was independently associated with female gender (OR=3.94 (95%CI 1.20-12.9), $p=0.024$) and younger age (OR=0.95 (95%CI 0.91-0.99), $p=0.027$). Minimal US activity was associated with history of enthesitis lesion (OR=11.26 (95%CI 1.34-94.93), $p=0.026$) and age (OR=0.95 (95%CI 0.90-1), $p=0.044$).

Table 1. Ultrasound characteristics of the 62 PsA patients.

	N (%)
Ultrasound remission	26 (41.9)
Ultrasound minimal disease activity	44 (71)
Patients with ≥ 1 grey scale synovitis	55 (88.7)
Patients with ≥ 1 Power Doppler synovitis	12 (19.4)
Patients with ≥ 1 grey scale tenosynovitis	15 (24.2)
Patients with ≥ 1 Power Doppler tenosynovitis	1 (1.6)
Patients with ≥ 1 grey scale enthesitis lesion (thickness, hypo echogenicity, calcification, enthesophyte, erosion, bursitis)	59 (95.2)
Patients with ≥ 1 Power Doppler enthesitis	32 (51.6)

Conclusion: Our study showed persistent inflammation evaluated by US in PsA patients considered in remission by their rheumatologist. However, prevalence of residual inflammation evaluated by US was not higher in patients with self-assessment of their disease discordant from their rheumatologist.

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