Table 1.

	axSpA without IBD (n=829)	axSpA with IBD (n=57)	p
Men/Women, n	272/557	15/42	0.33
Mean age (years) $\pm$ SD at the time of study	49 $\pm$ 13	49 $\pm$ 10	0.99
AS/nr-AxSpA	656/173	45/12	0.97
History of CV risk factors			
Current smoker	285 (34)	12 (21)	0.045
Obesity			
Dyslipemia	280 (34)	16 (28)	0.42
Hypertension	223 (27)	16 (28)	0.79
Diabetes Mellitus	60 (7)	4 (7)	0.99
Chronic Kidney Disease	20 (2)	2 (4)	0.65
History of cardiovascular events, n (%)	40 (5)	2 (4)	0.99
Structural damage at the time of study			
Presence of syndesmophytes, n (%)	307 (37%)	23 (49%)	0.66
mSASSS	5 (1-15)	6 (3-23)	0.64
Severe sacroiliitis (grade 3,4), n (%)	436 (53)	34 (60)	0.42
CV data at the time of study			
Carotid plaques	261 (31)	21 (37)	0.45
IMT (mm)	645 $\pm$ 147	636 $\pm$ 112	0.64
IMT $\geq$ 0.9 mm	46 (6)	0 (0)	0.066

Abbreviations: AS = ankylosing spondylitis. AxSpA= axial spondylitis. CV = cardiovascular. IBD = Inflammatory bowel disease. IMT = intima-media wall thickness. Nr-axSpA = no-radiographic axial spondylitis.

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POS1408

REPRODUCIBILITY OF A NEW AUTOMATIC SYSTEM (CAPILLARY.IO) IN THE ANALYSIS OF NAILFOLD CAPILLAROSCOPY IMAGES

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Background: Nailfold Capillaroscopy is a simple, inexpensive and non-invasive technique that allows microvascular damage to be observed, gaining recent importance in the diagnosis, monitoring and prognosis of many diseases with microangiopathy. However, the variability in the results interpretation has led to the development of new computerized systems that allow the automatic analysis of capillaroscopic images.

Objectives: to compare the degree of agreement between the automatic system Capillary.io and a gold standard obtained from the agreement of 9 expert capillaroscopists and to know the degree of the interobserver reliability To demonstrate the validity of the system to detect normal and enlarged capillaries, hemorrhages, megacapillaries, ramifications and tortuosities.

Methods: a cross-sectional study was performed in which 300 random and anonymous nailfold capillaroscopic images (1165 capillaries) were analyzed by 9 experienced observers. The degree of interobserver agreement was calculated from the 5 users. Likewise, the system performed an automatic assessment of the images and their agreement with the gold standard was calculated (interobserver agreement greater than 5, 6, 7, 8 and 9 successively). The validity of the program for each variable was also analyzed using sensitivity and specificity, positive and negative predictive values, and likelihood ratios, as well as their degree of agreement using the weighted kappa statistic (95% CI, p < 0.05). The programs used for statistical calculations were SPSS 22.0 and EPIDAT 3.0.

Results: the degree of interobserver agreement was 76.5% for the agreement of 5 or more observers, progressively decreasing to 15.4% for the 9 observers. Capillary.io obtained higher levels of agreement, reaching 97.7%

for the 9 observers. Statistically significant results were obtained in the automated detection of all the morphological alterations analyzed Capillary.io presented a sensitivity (S) of 79.82% and a specificity (E) of 82% in the recognition of normal capillaries. The automatized system was able to recognize enlarged capillaries with a sensitivity of 86.97% and a specificity of 81.38%. Megacapillaries were detected with 89.41% sensitivity and 78.75% specificity. Similarly, the system was able to detect tortuosities (S 66.94%; E 67.71%), ramifications (S 54.34%; E 58.61%) and hemorrhages (S 71.36; E 73.97%).

Conclusion: Capillary.io demonstrated a high degree of agreement with the gold standard, stronger with greater consensus among observers. It was able to detect with great sensitivity and specificity hemorrhages and megacapillaries, very relevant alterations in microangiopathies.

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POS1409

AUTOMATED DETECTION OF SCLERODERMIFORM PATTERNS USING CAPILLARY.IO

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Background: A nailfold capillaroscopy procedure is a non-invasive, low-cost, and well-established examination that can be used to diagnose several rheumatic autoimmune diseases and support the necessary follow-up of patients. While the clinical implications of the technique are known, a rigorous and in-depth examination of nailfold capillaries remains as one of the major challenges to produce new advances in research and diagnosis, due to practical limitations for analysing the whole nailfold area of each patient. The difference between the different patterns established by Maricq and Cutolo makes it possible to predict the evolution that the patient will present. We introduce Capillary.io, an automatic image reading system able to recognize capillaries in images obtained with any microscope, generate automatic measurements of each capillary and take advantage of this information to report capillary morphology and patterns.

Objectives: to determine the ability to detect active and early sclerodermiform patterns of Capillary.io.

Methods: Forty-nine complete capillaroscopies, reported by expert capillaroscopists according to the different patterns manually (gold standard), were compared with the pattern detection capability of Capillary.io. A scoring system based on the algorithm of the Spanish Capillaroscopy Study Group (GREC) was performed and interpreted by capillary.io for the global interpretation of each of the capillaroscopies analyzed.

Results: Overall, 37 of the 49 capillaroscopies reported agreed with the diagnosed pattern (75.51%). Separately, the early pattern presented a concordance of 77.27% and the active pattern of 74.07%. In reference to the findings detected by the Capillary.io system, the mean overall density was 5.01 capillaries/mm in the group with the active pattern compared to 6.46 capillaries/mm in the early pattern. The density of dilations and megacapillaries was 2.81/mm and 1.21/mm in the active pattern group versus 4.69/mm and 0.4/mm in the early pattern group. Global diameters were greater in the active pattern group with an apical mean of 37.3 μ m compared to 28.5 μ m in the early pattern subgroup.

Conclusion: Capillary.io is a simple, easy-to-learn web system for interpreting capillaroscopic images of nail folds. It can be a very useful tool to standardize the interpretation of capillaroscopic images, not only individually for each capillary, but also jointly through the detection of different patterns.

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POS1410 FLUORESCENCE OPTICAL IMAGING (FOI) DETECTS SUBCLINICAL INFLAMMATION IN HANDS OF PATIENTS DIAGNOSED WITH FIBROMYALGIA SYNDROME AND OTHER RHEUMATIC DISEASES

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Background: Myalgias are a common symptom of infections and diseases of the rheumatic type but can also occur in the case of physical overstrain or as an undesirable drug side effect. Anamnesis, clinical

examination and determination of specific laboratory parameters are usually helpful for diagnosis, but do not always lead to correct results. Particularly, differentiation between the diagnoses of fibromyalgia syndrome (FMS), polymyalgia rheumatica (PMR), and other myalgic diseases of the rheumatic type is often difficult. FOI are playing an increasingly role as quantifiable and sensitive diagnostic imaging methods. After injecting a fluorescent dye, the signal intensity enables visualization of the microcirculation. This can be used for the differential diagnosis of inflammatory, degenerative, muscular and connective tissue-associated diseases.

Objectives: The present work investigates the potential of this method for the detection of subclinical inflammatory processes to differentiate between FMS and various rheumatic diseases which are accompanied by myalgia.

Methods: Analyses of subjects without clinical symptoms (n = 59) were compared with patients with a clinical diagnosis of FMS (n = 63), PMR (n = 5), or polymyalgia as a consequence of other diseases (PM, n = 6), Sjogren's syndrome (SS, n = 20), and erosive rheumatoid arthritis (RA, n = 162). The FMS patients were stratified according to primary (n = 31) and secondary (n = 32) pathology. FOI signal intensity (SI) was defined by ratio of areas with SI in patients and controls. Clinical and FOI examinations were carried out under the conditions of standard outpatient rheumatological care. The laboratory parameters were created in certified medical laboratories.

Results: Only 21% of all patients diagnosed with FMS are seropositive for rheumatic factors. Secondary FMS have higher values than primary FMS (26 versus 13%). In contrast, 79% of the patients with RA, 75% of the SS patients, and 100% of the patients with PMR are seropositive. On average, both the CRP values and the ESR of FMS patients were in the normal range, whereas in the other cohort the mean values were significantly increased. X-ray examinations showed erosions in all patients with RA and in 80% with PMR, whereas this was only the case in less than 15% of FMS and SS patients. However, in nearly 80% of patients both with primary and secondary FMS, increased SI value as a sign of inflammation could be detected by FOI. While in patients with RA or PMR an accumulation of the dye in the metacarpophalangeal joints can be detected in an early phase of the FOI examination, in the FMS or SS patients signal increases can be detected in the later phases in the area of connective tissue, tendons and muscles (Figure 1).

Conclusion: The examination with FOI gives more precise information on the localization and extent of an inflammation in the hands and can thus make an important contribution to differential diagnosis and optimization of therapy. The present work demonstrates a high potential in the detection and localization of subclinical inflammatory processes which cannot be detected in FMS patients with other methods, often leading to a psychosomatic diagnosis. In future, there will be a requirement for diagnostic technologies that can be used widely and are suitable for interlinking therapy with diagnostics more closely than before.

Figure 1: Examples of FOI images in patients with clinical diagnosed: A. primary FMS or, B. secondary FMS as an accompanying syndrome of RA. Analysis of intermediate/late phase (P2/3) of fluorescence dye (indocyanine green) distribution.

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