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 Capillar.io. A scoring system based on the algorithm of the Spanish Capillaroscopy Study Group (GREC) was performed and interpreted by Capillar.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 Capillar.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 dilatations 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 μm compared to 28.5 μm in the early pattern subgroup.

Conclusion: Capillar.io is a simple, easy-to-learn 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.

REFERENCES

Disclosure of Interests: Eduardo Ramos Shareholder of: Co-founder and shareholder of Capillary.io, Alfredo Guillén-Del-Castillo: None declared, Carmen Pilar Simeón-Aznar: None declared, Borja Gracia Tello Shareholder of: Co-founder and shareholder of Capillary.io, Vicent Fonollola Pla: None declared, Albert Selva-O’Callaghan: None declared, Luisa Sáez-Comet: None declared, Co-founder and shareholder of Capillary.io, Vicent Fonollola Pla: None declared, Elena Martinez Robles: None declared, Juan José Rios: None declared, Gerard Espinosa: None declared, Jose Antonio Todoli Parra: None declared, Jose Luis Callejas-Rubio: None declared, Norberto Ortego: None declared, Begoña Elena Martínez Robles: None declared, Juan José Rios: None declared, Gerard Albert Selva-O’Callaghan: None declared, Luis Sáez-Comet: None declared, Vicent Fonollola Pla: None declared, Men Pilar Simeón-Aznar: None declared, Borja Gracia Tello Shareholder of: Xiralite GmbH, nanoPET GmbH, Vieri Failli Employee of: Xiralite GmbH, nanoPET GmbH, Vieri Failli.

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), Sjögren’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.

DOI: 10.1136/annrheumdis-2021-eular.4112

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

Disclosure of Interests: Pia Welker Employee of: nanoPET GmbH, Josefine Ferl: None declared, Sarah Ohrndorf: None declared, Andreas Briel Shareholder of: Xiralite GmbH, nanoPET GmbH, Vieri Failli Employee of: Xiralite GmbH

DOI: 10.1136/annrheumdis-2021-eular.4268