Objectives: To evaluate different reader dependent assessment methods to evaluate FOI in psoriasis and psoriatic arthritis.

Methods: FOI data (clinical PsA n=137, PsO without PsA n=202) from an observational prospective multicentre trial in Germany was used for manual assessment of the films using two different published assessment methods: (1) FOI activity score (FOIAS) and (2) individual characteristics of ICG kinetics. For (1) FOIAS, the levels of signal enhancement were scored using a scoring system from 0 to 3 (0= no enhancement, 3 = strong enhancement) per joint as well as an assessment of the summation picture. (2) Kinetics were determined by joint-related signal enhancements as well as by ICG related flow-on and flow-off behaviour. Time to the first appearance of the signal, the time to the maximum enhancement and the time to the end of the signal were determined.

Results: By use of (1) FOIAS, the maximum score (overall signals of all joints assessed by FOIAS) showed a significant difference (p=0.0075) between PsA (mean 4.76) and PsO (mean 3.84). (2) Time to global maximum showed no significant difference (PsA mean 91.1 sec vs PsO 92.6 sec) for both methods. Moreover, the mean time to maximum and clearance of ICG did not differ between the two diseases. The duration of the 3 phases of kinetic (phase 1: flow-in, phase 2: stable, phase 3: clearance) was 52.4 sec, 180.2 sec and 119.8 sec for PsA and 57.6 sec, 186.0 sec and 130.5 sec for PsO with an earlier phase 2 and 3 for PsA by trend. The most frequently affected joints in PsA (affected >10%): PIP 3 right and PIP 5 right.

Conclusion: FOI is a sensitive method to detect changes in microvascularisation in the hands. The use of the manual FOIAS is able to discriminate significantly between PsA and PsO patients by comparison of the sum of scores over all joints (maximum score). The assessment of ICG kinetics is limited to discriminate between musculoskeletal and joint disease, differentiation of diseases is only seen by trend. Both methods characterize disease states differently. A combination of both methods might be useful to increase the potential of manual assessment of FOI signals.

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