Utility of power Doppler ultrasound-detected synovitis for the prediction of short term flare in psoriatic arthritis patients in clinical remission.

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Objective: To determine whether the power Doppler ultrasound (PDUS) assessment of synovitis predicts short term relapse in patients with psoriatic arthritis (PsA) in clinical remission.

Patients and Methods: PsA patients in clinical remission (fulfillment of minimal disease activity [MDA] criteria or Disease Activity Score in 28 joints [DAS28] <2.6) underwent PDUS examination of 18 joints (second and third metacarpophalangeal joints, second and third proximal interphalangeal joints, wrist, knee, ankle and second and fifth metatarsophalangeal joints). PD signal was graded on a semi-quantitative scale from 0 to 3. PD synovitis was defined as the presence of intraarticular PD signal ≥1, and was treated as a dichotomous variable. On the same day a complete clinical assessment was performed by another rheumatologist. All patients were followed-up for 6 months. Flare was defined as the requirement of a change in disease modifying antirheumatic drugs (DMARDs) (increasing dose, adding or changing DMARDs or biologics therapy) by the treating rheumatologist, who was blinded to the US findings. Relative risks (RR) with their 95% CI for flare among patients with and without PD signal were calculated. Multivariable analysis using logistic regression with flare as the outcome variable, and PD signal, demographic characteristics, and disease activity as independent variables were also calculated.

Results: 96 patients were evaluated of whom 47 (49%) fulfilled MDA criteria and 36 (37.5%) DAS28 remission criteria. Patients' characteristics are shown in the table. Among the 47 patients fulfilling MDA and the 36 patients on DAS28 remission, 15 (32 %) and 10 (28 %) experienced a flare within the next 6 months respectively. Thirteen (87 %) of the 15 patients with flares among patients on MDA had PD ≥1, while only 2 of the 32 patients without flares had positive PD (RR= 14; 95% CI: 3.6-53.8; p<0.0001). Among the 10 patients on DAS28 remission that experienced flares, 9 (90%) had PD positive, while only 5 (19%) of the 26 patients without flares had positive PD signal (RR: 14.4; 95% CI: 2-99.8; p<0.0001). On logistic regression analysis the only variables associated with flares were positive PD signal (OR: 31; 95% CI: 1.4-696; p=0.029); and use of non-biologics DMARDs (91% methotrexate) (OR: 12; 95% CI: 1.2-120; p=0.034).

Conclusion: Among PsA patients on clinical remission residual synovial inflammation determined by the presence of a positive PD signal, was a strong predictor of short term flare.

Table: Patients' characteristics.

Feature	Patients on MDA (N=47)	Patients on DAS28 remission (n= 36)
Male, no. (%)	28 (60)	24 (66)
Mean age (SD) years	54.4 (14)	55.2 (12)
Median disease duration (IQR) months	36 (10-60)	36 (14-84)
DMARDs use, no. (%)	31(66)	23 (64)
TNFi use, no. (%)	10 (21)	12 (33)
erythrocyte sedimentation rate, median (IQR)	15 (9-25)	10.5 (5-14.5)
Swollen joint count 66, mean (SD)	0.3 (0.6)	0.2 (0.5)
Tender joint count 68, mean (SD)	0.3 (0.6)	0.25 (0.6)
DAS28 remission, no. (%)	29 (62)	NA
Minimal disease activity, no. (%)	NA	29 (80.5)
Synovial PD>=1, no. (%)	15 (32)	14 (39)
Patients with flare, no. (%)	15 (32)	10 (28)