SAT0401 SWOLLEN JOINTS ARE ASSOCIATED WITH ULTRASOUND POWER DOPPLER SYNOVITIS, WHEREAS TENDER JOINTS IN THE ABSENCE OF SWELLING ARE NOT: AN ANALYSIS OF AGREEMENT AND CORRELATION IN VERY EARLY DMARD NAÏVE PSORIATIC ARTHRITIS FREE

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Abstract

Background: Ultrasound (US) is an imaging adjunct to clinical joint examination adding sensitivity and objectivity to the assessment of inflammation. Previous studies in PsA have shown disparity between ultrasound and clinical findings with significant subclinical joint inflammation. A clinical challenge in PsA is to interpret tender joints (TJ) that are not swollen (SJ). As US is not widely used, alignment of clinical with US assessment is needed to determine its future role.

Objectives: To determine how joint clinical examination relates to US findings in very early DMARD naïve PsA.

Methods: Newly diagnosed DMARD naïve PsA patients, fulfilling CASPAR criteria, were recruited into the Leeds Spondyloarthropathy Register for Research and Observation (SpARRO), a prospective observational cohort study. US examination of 48 joints per patient was conducted by trained ultra-sonographers, blinded to clinical details with semi-quantitative scoring (0-3) for gray scale (GS) and power Doppler (PD). TJ and SJ counts were independently recorded. Cross-sectional baseline analysis was performed. The prevalence-adjusted and bias-adjusted kappa (PABAK) was calculated to determine agreements between clinical and US parameters. Spearman's rank correlation coefficient was calculated to identify permutations of TJ/SJ correlating with GS ≥2, PD≥1 or both.

Results: A total 5927 joints were scanned in 155 PsA patients. The mean age was 44.4 years, (SD 12.8), median disease duration 5.1 weeks (0.4-13.1); median TJC=7 (3-14) and SJC=2 (1-7). Oligoarthritis was present in 63.9% (99/155). US GS≥2 was frequently detected in the feet at MTPs1-4 (37.4- 53.6 %) and wrists (26.5- 33.6%). PD was most prevalent at wrists (17.5%) and MTP1 (12.6%) but observed less in other joints. Erosions were less frequent, the commonest site being MTP5 (17/310, 5.4%).

Overall, SJ demonstrated high agreement ($p<0.001$) with US synovitis (GS ≥2 and/or PD ≥1). High agreement was equivalent between combined GS ≥2 and PD ≥1 compared with PD ≥1 alone ($p<0.001$) indicating it was predominantly driven by PD. Agreement with TJ and US was consistently lower yet still significant ($p<0.001$). Combinations of TJ/SJ were explored with US synovitis (table 1). Correlation was significant for T+ S+ and PD≥1 at wrists, MCP1-5, PIP2-5, MCP3-4 ($p<0.001$); DIP2 ($p<0.05$), knees and ankles ($p<0.01$) but weaker correlation in MTP3,4. In contrast, poor correlation was observed in the T+ S- group for most joints.

Agreement between TJ or SJ with GS≥2 & PD ≥1 and correlations for tender with/ without swollen combinations for right sided hand/feet joints.

Conclusion: Swollen joints demonstrate higher agreement with US synovitis (PD≥1 alone or GS ≥2 & PD ≥1 combined) than tender joints in early PsA. In addition, joints that are tender but not swollen have poor correlation with US synovitis at the individual joint level indicating that swelling is a better

clinical discriminator of active synovitis, and factors other than synovial inflammation may drive tenderness in very early, DMARD naïve PsA. These results suggest re-appraisal of clinical joint counts is needed to refine treatment decision making in early PsA.

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Table 1.

Agreement between TJ or SJ with GS≥2 & PD ≥1 and correlations for tender with/ without swollen combinations for right sided hand/feet joints.

	Tender		Swollen		T+ S-	T+ S+
Joint (Right)	**A (%)**	**PABAK**	**A (%)**	**PABAK**	**r**	**r**
Wrist	75.5	0.51*	89.1	0.78*	-0.09	0.35*
MCP1	84.1	0.68*	87.5	0.75*	0.09	0.44*
MCP2	77.7	0.55*	83.1	0.66*	0.08	0.35*
MCP3	79.1	0.58*	84.5	0.69*	0.005	0.50*
MCP4	78.4	0.57*	86.4	0.72*	0.07	0.22†
MCP5	87.8	0.76*	95.6	0.91*	-0.03	0.49*
MTP1	69.8	0.40*	83.9	0.68*	-0.03	-
MTP2	79.1	0.58*	90.5	0.81*	0.06	0.11
MTP3	77.0	0.54*	88.5	0.77*	0.05	0.22‡
MTP4	77.7	0.55*	87.2	0.74*	-0.002	0.23‡
MTP5	79.9	0.60*	89.9	0.80*	0.15	0.09

- **T+= tender, S+ =swollen, S- = not swollen, A=agreement (%), r =coefficient, † p<0.05, ‡ p<0.01, *p<0.001.**