

## Do we Really Need A Comprehensive US Assessment of Joints in Rheumatoid Arthritis on Biological Therapy?

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### Rapid Communication

The assessment of joint inflammation is essential in diagnosis and in monitoring response to therapies in patients affected by inflammatory arthropathies, such as RA. For this purpose, use of musculoskeletal US, with application of the Power Doppler (PD) method, has been increasing over the past decade. Musculoskeletal US had been used in the diagnosis and monitoring of RA [1-3]. Many scoring methods have strived to reduce joint counts at B-mode and Doppler synovitis as surrogates for comprehensive US assessment for monitoring [4-7] or diagnosing RA [8]. It has been demonstrated that US assessment can be useful in the management of RA and in monitoring the course of the disease [9]. The application of US is helpful in such evaluations and is a complementary tool to classic methods used to detect RA, such as clinical evaluation and radiography, particularly when MCP, PIP and MTP joints are considered [10-12]. Naredo et al developed a predictive value of Doppler ultrasound-detected synovitis in relation to failed tapering of biologic therapy in patients with rheumatoid arthritis [13]. Evidence has confirmed that grey-scale and PD evaluation demonstrated the correlation between disease activity and degree of inflammation of synovial tissue [14,15]. US can be used in the evaluation of the response to biological drugs. Naredo et al. [16] found a significant improvement in US parameters in RA patients undergoing therapy with a TNF blocking agent. Thus, the US evaluation could be a valid method for monitoring response to biological therapy in RA patients. However, a comprehensive evaluation including multiple recesses of all accessible peripheral joints may be overly time consuming in daily practice and when conducting clinical trials. Which joints and synovial recesses are appropriate for studying and monitoring RA patients remains unknown.

Hammer et al. [17] suggested a 78-joint US assessment. He evaluated 20 RA patients using adalimumab and found an association between US scores and clinical and laboratory parameters [17]. US detected more inflamed joints when compared with clinical assessment. However, the average time for each US examination was approximately 70 min; as a result, such a time consuming process is not suitable for daily clinical practice [17]. Dougados et al. [18] conducted a US evaluation included in the DAS-28, plus the MTP joints. The authors found that US evaluation of synovitis could represent an outcome measure at least as good as, and possibly more accurate than, a physical examination. The time spent by investigators in collecting the US data ranged from 10 to 25 minutes [18]. Backhaus et al. [5] used a US7 score involving the wrist, the second and third MCP, the second and third PIP, and the second and fifth MTP joints of the clinically dominant side of RA patients. A significant correlation between changes in the US parameters for synovitis and the DAS-28 was found. This US7 score may represent a valuable tool for US examination of inflamed joint activity with reduced examination time

(10-20 min) in rheumatological diseases. Naredo and colleagues [4] developed a simplified assessment evaluating 12 joints. This simplified US assessment was found to have good content and construct validity. The mean time spent on the 12 joint US examinations was 22 minutes [4]. Starting from this study, we applied the same process of data reduction used by Naredo et al. [4], we aimed to investigate the validity, responsiveness and feasibility of a 1-joint US score in assessing joint inflammation. Over a 12-month period of comparison using a general linear mode to analyze the effect of the treatment on GS synovitis between all 12 joints, there were no differences in synovial hypertrophy among the bilateral elbows, wrists, second and third MCP, knees, and ankles ( $p=0.335$ ). Furthermore, for PD synovitis in all 12 joints, there were no differences among the elbows, wrists, second and third MCP, knees, and ankles surveyed ( $p=0.623$ ). So a reduced US assessment may efficiently contribute to detect inflammation. Therefore, it is not necessary to conduct a work-up for more than one joint in clinical practice. In conclusion, we achieved a significantly shorter time with regards to execution, suggesting that this 1-joint model could be more feasible than others previously described. We suggest a single joint evaluation is all that is required to avoid unnecessary consumption of time performing such routine work. Further validation in longitudinal cohorts and a review of data on responsiveness is also needed.

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