Psoriatic arthritis (PsA) is a chronic and complex joint disease associated with extraordinary variability in its clinical phenotype. This variability means that the diagnosis, the evaluation of the different disease domains, as well as the therapeutic approach, remain authentic challenges even for rheumatologists with wide experience in PsA. Most patients with PsA already suffer from psoriasis (PsO) when they are first diagnosed; however, the time between the onset of the skin condition and the appearance of the first symptoms and signs of arthritis can be very long (on average, about 10 years). This temporal distance has driven intense research aimed at unraveling the different pathogenic stages that the patient goes through until finally receiving a correct diagnosis. Likewise, a hot topic in the management of PsA is whether the different therapeutic interventions, both pharmacological and otherwise, could have a significant effect on the natural history of the disease. In the last few years we have witnessed how some interventions could be successful in the subclinical and prodromal phases of PsA. Early recognition of PsA is a difficult path but at the same time essential to improve the overall prognosis of the disease. Part of this recognition lies in imaging modalities such as ultrasound (US) and magnetic resonance imaging (MRI), which, thanks to their high sensitivity, have allowed us to lay the foundations for concepts such as subclinical disease, thus identifying a subgroup of patients with PsO with high possibilities of transition toward PsA in the short term. Patients with PsO and arthralgia (but without clear evidence of PsA) constitute a group of special interest to validate the benefits of the aforementioned imaging techniques. In this sense, US has several advantages over MRI, such as its greater accessibility, lower cost, absence of contraindications, and greater acceptance by the patient. Further, it is a technique widely used by many rheumatologists worldwide. However, MRI outperforms US in the study of those anatomical structures where the quality of the US image is hampered by a poor acoustic window (eg, sacroiliac joints, intrinsic bone pathology).

In recent decades, there has been a profusion of studies on the benefits of US in PsA. US has demonstrated competitive advantages over clinical examination in the detection of synovitis and enthesitis, in the evaluation of the nail complex, in its use as a detection tool in patients with PsO at risk of developing PsA, in its use to differentiate PsA from other conditions, in estimating disease activity and response to treatment, or even in disease prognosis. However, this technique is not free from barriers and limitations that continue to raise doubts when recommending its widespread use in rheumatology. For example, despite the aforementioned benefits, the diagnostic accuracy of the technique remains quite variable when confronted with Classification for Psoriatic Arthritis (CASPAR) criteria or a physician’s diagnosis. Further, it should be recognized that the objectivity and certainty of US largely depend on a well-trained examiner and a sufficiently sensitive US machine and/or probe, especially with respect to the detection threshold of the power Doppler (PD) signal. On the other hand, contrary to what is done in numerous studies, it would be unfeasible to scan a large number of joints and entheses in each patient in routine clinical practice due to time constraints. Also, it is important to emphasize that the enthesitis scoring systems normally used in the field of spondyloarthritis add some confusion since some of the components of the scores, including enthesophytes, can be observed in noninflammatory conditions, and some components linked to the inflammatory load, including erosions, may be due to chronic damage, but do not necessarily indicate an active inflammatory process. What is further limiting is that there is currently no agreed-upon term to describe noninflammatory enthesopathies, further complicating the interpretation of these scoring systems. For its part, the US examination of these patients is not free from false positives. By improving equipment technology and, therefore, the possibility of detecting more changes in joints and

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enthesis, the chances of detecting even minimal abnormalities with uncertain clinical significance increase. On the other hand, demographic factors, such as age and sex, and biomechanical stress have been associated with the presence and severity of US abnormalities in the joints and entheses among healthy individuals with no musculoskeletal symptoms. 1-6

Therefore, given that the literature on the use of US in PsA is profuse, but inconclusive in many aspects, it would be of interest to have a synthesis of the literature with implications for practice. In this issue of The Journal of Rheumatology, Gouze et al reported a systematic literature review (SLR) aimed to analyze the role of US for the management of PsA, in terms of diagnosis, treatment follow-up, and prognosis, and proposed 3 pragmatic algorithms that included information about lesions and articular sites to be assessed in clinical practice. There were 5 research questions the authors agreed on: "(1) the added value of US for diagnosing peripheral lesions in PsA. (2) the added value of US for permitting an early diagnosis or a differential diagnosis of PsA, (3) the added value in monitoring treated patients, (4) the contribution of US findings in defining remission, and (5) the ability of US to predict the severity of disease including structural progression and flares." Of the 120 articles finally included in the SLR, 62 were papers on the diagnostic process (including the description of elementary lesions), 39 on the therapeutic monitoring of PsA (activity assessment and treatment response), 7 on the state of remission, and 12 on the severity of progression (9 were on structural damage and 3 on prognosis). 8

Overall, the findings of this SLR supported the use of US in the management of patients with PsA. Based on the available data, authors were able to propose at least 3 practical algorithms to guide its use for the clinical management of PsA, mainly for helping the diagnostic evaluation and for assessing treatment response. They separated different situations to propose a pragmatic clinical guidance: suspicion of PsA, management of patients with PsA with good clinical response, and management in cases of insufficient clinical response. The findings showed that there are specific US lesions that can aid in distinguishing PsA from other rheumatic conditions and should therefore be examined to confirm a PsA diagnosis. 9 However, according to Gouze et al, "how many sites should be examined and if all these specific lesions should be sequentially or simultaneously evaluated is still unclear, as well as if we can consider some sites as specific to target." 10 Therefore, these proposed algorithms need further validation. As the authors stated, "an additional algorithm specifically for remission could be of interest, but evidence on this aspect was insufficient at this time to propose standardized guidance." 8

Although these algorithms are clearly welcome, they suffer from gaps that the authors have not been able to adequately address or clarify, thus limiting their possible generalizability. For example, in the algorithm aimed at confirming the diagnosis of suspected PsA, the relevant amount of US inflammation has not been defined and/or agreed upon. Further, excessive diagnostic weight has perhaps been given to enthesitis and dactylitis, while subtracting it from synovitis. Regarding enthesitis, the results of a recent multicenter, international, web-based study showed a good reliability of the Outcome Measures in Rheumatology (OMERACT) US definition of bone erosions, PD signal at the enthesis, and enthesophytes/calcifications. However, in this study, the low reliability of enthesal thickening and hypoechogenic areas among US readers raises questions about the opportunity to revise the definition of these 2 major components for the US diagnosis of enthesitis. 9 Moreover, although using cut-offs appears to be an appealing method to evaluate entheseal thickness, the measurements may be affected by several confounding factors, leading to a low discriminative value. 10 To further complicate the interpretability of US findings that suggest inflammation and thus support the ultrasonographic diagnosis, a recent study found joint effusion in large and medium joints, as well as entheseal hypervascularization, bursal effusion, and tendon sheath effusion, in healthy individuals. Hours of sports activity per week, BMI, and fat mass index showed significant associations with these findings. 11 Contextual factors are therefore essential in the accurate interpretation of diagnostic images in PsA.

Regarding the algorithm intended for the usefulness of US in the scenario of a poor response to treatment, we once again encounter limitations similar to those already mentioned. The minimum amount of relevant US inflammation is not defined. Further, even if relevant US inflammation is found, this does not exclude other causes of the poor response to treatment, 12 and we do not have enough information to make a decision in this case based on US findings alone.

Finally, with regard to the US algorithm in a good response and/or remission scenario, surely many rheumatologists are not going to request or perform an US examination because decisions today tend to be mostly clinical and not so much based on imaging. Further, it is difficult for the patient to admit an intensification of their treatment based only on US findings—would the risk/benefit balance be justified?

The research agenda on US in PsA continues to have many questions that need to be resolved.

REFERENCES


