Mini Review

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In the Rheumatoid Arthritis Continuum, Musculoskeletal Ultrasound Plays a Role

Rheumatoid arthritis (RA) is now viewed as a disease continuum rather than a single phenotype. The current and potential benefits of using ultrasound (US) along this continuum are discussed in this overview: from the use in disease monitoring and defining remission to the confirmation of an early diagnosis of RA, the prediction of progression to RA in individuals at risk, and the consideration of differential diagnoses.

Keywords: Musculoskeletal ultrasound ● rheumatoid arthritis ● Differential diagnosis ● Disease monitoring ● Remission

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Introduction

In Rheumatoid Arthritis, Ultrasound

An accomplished musculoskeletal radiologist spoke about the significance of imaging methods for musculoskeletal diseases in 1997 at the American College of Rheumatology (ACR) pre-course conference. The question, "What about ultrasound, you didn't mention it?" was one of the last ones asked." Well, it is only really useful for Baker's cysts!" was the response [1]. That same year also saw the first international trial of Remicade (infliximab) for rheumatoid arthritis the beginning of the idea of early diagnosis and the "window of opportunity," and the introduction of a new generation of ultrasound machines that were better suited for assessing musculoskeletal diseases [2].Starting here, there started a rising ascent in the utilization of outer muscle US in rheumatology practice, worked with through a planned methodology of training drove by the European Association Against Rheumatology (EULAR) and the ACR, as well as other public social orders. While some nations were more cautious and took a more evidence-based, "wait and watch" approach, others were quick to adopt the US concept and incorporate it into their educational programs for new trainees. As a direct means of enhancing the accuracy of physical examination, enabling a deeper understanding of joint pathophysiology, and providing a means of guiding needles for interventions, the availability of US to rheumatologists was, without a doubt, initially met with much anticipation [3]. Because it was a method that rheumatologists might be able to use themselves, it might also make it possible to make decisions right away, which would make work more efficient. Its adoption has been further facilitated over time by falling costs, the growth of educational opportunities, and increased credibility as a result of expanding experience and evidence .When compared to images from today, US images from 20 years ago are barely recognizable. The depiction of minute anatomical details and blood flow is now possible thanks to improvements in image resolution brought about by computer processing power and the development of higher-frequency transducers employing more sensitive Doppler modalities [4]. Similar to US, other cutting-edge imaging methods for early disease detection, such as MRI and CT, initially generated a great deal of excitement. Theoretically, MRI appeared to be the ideal instrument for simultaneously imaging soft tissue and bone with tomography. Despite more recent research into whole-body MRIs, however, MRI has never gained widespread acceptance as a routine imaging method for RA [5]. This is largely due to the feasibility issues of availability, cost, and patient tolerance. For ambiguous or uncertain cases, many would argue that MRI remains a second or third line imaging tool (after X-ray

and US) and second line in axial scanning (after X-ray). Contrarily, despite being arguably the most effective at depicting bone integrity, CT suffers from its inability to image soft tissue and requires ionizing radiation.

The Use of Ultrasound in the Treatment of People without Clinical Sinusitis Who Are At Risk for Rheumatoid Arthritis

Exceptionally factor. The rheumatologist's clinical intuition predicts that both excessive and inadequate treatment will naturally occur. As the concept of has developed over the past few years, biomarkers like US have been studied to address two main areas. Most rheumatology reading material illuminate us that RA is a synovial-based infection [6]. However, the flexor and interosseous tendons of the fingers have been linked in two recent studies. A clinical observational study by Stack et al. supports this. Which demonstrates that prior to the onset of RA disease, skin oedema and redness show that early RA-related inflammation can occur outside the joint capsule. Non-specific pain and stiffness that may precede clinical sinusitis may be explained by the involvement of these extra-articular structures. For optimal use of US in individuals at risk for RA without clinical sinusitis, there are a few important considerations to keep in mind, despite the numerous benefits previously mentioned. The following arguments support using the United States with care and consideration rather than indiscriminately in populations at risk. Second, since US is now widely available in early arthritis clinics, it is frequently utilized to aid in the diagnosis and management of patients with IA suspicions [7].US should be used to guide treatment for ACPA-positive patients with inflammatory joint symptoms but no clinical sinusitis, according to algorithms for rheumatologists. Without a trace of preliminary proof, the ideal administration of these patients isn't yet clear. However, in actual practice, rheumatologists already intuitively use US to guide these patients' treatment; When US sinusitis is discovered, treatment is frequently considered rather than monitoring for progression. Since many of these symptomatic at-risk patients may not develop clinical sinusitis, especially in the short term, there is clearly a significant risk of overtreatment with this strategy [8]. In addition, if treatment is started based on the US findings, the treatment plan may not be given much thought, and patients may become committed to long-term medications that might not be necessary.

In the Differential Diagnosis, Ultrasound

It has been demonstrated that extra-capsular inflammation on ultrasound, whether it is associated with sinusitis or not, and peri-tendonitis of the finger extensor tendons can be used to distinguish RA from other rheumatic conditions like palindromic rheumatism and systemic lupus erythematous [9]. A substantial number of PR patients will eventually develop RA. During flares, these patients' US evaluations reveal a high prevalence of extra-capsular inflammation—such as tenosynovitis, peri-articular inflammation, and per-tendonitis—with isolated extra-capsular inflammation being a particular finding in PR. Reversible flares of extra-capsular inflammation in PR patients may eventually progress to persistent intra-articular inflammation as RA progresses. As a result, US may be extremely helpful in distinguishing patients with PR who do not have intra-articular disease from those with new RA.This distinction is crucial despite the fact that the two conditions are managed in very different ways, making it frequently difficult solely on clinical grounds. Ogura et al. conducted a small study to examine the US abnormalities at the joint and tendon levels in hands of SLE and RA patients who had never received treatment. Strangely, the creators found a high predominance of tenosynovitis, which was higher in the SLE bunch. In addition, it was demonstrated that, in contrast to RA patients, SLE patients frequently had involvement of the finger extensor tendon even when joint sinusitis was not present. This suggests that US may be used to depict distinct patterns of articular involvement in these two conditions [10].

Conclusions

The current and potential benefits of US imaging across the RA continuum have been highlighted in this review. It clearly has advantages for early diagnosis, risk stratification, and optimal disease control due to its ability to identify early inflammatory and structural changes in joints and soft tissues. The United States is facilitating new insights into joint pathology and aiding in disease differentiation as technology advances. As with all research, more questions are being asked as more data is collected. To determine which patient groups will receive the greatest benefit from US imaging, RCTs that are designed more appropriately are required.

References

1. Bruyn GA, Iagnocco A, Naredo E, OMERACT Ultrasound Working Group et al. OMERACT definitions for ultrasonography pathologies and elementary lesions of rheumatic disorders 15 years on. *J Rheumatol.* 46, 1388–1393 (2019).
2. Gerlag DM, Raza K, van Baarsen LG *et al*. EULAR recommendations for terminology and research in individuals at risk of rheumatoid arthritis: report from the study group for risk factors for rheumatoid arthritis. *Ann Rheum Dis.* 71, 638–641(2012).
3. Van Steenburgen HW, Aletaha D, de Voorde LJJ B *et al*. EULAR definition of arthralgia suspicious for progression to rheumatoid arthritis. *Ann Rheum Dis.* 76, 491–496 (2017).
4. Nam JL, Hunt L, Hensor EM, *et al*. Enriching case selection for imminent RA: the use of anti-CCP antibodies in individuals with new non-specific musculoskeletal symptoms a cohort studies. *Ann Rheum Dis.* 75, 1452–1456 (2016).
5. Mankia K, Briggs C, Emery P. How are rheumatologists managing ant cyclic citrullinated peptide antibodies-positive patients who do not have arthritis? *J Rheumatol.* 47, 305–306 (2020).
6. Mankia K, D'Agostino MA, Rowbotham E *et al*. MRI inflammation of the hand interosseous tendons occurs in anti-CCP-positive at-risk individuals and may precede the development of clinical sinusitis. *Ann Rheum Dis.*78, 781–786 (2019).
7. Sahbudin I, Pickup L, Nightingale P *et al*. The role of ultrasound-defined tenosynovitis and sinusitis in the prediction of rheumatoid arthritis development. *Rheumatology.* 1, 1243–1252 (2018).
8. Stack RJ, van Tuyl LH, Sloots M, *et al*. Symptom complexes in patients with seropositive arthralgia and in patients newly diagnosed with rheumatoid arthritis: a qualitative exploration of symptom development. *Rheumatology.*53, 1646–1653 (2014).
9. Rakieh C, Nam JL, Hunt L *et al*. Predicting the development of clinical arthritis in anti-CCP positive individuals with non-specific musculoskeletal symptoms: a prospective observational cohort study. *Ann Rheum Dis.* 74, 1659–1666 (2015).
10. Hunt L, Hensor EM, Nam J *et al*. T cell subsets an immunological biomarker to predict progression to clinical arthritis in ACPA-positive individuals. *Ann Rheum Dis.*75, 1884–1889 (2016).