

Could nail and joint alterations make the difference between psoriatic arthritis and osteoarthritis during the ultrasonographic evaluation of the distal interphalangeal joints?

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The nail can be considered the terminal extension of the joint-enthesal-nail apparatus [1]. The key role of entheses' inflammation in psoriatic arthritis (PsA) pathogenesis is well demonstrated and imaging techniques describing distal phalanx abnormalities have revealed strictly related signs of nail root and adjacent joint involvement, even in a subclinical context.

Aydin et al demonstrated by ultrasound (US) the presence of extensor tendon enthesopathy in both psoriasis (PsO) and PsA cohorts [2]. Moreover, an elegant high-resolution MRI study identified a high prevalence of a characteristic pattern in early PsA patients: changes in the collateral ligament structure as well as in the enthesal extensor tendons and osteitis [2,3].

This hypothesis could explain the strong link between distal interphalangeal (DIP) joint disease and psoriatic nail involvement suggested in several clinical studies and the high predictive value of nail manifestations for the development of PsA in the PsO cohort of patients [4].

Due to their typical involvement in PsA and easy accessibility by US, DIP joints have been assessed by US in several studies. In particular, the dorsal capsular enthesal reaction [3], the MRI studies demonstrating the enthesal and ligament enhancement, erosions, extracapsular

changes, and perienthesal bone edema typical of PsA [5]. In fact, at the DIP joints, several structures accessible by US can potentially be involved. First, the distal insertions of extensor and flexor tendons can show signs of inflammation, with increased vascularization detectable by Doppler techniques. As a consequence of persistent inflammation, bone erosions and new bone formation can be seen at these sites. In addition, articular involvement can be present, with synovitis and effusion which are detectable by B-mode and Doppler modalities [6]. Patients with PsA showed significantly more pathological findings at the DIP, compared to RA. In particular bone erosion and bone proliferation, which were absent in RA, were seen in 4% and 13% of PsA patients, respectively. Tendon insertion abnormalities were also found more frequently in PsA [7].

Hand osteoarthritis (OA) is a disease characterized by the degradation of articular cartilage, subchondral bone modifications and osteophyte formation leading to joint failure [8]. Synovitis has been reported to be more severe in autoimmune processes than in OA [9,10]. Erosive hand OA is an uncommon variant of OA characterized by a large amount of inflammation and degeneration [11]. Degradation of articular cartilage, subchondral bone changes and osteophyte formation at the joint margins leading to joint failure are typically present at the DIP joints in that disease. In addition, synovial inflammation has usually a high grade [8].

To better differentiate DIP involvement in hand OA vs PsA, a recent review on the use of imaging in peripheral OA [12] reports that, in atypical presentations, imaging is recommended to help confirm the diagnosis (level of

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evidence IV). Conventional radiography should be used before other techniques. In differential diagnosis involving soft tissues US or MRI should be performed and bone should be evaluated by CT or MRI (level of evidence III/IV) [12].

Since the DIP joints are peculiar joints in the clinical setting of PsA and OA, one of the main goals of US is to provide information for diagnosis. One of the most frequent claims is the differential diagnosis between PsA and OA. This is a challenging task because the inflammation process is also present in common nodal hand OA [13]. Both conditions share important common features such as bone proliferation, joint involvement and a quite frequent inflammatory status. Since the presence of this last element in the very early phase of OA, the finding of a mild hypertrophy and/or power Doppler signal may be common. The concept of a unique entity, the so called, nail entheses complex and its strong bond with joint alterations might play in future a key role in distinguishing essential lesions and differentiating the two pathologies, as already suggested for the entheses [14]. A further step might be represented by nail US, due to its capability to assess the entheses and the abnormalities of the nail-entheses unit.

In the authors' opinion, however, this is not possible since the elementary lesions alone cannot be considered to be of any pathognomonic value. In the light of the evidence presented, US can be a useful technique in order to establish the severity of the condition, providing information related to structural damage and inflammation but not supporting the differential diagnosis.

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