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Letter to the Editor (other)

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A preliminary study showing that ultrasonography cannot differentiate between psoriatic arthritis and nodal osteoarthritis based on enthesopathy scores

Rehumatology key message

- Enthesopathy is a feature of both PsA and nodal OA with similar ultrasound enthesopathy scores.

Sir, Enthesitis has been thought to be the primary lesion in PsA and spondyloarthropathies [1, 2]. Recent imaging studies showed that enthesopathy was also common in hand OA, suggesting a similar micro-anatomical early disease topography [3, 4]. This has resulted in a mechanistic anatomical classification of OA that recognizes that the generalized form of disease has an enthesis-associated micro-anatomical basis [5]. Given that OA and PsA may affect similar age groups and joints, we wanted to find out whether US enthesopathy scores might be similar in both, thus complicating the potential use of US for subclinical PsA screening in psoriasis [6].

The study was approved by the Istanbul Medeniyet University, Goztepe training and research hospital ethics committee. Informed consent was obtained from all patients before participation in the study. Particular attention was given not to include overlapping patients [PsA without OA, OA without psoriasis, and the healthy controls (HCs) had neither condition]. We deliberately chose nodal hand OA for comparison because it is associated with extensive generalized OA, may present with a phenotype called inflammatory OA and may also present in the same age group as PsA. Consecutive PsA patients without lower limb psoriasis were selected in order to blind the ultrasonographer. Patients were examined for tenderness and swelling of the lower limb enthesis. US was performed using a MyLab 70 XVG (Esaote Biomedica, Genoa, Italy) with a broadband 6–18 MHz linear probe, with a sheet being used to provide a barrier with the ultrasonographer. The scanning and scoring method has been extensively described before [7, 8]. Briefly, five entheses of the weight-bearing sites were chosen (quadriceps insertion, patellar tendon origin and insertion, Achilles tendon and plantar fascia) bilaterally. US findings included hypoechogenicity and loss of fibrillary echotexture, thickening and bursal enlargement for inflammation, Doppler signal and findings related to chronicity (erosions, enthesiophytes and calcifications). All findings were graded on a scale between 0 and 3.

Nineteen patients with PsA, 25 with nodal hand OA and 28 HCs were recruited. Both PsA and OA patients had higher US scores than HCs (Table 1), but no significant differences in US scores of PsA and OA patients were evident. The analysis of covariance procedure revealed that BMI was a significant covariate for inflammation (grey scale + Doppler) and total scores. There was a statistically significant difference between the mean inflammation and total US scores of PsA patients and HCs after controlling for BMI (P-values for PsA *vs* HCs: grey scale, 0.07; power Doppler, 0.17; inflammation, 0.028; chronicity, 0.06; and total US scores, 0.02). Likewise, the US scores were higher in OA patients than HCs (P-values for OA *vs* HC: grey scale, 0.02; power Doppler, 0.5; inflammation, 0.057; chronicity, 0.04; and total US scores, 0.027). There were no differences for any of the scores

Table 1 Demographics and US scores of patients and healthy controls

Parameter	Healthy control, n = 28	OA, n = 25	PsA, n = 19	P-values		
				HC *vs* OA	PsA *vs* OA	HC *vs* PsA
Age, years	41.3 (9.8)	53.5 (6.1)	48.4 (13.8)	0.001	0.2	0.06
BMI	28.7 (5.4)	30.3 (3.9)	28.9 (5.8)	–	–	–
Disease duration, years	–	3.9 (3)	9.6 (8.6)	–	–	–
US/grey scale	5.3 (5.1)	9.4 (5.5)	9 (5.9)	0.002	0.72	0.006
US/power Doppler	0.4 (1)	0.9 (1.4)	1.3 (1.6)	0.09	0.5	0.043
US/inflammation, grey scale + Doppler	5.7 (5.1)	10.2 (6.3)	10.2 (6.6)	0.003	0.93	0.003
US/chronicity	5.6 (4)	9.2 (6.4)	9.2 (4.8)	0.017	0.76	0.006
US/total	11.4 (7.7)	19.4 (11.6)	19.4 (10.2)	0.001	0.83	<0.001

Numbers are given as the mean (s.d.). HC: healthy controls.

between PsA and OA patients when controlled for BMI and gender.

The Spearman's correlation analysis showed that age was strongly correlated with the chronicity scores in PsA ($r = 0.639$, $P = 0.003$) and moderately in OA ($r = 0.406$, $P = 0.04$) but not in HCs. Disease duration was independent of US scores. In contrast, BMI was correlated more strongly with inflammation scores in OA (for grey scale: $r = 0.402$, $P = 0.05$) and HCs ($r = 0.556$, $P = 0.002$), but not for chronic changes and not in the PsA group.

Four of 25 OA patients had tenderness on at least one of the entheseal sites, and these patients had higher US scores than OA patients without tenderness for grey scale [16.75 (3.4) *vs* 7.95 (4.57); $P = 0.003$], chronicicity [19 (8.91) *vs* 7.29 (3.27); $P = 0.001$] and total US scores [38.25 (13.77) *vs* 15.81 (7); $P = 0.001$]. Only two PsA patients and none of the HCs had tenderness on entheseal sites on physical examination, and there were no significant differences for these two patients.

This pilot study showed that enthesopathy is common in both PsA patients and patients with nodal OA. This means that careful attention is needed for interpretion of US findings in subjects with PsA, and early OA needs to be excluded, which can be challenging because radiographs may be normal. The fact that both OA and PsA groups were older than HCs could potentially contribute to lower US scores in healthy people. The younger age of the HCs was unavoidable because we paid particular attention to exclusion of overlapping groups. This is challenging because it is hard to rule out OA in elderly patients with PsA and HCs, and patients were excluded if there were any suspicions. However, there were no correlations between the US scores and age in HCs, whereas there was a correlation with chronicity scores in both disease groups, suggesting that there is a different response to ongoing biomecahnical stress in these patients. In addition, the lack of any difference between OA and PsA groups could not have been affected by age because there was no difference between these groups.

To conclude, enthesopathy is a major feature of both PsA and nodal OA, which is of considerable importance because patients with psoriasis who are prone to PsA typically develop disease at an age when the skeleton starts to exhibit features of OA.

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