most common type of psoriasis was vulgaris (85%) and time from diagnosis was greater than ten years at least in 85% of patients. The majority of patients experienced chronic back pain (82%), and 15 (44%) patients had IBP according to ASAS criteria. MRI-SUJ showed structural and/or inflammatory changes, and 5 of these 11 patients (55%) had BME suggestive of axSpA according to ASAS/OMERACT criteria. We observed that patients with an MRI negative for sacroiliitis had BME in MRI-spine, with only two patients with three of the more BME lesions according to ASAS/OMERACT criteria. Finally, when a chronic lesion on MRI-SUJ was considered as a possible criterion for classification, among patients with sacroiliitis, one patient could be deemed to have axSpA. The findings in this image of SUJ were erosions and fatty deposition (Romasan sign).

Conclusion: A positive MRI-spine in patients with suspected axSpA was more frequent than previously described for axSpA. Furthermore, spinal inflammation in the absence of sacroiliitis was present in 2 of the 19 patients in this cohort. Therefore, MRI-spine could be considered in the classification criteria for patients suspected of axSpA.

REFERENCES:

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AB1544
PARAVERTEBRAL MUSCLES TRIGGER POINTS ATTACHED TO FACET JOINTS ARTHROPATHY ARE PREFERRED TARGETS FOR ULTRASOUND-GUIDED INTERVENTION TO TREAT LOW BACK PAIN

Keywords: Physical therapy/physiotherapy, Ultrasound, Rehabilitation

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Background: Facet joints (FJ) arthrosis can be a cause of pain and spinal instability and could be a potential target for injection treatment. However, FJ arthropathy is difficult for diagnosis and confirmation associations with pain syndrome, effectiveness of FJ injections is debatable. Trigger points (TrPs) are major cause of pain syndromes, dry needling under ultrasound (US) guidance (DN-US) is a crucial therapeutic for treatment of myofascial pain [1], is a proven and effective method for treatment various pain conditions; can restore muscle function and motion [2], reduce fascia overload [3], and can improve movement in spine and also in FJ.

Objectives: Aim was to evaluate the relevance of US for diagnosis of FJ arthrosis as a cause of pain and evaluate the efficacy of DN-US to treat FJ-associated low back pain and improve movement in spine and facet joints.

Methods: We included 26 consecutive patients (15 females, 23-57 years old) with symptoms of LBP suspected due to unilateral or bilateral FJ arthrosis assessed at MRI and CT with three-dimensional reconstructions. Conditions of rheumatic parasesis, advanced injury background were excluded. All patients received DN-US protocol by R. Bubnov [1]: MTIP were identified according to clinical examination, referred pain pattern, US identification; single fine (28G) steel needle DN under US guidance was applied to eliciting local twitch response (LTR) and/or ‘needle grasp’. Specific recommendations were given to preserve effect after DN-US.

Results: We diagnosed bi- and unilateral FJ arthrosis on the levels of T11-S1 in all patients, assessed fluid in joints, deformation, movement restriction and revealed closely localized TrPs in paravertebral (multidiscus) muscles followed by targeted DN-US. We distinguished different pain patterns (referred pain - groin pain, pelvic pain, irradiation to leg, thigh, etc.) which correlated with facet arthrosis localization. Pain decreased in all patients VAS from 6-8 at baseline to 1-4 immediately and VAS 3-4 at one week after procedure. We noted decreasing in neuropathic pain, detected higher rates of lumbar spine motility, movements in particular segments and FJ were registered on functional US; improvement postural balance in all patients after DN-US. Additional needing sessions to FJ capsule did not induce significant LTR and effective alleviating pain compared to DN-US. All patients had postural imbalance, had multiple bilateral MTIPs; in multitudes muscles but thoracic, lumbar levels sacroiliac joint dysfunction, shoulders impingement, other associated postural abnormalities; all MTIPs were inactivated, posture imbalance restored.

Conclusion: US is helpful to detect FJ arthrosis; DN-US has a good treatment outcome for low back pain due to FJ arthrosis. Local interventions targeting FJ in most cases not relevant approach; DN-US is not less complicated technically, however, more effective vs targeting FJ. Complex posture assessment and correction is needed.

REFERENCES:

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Disclosure of Interests: None Declared.

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AB1545
A COMPARATIVE ANALYSIS BETWEEN THERMAL AND ULTRASOUND IMAGING AT THE ELBOW IN PATIENTS WITH RHEUMATOID ARTHRITIS

Keywords: Imaging, Rheumatoid arthritis, Ultrasound

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Background: Thermal imaging (TI) is a relatively low cost, non-invasive imaging technique that offers a quick and objective measurement of joint surface temperature. However, TI data at the elbow in patients with rheumatoid arthritis (RA) is presently lacking.

Objectives: The aim of this study is to compare TI outcomes with ultrasound (US) joint inflammation findings at the elbow among patients with RA.

Methods: TI and US imaging were performed at the same study visit. TI was carried out in a draft free room following a standardized protocol. The maximum (Tmax), average (Tavg) and minimum (Tmin) temperatures at the elbow (anterior, posterior, lateral and medial aspects) were summed up to obtain the respective MAX, AVG and MIN temperatures for the right and left elbows. Ultrasound power Doppler (PD) and greyscale (GS) joint inflammation were graded semi-quantitatively (0-3) at the anterior (humeroradial) and posterior fossa recesses of the elbow joint using previously validated scoring methods; and these were summed to obtain the respective PD and GS scores at the right and left elbows per patient. Pearson's correlation coefficient was used to correlate the findings from TI and US imaging, while simple linear regression was used to describe the relationship between parameters.

Results: In this cross-sectional study, 60 elbows were evaluated by TI and US imaging among 30 adult RA patients with the following patient baseline characteristics: 78.7% female, 78.7% Chinese; mean (SD) disease duration 73 (6.8) months; mean (SD) DAS28 3.83 (1.19). Table 1 shows the results of the comparative analysis between the TI parameters (MAX, AVG and MIN) and the US PD and GS scores. For Pearson's correlation, the TI parameters (MAX, AVG and MIN) were all significantly correlated (P<0.05) with the US PD scores (Table 1) at both the right and left elbows. For US GS scores (Table 1), significant correlation (P<0.05) were observed with all the TI parameters (MAX, AVG and MIN) only at the right elbow but not at the left elbow (with P-values all >0.05). The simple linear regression estimates between TI and US imaging parameters at the right and left elbows are summarized in Table 1.

Conclusion: To the best of our knowledge, our study is the first to report on the comparative analysis between TI parameters and US joint inflammation outcomes at the elbow from an RA cohort. Between US PD and GS joint inflammation, TI is more consistently associated with the former at the elbow in RA. TI of the elbow in RA appears promising and will require further validation in independent RA cohorts.

REFERENCES:
Table 1. Comparative analysis between the thermal and ultrasound imaging parameters

<table>
<thead>
<tr>
<th>Thermal imaging parameter</th>
<th>Pearson's correlation</th>
<th>Simple linear regression</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Correlation Coefficient (95% CI)</td>
<td>P-value</td>
</tr>
<tr>
<td>Left elbow</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MAX</td>
<td>0.32</td>
<td>(0.05, 0.61)</td>
</tr>
<tr>
<td>AVG</td>
<td>0.26</td>
<td>(0.01, 0.74)</td>
</tr>
<tr>
<td>MIN</td>
<td>0.15</td>
<td>(0.03, 0.66)</td>
</tr>
<tr>
<td>Right elbow</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MAX</td>
<td>0.40</td>
<td>(0.04, 0.66)</td>
</tr>
<tr>
<td>AVG</td>
<td>0.42</td>
<td>(0.07, 0.68)</td>
</tr>
<tr>
<td>MIN</td>
<td>0.39</td>
<td>(0.03, 0.66)</td>
</tr>
</tbody>
</table>

Statistically significant: *P<0.05, **P<0.01

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AB1546 GRADING SYNOVITIS IN WRIST AND HAND USING THE MRI DERIVED APPARENT DIFFUSION COEFFICIENT FAILS TO SHOW RELIABILITY AND REPRODUCIBILITY

Keywords: Imaging, Validation


Background: Diffusion-weighted (DWI) magnetic resonance imaging (MRI) of the hand and wrist has been suggested as an outcome measure of synovitis as an alternative to gadolinium enhanced MRI in patients with rheumatoid arthritis (RA) [1,2]. The apparent diffusion coefficient (ADC), which is a derived parameter from the DWI, may be used to grade synovitis, similar to the OMERACT Rheumatoid Arthritis MRI scoring system (RAMRIS) for synovitis [1]. In a small study criterion validity has been measured but no correlation to contrast-enhanced MRI was revealed [2].

Objectives: To test the discriminative validity of ADC in the synovium ("synovitis ADC") in a prospective cohort of patients with RA and psoriatic arthritis (PsA) and healthy controls (HC).

Methods: The right hand and wrist of all participants were imaged in a 3T MRI system with a dedicated 8 channels coil, applying a 2 mm thick coronal turbo spin echo DWI sequence with an in-plane resolution of 1.5x1.7mm. An ADC map was calculated on basis of two b-values (0;800). Assessment of ADC maps was performed in 7 regions of interest according to the same 7 areas which are assessed by the OMERACT RAMRIS (radioulnar-, radiocarpal-, and intercarpal-carpometacarpal) and intraobserver reproducibility were assessed using intraclass correlation coefficients (ICCs).

Results: Thirty-eight participants were imaged twice within a week (median 7 days, range 3-14 days). Participant characteristics are provided in Table 1. The repeatability was moderate for RA (ICC=0.68; 95% CI: 0.45-0.83), poor for PsA (ICC=0.10; 95% CI: -0.09-0.29) and poor for HC (ICC=0.28; 95% CI: 0.07-0.47). Intra-reader reproducibility was poor for all three groups: RA (ICC=0.37; 95% CI: 0.12-0.58), PsA (ICC=0.22 95% CI: 0.02-0.40) and HC (ICC=0.34; 95% CI: 0.13-0.52). Bland-Altman plots revealed large absolute differences between 1st and 2nd MRI in all three groups of participants (Figure 1).

Conclusion: ADC, determined from DWI-MRI, is not a reliable outcome measure for grading synovitis in the hand and wrist of patients with inflammatory joint diseases.

REFERENCES:

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