Background: Optical spectral transmission imaging (OST) is a new imaging method that measures inflammation in the hands of rheumatoid arthritis (RA) patients. OST might be used to assess disease activity instead of disease activity score 28 (DAS28) or ultrasonography (US). The advantage of OST is that it is fast and not operator dependent. Up to now OST has only been investigated cross-sectionally and it is unknown if and to what extent OST can detect inflammatory changes due to anti-inflammatory treatment for RA.

Objectives: To compare OST measurements before and after 1 month of biological treatment for RA and to compare these OST changes with changes on US and disease activity.

Methods: The HandScan device from Hemics, the Netherlands, was used to measure OST scores for 13 RA patients before and after 1 month of anti-inflammatory therapy. Treatment included tumor necrosis factor inhibitor (n=10), tocilizumab (n=2) and tofacitinib (n=1). OST scores range from 0-66 (one score for both hands) and are based on bilateral wrist, MCP andPIP joints. US was performed in the same joints as OST and semi-quantitatively scored on a scale of 0-3 for grey-scale (GS) synovitis and power Doppler (PD) signal. Joint scores of GS synovitis or PD were summed, resulting in a total GS synovitis score and a total PD score, both also ranging from 0-66. Furthermore, tender joint count 28 (TJC28), swollen joint count 28 (SJ28), DAS28, C-reactive protein (CRP) and erythrocyte sedimentation rate (ESR) were determined. Response to therapy was defined as achieving the minimal clinically interesting improvement of DAS28 (DAS28 difference after 1 month > -1) as proposed by Ward et al. [1].

Results: Baseline OST was 17.73 ± 6.10 and this significantly decreased to 16.01 ± 6.68 (difference -1.71, 95% CI 0.05-3.38, p=0.045) after 1 month of therapy. This decrease was only present in patients who responded to therapy (n=8); OST decreased from 17.24 ± 5.98 to 14.26 ± 5.65, p=0.01 and not in non-responders (n=5); OST increased from 18.52 ± 6.90 to 18.78 ± 7.83, p=0.03.

In the total group, also DAS28 (difference -1.59, 95% CI 0.74-2.45, p=0.002), SJ28 (difference 4.82, 95% CI 1.50-7.73, p=0.007), ESR (Wilcoxon Rank p=0.008) and CRP (Wilcoxon Rank p=0.03) significantly decreased after 1 month of therapy, but TJC28 did not (difference 2.62, 95% CI -2.79-7.91, p=0.30).

Conclusion: OST scores significantly decreased after 1 month of anti-inflammatory therapy and only in the RA group that responded well to this therapy. This indicates that OST is capable of detecting therapy induced inflammatory changes in the hands of RA patients. Larger studies are needed to further assess the monitoring value of OST for therapy efficacy in RA patients.

References:

Disclosure of Interests: Annelies Blanken: None declared, C.J. van der Laken: None declared, Michael Nurmohamed Grant/research support from: Not related to this research, Consultant of: Not related to this research, Speakers bureau: Not related to this research.

DOI: 10.1136/annrheumdis-2020-eular.5811