**Objectives:** To evaluate the utility of a new fluoroenzyme Immunoassay "EliA-CTD" as an alternative for screening patients suspected for autoimmune connective tissue diseases.
**Methods:** Sixteen Hundread (1600) consecutive patients' sera submitted for anti-nuclear antibodies were tested using the ANA-IIF (Diasorin S.P.A, Saluggia, Italy) and the new EliA-CTD screen (Phadia GmbH, Frieiburg, Germany). ANA testing was ordered by both primary and secondary care physicians. The EliA-CTD screening assay is a fluoroenzyme immunoassay which is performed on the Phadia-250 automated platform. The EliA–CTD assay contains ANA-targeted recombinant antigens including dsDNA, Sm-D, Rib-P, PCNA, U1-RNP (70, A, C), SS-A/Ro, SS-B/La, Centromere B, Scl-70, Fibrillarin, RNA Polymerase III, Jo-1, Mi-2, and PM-scl. The test results are expressed as ratio, with >1.0 considered positive. For ANA-IIF, the cut off for positive results was 1:40 or greater. Additionally, further testing for dsDNA and other extractable nuclear antigens (ENA) was undertaken on a subset of sera that were ANA-IIF+ or whenever there was discrepancy between the two methods.
**Results:** The overall agreement between the two methods was 84.2%. Three hundread and eight (308) out of 1600 (19.3%) samples tested positive by ANA-IIF positive as compared to 101/1600 (6.6%) for the EliA-CTD assay. Additional testing showed that 105 samples were positive for ENA including dsDNA. Of those, 101 were EliA-CTD positive and 81 were ANA-IIF positive. By incorporating the ENA results, the calculated sensitivity and specificity for the EliA-CTD were 97.1% and 99.7% respectively with positive and negative predictive values for the EliA-CTD assay of 96.1% and 99.8%, respectively. The corresponding sensitivity, specificity, positive predictive value (PPV) and negative predictive value (NPV) for the ANA-IIF assay at different dilutions is shown below:

| Titer | Sensitivity (%) | Specificity (%) | PPV (%) | NPV (%) |
|---|---|---|---|---|
| ≥1:40 | 77.7 | 84.8 | 26.0 | 98.2 |
| ≥1:80 | 60.3 | 95.3 | 32.4 | 98.4 |
| ≥1:160 | 57.4 | 97.4 | 41.3 | 98.4 |
| ≥1:320 | 46.5 | 98.7 | 48.8 | 98.5 |

**Conclusions:** The new automated EliA-CTD assay shows superior sensitivity and specificity compared to the conventional labor intensive ANA-IIF. The EliA-CTD can be used as an upfront screening tool for connective tissue diseases. Depending on the clinical details, any EliA-CTD positive results could be reflexly followed by additional testing including ANA-IIF testing to elucidate the titer and pattern.
**References:**
[1] Hayashi N, Kawamoto T, Mukai M, Morinobu A, Koshiba M, Kondo S, Maekawa S, Kumagai S. Detection of Antinuclear Antibodies by Use of an Enzyme Immunoassay with Nuclear HEp-2 Cell Extract and Recombinant Antigens: Comparison with Immunofluorescence Assay in 307 Patients. Clinical Chemistry 2001; 47(9):1649–1959.
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## FRI0664 INFLUENCE OF JOINT PATHOLOGY ON OPTICAL SPECTRAL TRANSMISSION IMAGING, ASSESSING INFLAMMATION IN HAND AND WRIST JOINTS OF RHEUMATOID ARTHRITIS PATIENTS

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**Background:** Rheumatoid arthritis (RA) patients benefit from treat-to-target strategies, aiming for remission or low disease activity[1]. Clinical disease activity measures like the Disease Activity Score (DAS28) have questionable reproducibility and lack sensitivity for low disease activity states; MRI and ultrasound (US) are sensitive, but scanning multiple joints is time-consuming. Optical spectral transmission (OST) is stronger than DAS28 associated with inflammation assessed by both US and MRI[2]. OST measures the blood-specific absorption of light transmitted through tissue, which is reduced in presence of joint inflammation, but also influenced by other joint pathology.
**Objectives:** Evaluating the influence of joint pathology on the misclassification of joint inflammation, in the hand and wrist joints of RA patients, determined by OST, as compared to US, the reference standard.
**Methods:** Fifty RA patients with at least one swollen joint, generally with low disease activity were included in this cross-sectional study. Assessments were US, OST, and DAS28, performed according to established guidelines[3] by separate experienced examiners, blinded for other study outcomes. US joint inflammation was defined as a gray-scale score>1 or a power Doppler score>0 (scales 0–3), assessed in MCP, (P)IP, and wrist joints. Using US as reference, diagnostic performance of OST in detecting inflammation at joint level was evaluated using receiver operating characteristic (ROC) analyses; at patient level, DAS28 and OST were correlated to US. Joint pathology potentially influencing misclassification of OST (erosions, osteophytes, tendon (sheet) inflammation, abnormal vasculature, and triangular fibrocartilage complex injuries) were evaluated for significance in a multivariate nominal logistic regression model.
**Results:** OST performed well at joint level, separately for the MCP (ROC-AUC:0.85), PIP (ROC-AUC:0.79) and wrist (ROC-AUC:0.72) joints and for all joints together (ROC-AUC:0.83). On patient level, DAS28 correlated poorly with US (r=0.29), but OST correlation was good (r=0.72). The presence of joint pathologies per misclassification group is shown in table 1. In the regression model, inflammation in MCP and PIP joints had a higher risk of false negative misclassification in the presence of dorsal bone erosions (OR:3.5, 95% CI:1.7–7.3), volar erosions (OR:5.0, 95% CI:1.8–14.1), flexor tenosynovitis (OR:2.5, 95% CI:1.4–4.5), osteophytes (OR:1.9, 95% CI:1.2–2.8), and extensor tendonitis (OR:3.7, 95% CI:1.6–8.5), and a higher risk of false positive misclassification in the presence of osteophytes (OR:2.3, 95% CI:1.6–3.2).

Table 1: Frequency of joint pathologies, per misclassification group.

| Misclassification | Erosions dorsal | | Erosions volar | | Osteophytes | | Flexor tenosynovitis | | Extensor tendonitis | | Vascular pattern | | TFCC | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Absent | Present | Absent | Present | Absent | Present | Absent | Present | Absent | Present | Absent | Present | Absent | Present |
| True positives & true negatives | 1546 84.4% | 34 66.7% | 1569 84.2% | 12 63.2% | 1265 86.6% | 315 74.8% | 1502 84.3% | 79 78.2% | 1556 84.3% | 25 65.8% | 1349 84.6% | 231 80.5% | 121 65.4% | 2 50.0% |
| False negatives | 116 6.3% | 13 25.5% | 122 6.5% | 7 36.8% | 85 5.8% | 44 10.5% | 114 6.4% | 15 14.9% | 121 6.6% | 8 21.1% | 109 6.8% | 20 7.0% | 13 7.0% | 1 25.0% |
| False positives | 169 9.2% | 4 7.8% | 173 9.3% | 0 0.0% | 111 7.6% | 62 14.7% | 166 9.3% | 7 6.9% | 168 9.1% | 5 13.2% | 137 8.6% | 36 12.5% | 51 27.6% | 1 25.0% |
| Total | 1831 | 51 | 1864 | 19 | 1461 | 421 | 1782 | 101 | 1845 | 38 | 1595 | 287 | 185 | 4 |

**Conclusions:** OST is a sensitive and specific technique to assess inflammation in hand and wrist joints of RA patients with low disease activity, nonetheless, joint pathology like erosions, tendonitis, and osteophytes increase the risk of misclassification of inflammation by OST.
**References:**
[1] Bijlsma J et al. Early rheumatoid arthritis treated with tocilizumab, methotrexate, or their combination. Lancet 2016;388:343–55.
[2] Van Onna M et al. Assessment of disease activity in patients with rheumatoid arthritis using optical spectral transmission measurements. ARD 2016;75(3):511–518.
[3] Backhaus M et al, Guidelines for musculoskeletal ultrasound in rheumatology. ARD 2001;60(7),641–9.
**Disclosure of Interest:** N. Besselink: None declared, P. van der Meijde: None declared, A. Marijnissen: None declared, P. Meijer Shareholder of: Hemics, Employee of: Hemics, W. Rensen Shareholder of: Hemics, Employee of: Hemics, J. van Laar: None declared, F. Lafeber: None declared, J. Jacobs: None declared
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## FRI0665 ANTI-HETEROGENOUS NUCLEAR RIBONUCLEOPROTEINS (ANTI- HNRNP) AND OTHER AUTOANTIBODIES FOR DETECTION OF EROSIVE ARTHROPATHY IN SYSTEMIC LUPUS ERYTHEMATOSUS WITH JOINT INVOLVEMENT IN COMPARISON BY JOINT X-RAY

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**Background:** Joint involvement in SLE is very common, affecting 90% of patients at some stage in the course of their disease (1).Arthritis featuring prominent radiological erosion in SLE is less common; however, in a small subset of patients an erosive pattern similar to RA develops (2).
Anti- heterogenous nuclear ribonucleoprotein A2 (anti-hnRNP-A2) occur in about one-third of patients with RA but rarely in other arthritides such as OA, PsA or reactive arthritis. Interestingly, in SLE patients anti-hnRNP-A2 autoantibodies were found to be significantly associated with erosive arthritis (3).
**Objectives:** To investigate joint involvement in SLE and its relationship with autoantibodies to the hnRNP Ab A1 and A2, rheumatoid factor (R.F), Antinuclear antibody (A.N.A) and Anti-double stranded DNA (Anti-DSDNA) and correlation with articular involvement by joint x-ray.
**Methods:** Case series study comparing diagnosis of arthritis by hand and wrist x-ray with anti-hnRNP A1 and A2 in Fourty SLE patients aged 17–60 years old with disease duration 1–17 years complaining of arthralgia or arthritis. A controlled group of 21 clinically normal persons, age and sex matched and blood

Table 1. Comparison of serological features in SLE patients with and without erosive arthritis (EA)*

| Characteristic | SLE patients with EA | SLE patients without EA | Total | P value |
|---|---|---|---|---|
| Rheumatoid Factor, N (%)[b] | 5 (50) | 6 (20) | 11 (27.5) | 0.079 |
| ANA, N (%)[b] | 8 (80) | 14 (46.7) | 22 (55) | 0.069 |
| Anti-double stranded DNA, N (%)[b] | 9 (90) | 13 (43.3) | 22 (55) | 0.011* |

Table 2. Comparison of radiological findings of hand X-ray in SLE patients with and without erosive arthritis (EA)*

| Characteristic | SLE patients with EA | SLE patients without EA | Total | P value |
|---|---|---|---|---|
| Juxta-articular osteoporosis, N (%) | 9 (90) | 21 (70) | 30 (75) | 0.204 |
| Narrowing of joint space, N (%) | 9 (90) | 9 (30) | 18 (45) | 0.001* |
| Subchondral cysts, N (%) | 4 (40) | 1 (3.3) | 5 (12.5) | 0.010* |
| MCP sublaxation, N (%) | 7 (70) | 3 (10) | 10 (25) | 0.001* |
| Interruption of cortical surface, N (%) | 7 (70) | 1 (3.3) | 8 (20) | <0.0001* |
| New bone formation, N (%) | 1 (10) | 0 | 1 (2.5) | 0.250 |
| AVN, N (%) | 0 | 1 (3.3) | 1 (2.5) | 0.750 |