in prediction accuracy between constructs was further assessed as integrated discrimination improvement (IDI). Similar AUC and IDI constructs evaluated the transition to obstructive or extensive atherosclerosis at follow-up in patients with baseline non-extensive or non-obstructive disease.

Results: High hs-cTnI (>15 pg/ml) added to FRD-DA increased AUC from 0.717 to 0.731 (Figure 1A) and improved prediction baseline plaque [IDI=0.041 (SE)=0.017, p=0.015]. In contrast, a-b2GPI-IgA did not [IDI=0.005 (0.006), p=0.47] and the combination offered no added benefit to the hs-cTnI model alone. Similar observations were made for CAC. Presence of a-b2GPI-IgA independently associated with coronary plaque progression (IRR=1.67 [95%CI 1.04-2.67]), whereas hs-cTnI did not. Likewise, a-b2GPI-IgA associated with transition to extensive or obstructive disease independently of FRD-DA (OR=13.48 [95% CI 2.09-86.99]). Notably, 71.4% of a-b2GPI-IgA positive patients with high hs-cTnI progressed to extensive or obstructive disease compared to 77% of a-b2GPI-IgA negative subjects with high hs-cTnI (p=0.008). Addition of a-b2GPI-IgA to FRD-DA in patients with prevalent non-extensive non-obstructive plaque increased AUC from 0.785 to 0.900 (Figure 1B) and significantly improved the prediction for development of obstructive or extensive atherosclerosis at follow-up [0.387, (0.13), p=0.003].

Conclusion: High hs-cTnI improved the risk of baseline plaque presence beyond clinical risk score and may trigger an initial non-invasive coronary atherosclerosis evaluation. A-b2GPI-IgA presence may justify a follow-up evaluation in patients with non-extensive, non-obstructive plaque at baseline to obstructive or extensive atherosclerosis at follow-up.

A PROSPECTIVE STUDY EVALUATING THE ROLE OF 68GA-RGD2 PET/CT ANGIOGENESIS IMAGING IN ASSESSING DISEASE ACTIVITY AND TREATMENT RESPONSE IN RHEUMATOID ARTHRITIS AND ITS COMPARISON WITH DAS28

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Background: PET/CT imaging of synovial angiogenesis using 68Ga-RGD (cyclic tripeptide agent targeting αvβ3 integrin) to study disease activity in rheumatoid arthritis (RA) has been demonstrated earlier in a few patients. However, post treatment changes in disease activity on 68Ga-RGD2 PET/CT imaging have not been adequately assessed.

Objectives: To compare the performance of 68Ga-RGD2 PET/CT with disease activity score (DAS) 28 in assessing disease activity and treatment response in RA.

Methods: Thirty patients (24F; 6M) aged 43±12 years with clinically diagnosed RA were prospectively studied. After calculation of DAS28 by a rheumatologist, all 30 patients underwent 68Ga-RGD2 PET/CT scan. Of these, 27 patients underwent a second 68Ga-RGD2 PET/CT scan and clinical assessment after at least 3 months of treatment. Total body and regional images of the upper limbs were acquired and interpreted by two nuclear medicine physicians blinded to the clinical findings. Joints showing focally increased tracer uptake compared to the background were considered positive and joints showing uptake equal to or less than background were considered negative.

Data of 30 patients were used for inter-observer and inter-modality agreement calculations. Changes in PET parameters and DAS28 were compared in 27 patients to assess treatment response.

Results: Out of 1560 joints examined in the initial scan, 394 were positive on PET/CT compared to 348 on clinical evaluation. Inter-observer agreement between nuclear medicine physicians was excellent (Cohen’s kappa 0.92, p<0.05) and inter-modality agreement between PET and clinical examination was moderate (Cohen’s kappa 0.55, p<0.05). The DAS28 and SUVmax values (highest and average) of 27 patients showed significant reduction on follow-up compared to the initial evaluation. There was significant correlation between percentage change in DAS28 and percentage change in scan parameters like PET positive joint counts (0.689, p<0.001), average SUVmax (0.712, p<0.001) and highest SUVmax values (0.558, p=0.003) of scan-positive joints in 27 patients. Additional advantages of 68Ga-RGD2 PET/CT include objective assessment, whole body evaluation of all small and large joints, and greater reproducibility.

Conclusion: 68Ga-RGD2 PET/CT is a promising tool for objective assessment of disease activity and treatment response in patients with RA.

Table 1. Clinical and PET parameters of the patients

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Initial data (n=27)</th>
<th>Follow-up data (n=27)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean (SD)/Median (IQR)</td>
<td>Mean (SD)/Median (IQR)</td>
</tr>
<tr>
<td>TJC(28)</td>
<td>10 (5-13)</td>
<td>3 (2-4)</td>
</tr>
<tr>
<td>SJC(28)</td>
<td>6 (3-7)</td>
<td>1 (0-2)</td>
</tr>
<tr>
<td>ESR</td>
<td>25 (20-41)</td>
<td>24 (18-35)</td>
</tr>
<tr>
<td>PIGA</td>
<td>6.0 (5.0-6.0)</td>
<td>3.0 (2.0-4.0)</td>
</tr>
<tr>
<td>DAS28(3)</td>
<td>5.14 (0.85)</td>
<td>3.74 (0.88)</td>
</tr>
<tr>
<td>DAS28(4)</td>
<td>5.60 (0.90)</td>
<td>3.86 (0.90)</td>
</tr>
<tr>
<td>PET positive Joints</td>
<td>12 (7-8)</td>
<td>4 (2-9)</td>
</tr>
<tr>
<td>SUVmax</td>
<td>2.08 (1.68-2.52)</td>
<td>1.79 (1.00-2.06)</td>
</tr>
<tr>
<td>hSUVmax</td>
<td>3.45 (2.71-4.70)</td>
<td>3.34 (1.95-4.25)</td>
</tr>
</tbody>
</table>

Acknowledgments: This study was supported by Indian Council of Medical Research, New Delhi [grant no.3/2/June-2017/PG-Thesis-HRD (29)]

THU0532 SEMIQUANTITATIVE ANALYSIS OF BONE SCINTIGRAPHY TO PREDICT SPINAL PROGRESSION IN EARLY AXIAL Spondylaoarthritis: A PILOT STUDY

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Background: Axial spondyloarthritis (axSpA) is a chronic inflammatory disease that typically affects the axial joint and entheses. Abnormal hyperplasia of osteoblasts in the vertebral corner is the underlying pathogenesis of syndesmophyte
scoring method on contrast-enhanced T1-weighted Dixon out-of-phase images to score synovitis and tenosynovitis (used to score erosions) and the three OMERACT “core set” MRI sequences (contrast-enhanced T1-weighted fat-saturated images to score osteitis and contrast-enhanced T1-weighted Dixon fat-only images to score synovitis) as independent predictors for worsening mSASSS over 2 years, current smoking (P = 0.013), and pre-existing syndesmophyte (P = 0.036) were independent predictors for worsening mSASSS by at least 2 units over 2 years. Twenty-four patients (16 women, mean age 45.7 years old) with early axSpA were reviewed retrospectively. The records of 53 patients with early axSpA who underwent baseline bone scintigraphy were reviewed retrospectively. The sacroiliac joint to sacrum (SIS) ratio of bone scintigraphy was measured for semiquantitative analysis, and modified Stoke Ankylosing Spondylitis Spinal Score (mSASSS) and syndesmophyte growth were calculated at baseline and after 2 years. Receiver operating characteristic (ROC) curve analysis was used to determine the cutoff for the SIS ratio of bone scintigraphy. To identify factors associated with significant spinal structural progression, univariate and multivariate logistic regression analyses were performed. Significant progression of spinal structural damage over 2 years was defined as an increase of mSASSS of at least 2 units for 2 years or new syndesmophyte growth/bridging of pre-existing syndesmophytes.

Results: Multivariate regression analysis revealed obesity (P = 0.023), current smoking status (P = 0.012), and high SIS ratio of bone scintigraphy (P = 0.015) as independent predictors for worsening mSASSS by at least 2 units over 2 years. For new syndesmophyte growth/bridging of pre-existing syndesmophytes over 2 years, current smoking (P = 0.013), high SIS ratio of bone scintigraphy (P = 0.025), and pre-existing syndesmophyte (P = 0.036) were independent predictors.

Conclusion: Semicontinuous analysis of bone scintigraphy (high SIS ratio) in patients with early axSpA may be useful for identifying patients at high risk for spinal structural progression after 2 years.

References:

Disclosure of Interests: None declared

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THU0533

A SINGLE MRI DIXON SEQUENCE TO ASSESS DISEASE ACTIVITY AND CARTILAGE IN EARLY RHEUMATOID HANDS: ONE SEQUENCE TO ASSESS THEM ALL?

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2 Department of Radiology, University of Brussels, Brussels, Belgium
3 Laboratoire d’Imagerie Biologique, INSERM UMR 1155, Université Paris-Descartes, Paris, France

Background: OMERACT recommends three “core set” MRI sequences with an optional cartilage-dedicated sequence to perform Rheumatoid Arthritis (RA) MRI scoring (RAMRIS) (1). Dixon method allows the production of four different images from a single short sequence: water-only images, fat-only images, T1 fat-saturated images and total RAMRIS scores obtained with the OMERACT sequences was excellent for R1 (0.97; 0.92-0.98) and R2 (0.91; 0.81-0.96). Inter-observer agreement was excellent with Dixon images (0.92; 0.92-0.98) and OMERACT sequences (0.96; 0.90-0.98). Inter-observer agreement was excellent with Dixon images (0.92; 0.92-0.98) and OMERACT sequences (0.93; 0.85-0.97).

Results: Agreement between the measures of cartilage thickness on the Dixon out-of-phase images and the measures of cartilage thickness on radiographs was substantial (0.71; 0.66-0.75). Intra-observer agreement was excellent with Dixon out-of-phase images (0.94; 0.93-0.95) and radiographs (0.93; 0.92-0.94).

Conclusion: An MRI protocol based on a single contrast-enhanced T1-weighted Dixon sequence allows reproducible RAMRIS scoring and measurement of the cartilage thickness. Further studies should be performed to evaluate the value of a short MRI protocol based on the Dixon method to monitor disease activity including cartilage loss in treated RA patients.

References:


Disclosure of Interests: None declared

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THU0534

LUNG ULTRASOUND IN PATIENTS WITH SECONDARY INTERSTITIAL LUNG DISEASES

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Background: Currently, lung ultrasound (LUS) is increasingly used in pulmonology.

Objectives: To evaluate the relationship between lung ultrasound and pulmonary function and disease activity in patients with rheumatic diseases with secondary lung involvement.

Methods: Thirty patients with rheumatic diseases were included in the study, who, according to the data of the high-resolution RCT of lungs (64-slice CT system Philips Diamond Select Brilliance), showed interstitial lung involvement as a type of nonspecific interstitial pneumonia. In 4 patients, mixed connective tissue disease (MCTD) was diagnosed, 20 had systemic vasculitis (SV), and 6 had rheumatoid arthritis (RA). The mean age of the patients was 56.5±10.59, the duration of the disease was 2.3±1.2 years. All patients underwent a standard clinical examination, the following indices and scales were used to assess the activity of the underlying disease: VDI damage index, Bermingham systemic vasculitis activity scale (BVAS), RA activity scale (DAS 28-CPRF). The functional state of the lungs was assessed using spirometry, bodyplethysigraphy, gas diffusion “single breath”: LUS was carried out for the evaluation of the location and number of B-lines on both right and left hemithoraces using commercially available echographic equipment with a 5-12 MHz linear transducer (Accuvix AX5, Samsung Medison).

Results: Most patients had an average number of B-lines 2.45[11,5;34,0]. There were no significant differences in the number of B-lines between groups of patients of different nosologies. The total number of B-lines correlated with the index of activity of systemic vasculitis BVAS (r=0.05; n=0.83). There were no statistically significant correlations with clinical manifestations of pulmonary involvement.

Conclusion: Lung ultrasound may be useful in screening secondary lung involvement in patients with rheumatic diseases with high activity.

References:

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