Results: CT revealed erosions and ankyloses of the sacroiliac joints, fusion of the posterior elements of vertebra especially in the thoracic spine, enthesophytes, not seen with CRs, in 26 patients ($p < 0.05$).

Level of diagnostic confidence was higher when interpreting CT compared to CRs, in cases of erosions and ankyloses, in 35 patients ($p < 0.05$). CT was slightly superior in the detection and characterization of syndesmophytes, enthesopathy and calcifications.

Effective dose for "i-Dose 5" CT was 1.20 ± 0.26 mSv and for CR 1.07 ± 0.21 mSv. The difference was not statistically significant ($p = 0.588$).

Conclusion: iDose CT of spine and pelvis at an effective dose, lower than previously published, seems to perform better than radiographs in the detection of structural changes of PsSpA. Further studies are needed to document the capabilities of iDose CT for the imaging assessment of PsSpA in daily clinical practice.

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SAT0551

WHOLE BODY MACROPHAGE PET IMAGING THAT INCLUDES THE FEET CAN PROVIDE ADDITIONAL INFORMATION TO CLINICAL ASSESSMENT IN PATIENTS WITH EARLY RHEUMATOID ARTHRITIS

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Background: Clinical assessment of arthritis is the cornerstone in the diagnosis and treatment of rheumatoid arthritis (RA). Nevertheless, reliable determination of (sub)clinical arthritis can be difficult, especially in the feet. Advanced imaging techniques may contribute to early diagnosis and therapy monitoring through sensitive detection and (quantitative) monitoring of synovitis. Previously, it has been demonstrated that macrophage imaging using (R)-[¹¹C]PK11195 positron emission tomography (PET) allows for highly sensitive and specific imaging of RA disease activity in the hands. ^(1,2) Whole body macrophage PET imaging that includes the feet has not yet been evaluated in RA.

Objectives: To compare whole body macrophage PET imaging to clinical assessment of arthritis activity in clinically active, early RA patients.

Methods: Thirty-five previously untreated RA patients (age 54 ± 12 , 51% male) with at least two clinically inflamed joints were included. They underwent a whole body (R)-[¹¹C]PK11195 PET/computed tomography (CT) scan in addition to standard clinical assessment of number of tender and swollen joints (TJC and SJC, respectively). Two readers blinded to clinical assessment (GZ and CvdL) visually scored intensity of uptake in joints on a 0 to 3 scale. A PET positive joint score was defined as ≥ 1 . Additionally, (R)-[¹¹C]PK11195 uptake in joints was assessed quantitatively as standardized uptake values (SUV). Visual parameters were compared to clinical parameters using Cohen's kappa, and quantitative parameters were analyzed using an independent T-test.

Results: All patients showed enhanced tracer uptake in one or more joints (Figure 1). A total of 168 joints were visually PET positive, with the following distribution: 16% in the wrists, 14% in the metacarpophalangeal joints, 25% in the proximal interphalangeal joints, 4% in the ankles, 37% in the metatarsophalangeal joints. Positivity in other large joints was rare (4%). The number of discrepant findings between PET and clinical outcome (TJC and/or SJC) varied based on anatomic localization; more joints were clinically active in the hands, and more joints were active on the PET scan in the feet. Consequently, agreement between visual PET positivity and clinical activity was low, with only moderate agreement found in the ankles ($\kappa = 0.46$ and 0.41 for SJC and TJC respectively). Quantitative PET data showed a trend towards higher SUV values in joints that were clinically tender and/or swollen, reaching a significant difference in the feet (ankles + MTPs) versus SJC (Figure 2; 0.7 vs 1.0 , $p < 0.001$). However, parts of the clinically non-affected joints also depicted moderately increased SUV values, and vice versa.

Figure 1. Visual PET uptake in the left MTP5-joint.

Figure 2. (R)-[¹¹C]PK11195 (SUV) in both clinically affected and non-affected feet joints (defined as swollen yes or no).

Conclusion: Whole body macrophage PET imaging showed clear uptake of (R)-[¹¹C]PK11195 in several joints of clinically active, early RA patients, especially in MTP-joints. The best correlation between quantitative PET data and clinical assessment of swelling was observed in the feet. In general, however, PET also provided distinct information from clinical assessment, which may provide a means for detecting subclinical synovitis. We are performing longitudinal studies to further assess the value of macrophage PET in RA.

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SAT0552

IMAGING OF CORTICAL INTERRUPTION IN THE METACARPOPHALANGEAL JOINTS WITH HIGH-RESOLUTION PERIPHERAL QUANTITATIVE COMPUTED TOMOGRAPHY SHOWS HIGH RELIABILITY AND ACCEPTABILITY FOR PATIENTS WITH RHEUMATOID ARTHRITIS.

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Background: High-Resolution peripheral Quantitative Computed Tomography (HR-pQCT) has been proposed as a modality for assessment of disease severity in inflammatory arthritis. The excellent resolution ($82\mu\text{m}^3$) and the inherent contrast between bone and soft tissue makes it a gold standard reference for the detection of bone damage in vivo. However, the nine minutes acquisition