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Title: 18F-FDG PET scans demonstrate strong correlation between spleen metabolism and serum IL-2R levels in patients with untreated sarcoidosis under surveillance

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Body: Introduction: F-18 fluorodeoxyglucose used in positron emission tomography and computed tomography (FDG PET/CT) has been shown to be a sensitive molecular imaging marker of inflammation. Aims: To use FDG PET/CT to assess splenic hypermetabolism in therapy-naive sarcoidosis patients and to examine possible correlation between splenic FDG uptake and biochemical markers. Methods: All patients diagnosed with sarcoidosis were identified from a local database in our hospital. Therapy-naive patients under routine surveillance were enrolled in this study and after informed consent they prospectively underwent whole-body FDG PET/CT and same-day biochemical lab tests, including interleukin-2 receptor (IL-2R), C-reactive protein (CRP), serum angiotensin-I converting enzyme (SACE), serum calcium and urine calcium levels. Results: Thirty patients (10 male, 48.2 ±11.7 years) were included. Spleen SUVmax was 4.6 ±2.4 (range: 2.5-15.7) and SUVmean was 2.5 ±1.4 (range: 1.5-9). Serum IL-2R was 1417 ±1164 (range: 417-4992). Significant correlation was found between serum IL-2R levels and splenic SUVmax (Pearson's r=0.7, p<0.001), splenic SUVmean (r=0.698, p<0.001), and splenic size (r=0.373, p=0.042). Serum IL-2R levels did not correlate with presence of focal splenic hypermetabolism. No significant correlation was found between splenic metabolism and CRP, SACE, serum or urine calcium levels. Conclusions: There is strong correlation between serum IL-2R levels and spleen metabolism and size, while no correlation is identified between spleen metabolism and CRP, SACE, serum or urine calcium levels in patients with untreated sarcoidosis.