

## 18F-FDG PET IN SARCOIDOSIS

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This study evaluated the clinical application of 18F-fluorodeoxyglucose (18F-FDG) PET in the assessment of sarcoidosis. Currently, the presence of active disease is based on several parameters: symptoms, clinical findings, the serum markers angiotensin converting enzyme (ACE) and soluble interleukin-2 receptor (sIL-2R), chest radiography, pulmonary function tests (PFT) and bronchoalveolar lavage (BAL). However, a gold standard for the assessment of active disease is lacking. This study examined the usefulness of 18F-FDG PET in the assessment of sarcoidosis by comparing this new method with 67Ga scintigraphy, and by correlating 18F-FDG uptake with the aforementioned markers.

From the results it may be concluded that F-FDG PET is more sensitive in assessing sarcoidosis activity than 67Ga scintigraphy and demonstrates a higher inter observer agreement as well. 18F-FDG PET appears more sensitive than genotype corrected ACE and sIL-2R in determining the presence of active disease. The degree of metabolic activity in the pulmonary tract imaged by 18F-FDG PET and expressed as maximum standardized uptake value (SUVmax), correlates significantly with the CD4+/CD8+ ratio and neutrophils in BAL.

In untreated patients, the absence of parenchymal activity imaged by 18F-FDG PET correlates with stable pulmonary function tests after one year, while diffuse parenchymal activity predicts a decrease in diffusion capacity of the lung for carbon monoxide (DLCO).

Furthermore, 18F-FDG PET appeared to be a sensitive tool in demonstrating changes over time upon medical treatment. In patients with diffuse parenchymal activity and treated with immunosuppressive therapy, changes in SUVmax were

associated with improvement of pulmonary function tests. In addition, in chronic sarcoidosis patients treated with infliximab, changes in 18F-FDG PET correlate with the clinically observed response as well as with the change in vital capacity (VC) of the lungs.

The thesis concludes by presenting an 18F-FDG PET based classification system for phenotypes of sarcoidosis.