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Titel des Beitrags: Use of Simultaneous 18F-FDG PET/MRI for the Detection of Spondylodiskitis.

Abstract:
The diagnosis of spondylodiskitis is often challenging. MRI is quite sensitive but lacks specificity, and distinction from erosive osteochondritis is often difficult. We sought to assess the diagnostic value of (18)F-FDG PET combined with MRI (combined (18)F-FDG PET/MRI) in patients with suspected spondylodiskitis and an inconclusive clinical or MRI presentation. In a prospective study, 30 patients with previous inconclusive MRI results and suspected spondylodiskitis underwent combined (18)F-FDG PET/MRI, including precontrast and postcontrast standard spine MRI sequences. The image datasets were evaluated on dedicated workstations by 2 radiology residents and 1 board-certified nuclear medicine physician independently and then in consensus. Because of severe susceptibility artifacts, only 28 of 30 image datasets were evaluable, with a total of 29 regions of suspected spondylodiskitis. SUV ratios (affected disk/reference disk) were determined. The imaging results were compared with histopathology or clinical follow-up as a reference standard and subjected to statistical analysis. The reference standards identified spondylodiskitis in 12 disks and excluded spondylodiskitis in 17 disks. For MRI alone, the sensitivity was 50%, the specificity was 71%, the positive predictive value was 54%, and the negative predictive value was
67%. Adding the PET data resulted in sensitivity, specificity, positive predictive value, and negative predictive value of 100%, 88%, 86%, and 100%, respectively. In a receiver operating characteristic curve analysis, an SUVmax ratio threshold of 2.1 resulted in 92% sensitivity and 88% specificity (area under the receiver operating characteristic curve, 0.95). Neither the level of C-reactive protein nor the leukocyte count at the time of PET/MRI was related to the reference standard diagnosis of spondylodiskitis. In patients with inconclusive clinical or MRI findings, the use of (18)F-FDG PET/MRI significantly increased diagnostic certainty for the detection of spondylodiskitis.