
Additive value of 18F-FDG PET/CT in evaluation of treatment response of pediatric rhabdomyosarcoma

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Abstract

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Objectives The aim of the current study was to clarify the role of 18F-FDG PET/CT compared with conventional imaging in assessment of therapeutic response of pediatric rhabdomyosarcoma (RMS)

Methods A retrospective analysis of 27 patients with histopathologically proven RMS (26 males and 24 females; age range 10 m to 16 yrs.). Patients received specific therapy for RMS according to the standard institutional protocol. PET/CT results were compared with CT and/or MRI during follow up period of 6–12 months after treatment course. SUVmax of the primary lesion, LNs and metastases were calculated

Results The highest mean SUVmax value was present in anaplastic RMS followed by the embryonal then the alveolar types (10 ± 8.7 , 4.7 ± 3.0 , 2.3 ± 0.5 , respectively). Final results based on histopathology and/or clinical follow up revealed 17 patients had true positive viable tumor tissue while 10 patients were free of disease recurrence and/or metastases. PET/CT showed overall higher sensitivity, specificity and accuracy than CT (94.1%, 100%, 96.3% and 72.2%, 41.6%, 66.7%, respectively). PET/CT accurately detect 16/17 viable residue and failed to detect only one tumor recurrence in the urinary bladder near physiologic activity. CT was true positive in 13/17 patients with tumor residue and false positive in 2 patients with tongue and palatine RMS. PET/CT detected 24/36 positive LNS compared to only 16/36 detected by CT. MRI was performed in 15 patients with equivocal CT findings. PET/CT showed regressive course of the primary lesion with evident reduced SUVmax in 4 patients, 2 months earlier than MRI. MRI was false positive in 2 patient with vertebral lesion that was negative in follow up PET/CT and bone scan

Conclusions 18F-FDG-PET/CT provides additional accurate information about tumor viability giving a chance to evaluate the effectiveness of treatment regimen, which proposes superior prognostic value over conventional imaging. Further studies are needed to correlate between various grades of response to therapy by PET/CT and patient final outcome and survival

