

Limited value of interictal brain perfusion SPECT for detection of epileptic foci: High resolution SPECT studies in comparison with FDG-PET

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Accurate localization of epileptic foci is important for pre-surgical evaluation of patients with medically intractable epilepsy, and F-18 FDG PET has been proved to be a valuable method for this purpose. To examine the clinical value with interictal brain perfusion SPECT, we performed brain perfusion SPECT of Tc-99m HMPAO by means of a high resolution SPECT camera, and compared the results with F-18 FDG PET images and MRI in 10 patients with medically intractable epilepsy. In 9 of 10 patients (90%), FDG PET images showed focal hypo-metabolism in the area corresponding with the results of electroencephalography (EEG). SPECT images, however, demonstrated hypo-perfused lesions which corresponded with hypo-metabolic lesions on FDG PET images in only 6 cases (60%). Although MRI showed abnormal findings in 8 cases, the lesions were not directly related to epileptic foci in 2 cases. In conclusion, FDG PET is a valuable tool for accurate localization of epileptic foci. Brain perfusion SPECT, however, may not always be paralleled to metabolism visualized on FDG PET images.

Key words: epilepsy, high resolution SPECT, FDG PET, MRI