

Combined study of ^{99m}Tc -HMPAO SPECT and computerized electroencephalographic topography (CET) in patients with medically refractory complex partial epilepsy

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For successful surgery for drug-resistant partial epilepsy the site of the seizure focus needs to be known exactly. The purpose of this study was to compare the evaluation of the regional cerebral blood flow (rCBF) (localization and degree of disturbances) by ^{99m}Tc -hexamethylpropyleneamineoxime (HMPAO) single photon emission computed tomography (SPECT) with computerized electroencephalographic topography (CET) and transmission computed X-ray tomography (CT) in partial epilepsy.

The study included 20 patients with medically refractory complex partial seizures. Of the 20 patients included, 15 were studied interictally, four ictally and one in both states, interictally and ictally.

^{99m}Tc -HMPAO SPECT detected rCBF changes in 95% of the patients. Interictal studies demonstrated focal areas of hypoperfusion in 93% of the patients. Ictal studies demonstrated an area of hyperperfusion in all patients. Blood flow disturbances in deeper structures of the brain, such as basal ganglia, could be detected. The areas with abnormal ^{99m}Tc -HMPAO uptake were concordant, in localization, with CET in 85% of the patients. Abnormal data with CT scans were found in only 45% of the patients. Focal lesions were found in 20% of the patients by CT scans.

^{99m}Tc -HMPAO SPECT combined with CET may be a useful screening procedure prior to referral for invasive diagnostic procedures in future management of patients with medically refractory complex partial seizures.

Key words: brain imaging, SPECT, HMPAO, computerized EEG, partial epilepsy