

## Intracerebral Seizure Propagation on Ictal Brain SPECT : A pitfall in localization of seizure focus

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To assess the accuracy of ictal and interictal brain SPECT in the localization of epileptogenic foci and as to whether the seizure propagation affects accurate localization.

Fifteen patients with complex partial seizures (Rt. temporal : 8 patients, Lt. temporal : 5, extratemporal : 2) were analyzed. The localizations of seizure foci was based on the scalp or cortical EEG, MRI, clinical or surgical findings. Ictal Brain SPECT was performed after intravenous injection of 20 mCi of Tc-99m HMPAO. The mean injection time from seizure onset was 57 seconds. Interictal brain SPECT was performed within 3 days following ictal SPECT during the seizure free period.

On ictal brain SPECT, multifocal increased uptake within both seizure foci and sites of propagation was seen in eight patients whose scalp EEG showed diffuse spike and wave. However, increased uptake confined solely to the seizure foci was seen in only three patients. Therefore lateralization was possible in 79% but localization in only 21%. In interictal brain SPECT, ten patients (71%) showed focal decreased activity around the seizure focus but not in sites of propagation. MR showed hippocampal sclerosis in 47% (n=7). Seven patients showed discordant scalp EEG findings with SPECT. In cases with discordance, SPECT (n=5) was more accurate than scalp EEG (n=2).

Ictal brain SPECT was not as accurate as previously reported in localization of epileptogenic foci, since diffuse or multiple hot uptakes due to seizure propagation inhibited accurate localization. Because of those limitations, interictal brain SPECT appeared to be superior in the localization.