

Does interictal perfusion SPECT help localize epileptogenic focus in unilateral hippocampal sclerotic patients with partially concordant clinical, EEG and MRI findings?

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Background and Objective: In everyday setting of pre-surgical evaluation of intractable epileptic patients, we usually found patients with discordant pre-surgical data. In patients with temporal lobe epilepsy (TLE), hippocampal sclerosis is the most common finding on MRI. Although many studies have documented the value of brain perfusion SPECT in TLE, none stated about its value in day-to-day clinical situations. This study aims to determine the diagnostic value of interictal brain perfusion SPECT in intractable epilepsy with unilateral hippocampal sclerosis and partially concordant presurgical results.

Methods: Nineteen patients with unilateral HS whose seizure semiology, interictal EEG, ictal EEG and MRI were partly convergence were included in this study. All patients have undergone anteromesial temporal resection with good outcome (Engel class IA) and hippocampal sclerosis was confirmed by pathology. The values of interictal SPECT as a sole diagnostic test (i.e. without ictal SPECT) and as a complimentary test to ictal SPECT were analyzed.

Results: Interictal SPECT alone showed relatively hypoperfusion or hyperperfusion at the same location as surgical site in 74% (14/19 patients). Among these, 2 patients (11%) did not have ictal perfusion abnormality, thus, only interictal SPECT provided the diagnostic clue. Interictal SPECT showed conflicting results in 5 patients (26%). Ictal SPECT showed hyperperfusion leading to the correct localization in 16 patients (84%), conflicting results in 2 (11%), and no abnormality in 1 (5%). When interpreting ictal and interictal findings together, correct diagnostic value was increased to 95%.

Conclusions: Interictal SPECT alone provided a fair diagnostic value in localizing the epileptogenic focus in unilateral hippocampal sclerosis patients. Consideration with other presurgical investigations should be taken due to significant percentages of conflicting results. Interpretation along with ictal SPECT leads to the higher yield.

References

1. Spencer SS. The relative contributions of MRI, SPECT, and PET imaging in epilepsy. *Epilepsia* 1994; 39(suppl 6): S72-S89.
2. Hartley LM, Gordon I, Harkness W, Harding B, Neville BGR, Cross JH. Correlation of SPECT with pathology and seizure outcome in children undergoing epilepsy surgery. *Dev Med Child Neurol* 2002; 44(10): 676-80.