neuro exam: normal except memory deficit

● MRI: hippocampal atrophy and signal alteration with ipsilateral dilatation of temporal horn of lateral ventricle

● unilateral or bilateral independent anterior temporal EEG spikes with maximal amplitude in basal electrodes

● external ictal EEG activity only with CPS, usually initial or delayed focal rhythmic onset pattern of 5–7 Hz, maximal in 1 basal temporal derivation

● interictal fluorodeoxyglucose PET scan: hypometabolism in temporal lobe and possibly ipsilateral thalamus and basal ganglia

● neuropsychological testing: memory dysfunction specific to involved temporal lobe

● Wada test : amnesia with contralateral amobarbital injection

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A pilot study demonstrates that seizures in mesial temporal and temporal-plus epilepsies (i.e., temporoperisylvian) can be detected reliably in the anterior thalamic nucleus (ATN). Further studies are needed to validate these findings [1].

Fractional anisotropy asymmetry (FAA) values can be potentially used to identify the seizures of origin of TLE and to help understand the relationship between fiber tracts with the side of seizure origin of TLE [2].

The area of predominant perifocal 18F positron emission tomography hypometabolism and reduced [11C]flumazenil (11C-FMZ) -binding on PET scans is currently considered to contain the epileptogenic zone and corresponds anatomically to the area localizing epileptogenicity in patients with temporal lobe epilepsy (TLE).

1)
Pizarro D, Ilyas A, Toth E, Romeo A, Riley KO, Esteller R, Vlachos I, Pati S. Automated detection of mesial temporal and temporoperisylvian seizures in the anterior thalamic nucleus. Epilepsy Res. 2018 Jul 23;146:17-20. doi: 10.1016/j.eplepsyres.2018.07.014. [Epub ahead of print] PubMed PMID: 30055392.
2)
Li H, Xue Z, Dulay MF Jr, Verma A, Karmonik C, Grossman RG, Wong ST. Fractional anisotropy asymmetry and the side of seizure origin for partial onset-temporal lobe epilepsy. Comput Med Imaging Graph. 2014 Jul 2. pii: S0895-6111(14)00102-5. doi: 10.1016/j.compmedimag.2014.06.009. [Epub ahead of print] PubMed PMID: 25037096.