

Differentiation of cryptogenic lateral from mesial temporal lobe epilepsy using regional asymmetric index of F-18-FDG PET.

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We tried to find the possibility of utilization of F-18-FDG PET to differentiate lateral(neocortical) from mesial temporal lobe epilepsy(TLE) if we adopted quantitative comparison of regional metabolic activities using asymmetric index. We studied 22 pathologically proven mesial TLE(group C in Figure), and 27 lateral TLE patients. Lateral TLE patients were normal on MR(cryptogenic: 15: group A) or had structural lesions(12: group B). Asymmetric index(AI) was calculated as (ipsilateral -contralateral) / (ipsilateral +contralateral) x200. AI of medial lobe of cryptogenic lateral TLE was not decreased(-4.66.2, >0.05) and AI of lateral lobe was decreased(-13.68.9). AI of medial and lateral lobes of mesial TLE was decreased(-3.47.7 and -16.58.9, respectively). AI of medial lobe of lesional lateral TLE was -7.39.1(p<0.05 compared with mesial TLE). It was evident that lateral lobe of lesional lateral TLE had metabolic defect or decrease(AI: -21.410.4). While we could not find difference of metabolic activity in lateral temporal lobes between cryptogenic lateral TLE and mesial TLE patients, the difference of metabolic activity was significant in medial temporal lobes which was revealed by AI quantitation. An AI value larger than -10 (cutoff: AI) predicted positively for lateral TLE(PPV:80%) and negatively for mesial TLE(NPV:77%). Asymmetry of metabolic activity in medial and not in lateral lobe of temporal lobe could give hints about whether the epileptogenic zones were mesial or lateral.

