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Cerebral FDG-PET and MRI findings in autoimmune limbic encephalitis: correlation with autoantibody types.

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Abstract

In parallel to the detection of new neuronal autoantibodies, the diagnosis of non-infectious limbic encephalitis has risen. Given that cerebral imaging studies show highly variable results, the present retrospective study investigates imaging findings in association with autoantibody type. An institutional database search identified 18 patients with non-infectious limbic encephalitis who had undergone [18F] fluorodeoxyglucose positron emission tomography (FDG-PET). Sixteen of these patients also underwent magnetic resonance imaging (MRI). MRI and FDG-PET images were categorized as follows: normal (0); mesiotemporal abnormality (1); normal mesiotemporal finding but otherwise abnormal (2). Neuronal autoantibodies were determined in serum and/or CSF. Autoantibodies were grouped according to the cellular localization of their target antigen: antibodies against surface antibodies (i.e., VGKC, NMDAR): 9; antibodies against intracellular antigens (i.e., Hu, Ri, GAD): 4; no autoantibodies: 5. The fraction of abnormal scans was lower for MRI (10/16) than for FDG-PET (14/18). There was a significant association between PET findings and autoantibody type: All patients with autoantibodies against intracellular antigens showed mesiotemporal findings on FDG-PET. In turn, only 2/9 patients with autoantibodies against surface antigens displayed mesiotemporal hypermetabolism. In the remaining seven patients, four scans were rated as normal and three only showed findings outside the mesiotemporal region. A similar association was found using MRI, although this did not reach statistical significance. Autoantibody type was found to be associated with FDG-PET and, to a lesser extent, with MRI imaging results. Our observations may explain the heterogeneity of imaging data in LE and based on in vivo findings support the assumption of different patho mechanisms underlying LE due to antibodies against surface and intracellular antigens, respectively.

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