

Limbic Encephalitis Associated with COVID-19

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Contributor: Timur Sirbiladze, Natalia Shnayder, Marina Petrova, Regina Nasyrova

Limbic encephalitis (LE) is an inflammatory disease of the brain, in which lesion is anatomically limited in structures of the limbic system. In some cases, LE can start with symptoms of limbic dysfunction with further involvement of other regions of the brain. Classic LE syndrome includes such symptoms as the development of personality disorders, depression, sleep disorders, epileptic seizures, hallucinations and cognitive disorders (short-term and long-term memory impairment). The information of clinical examination, electroencephalogram (EEG), magnetic resonance imaging (MRI) and cerebrospinal fluid studies (CSF) suggest the diagnosis of LE in most patients with Coronavirus Disease 2019 (COVID-19).

Keywords: limbic system ; limbic encephalitis ; COVID-19 ; neurological complication

Limbic encephalitis (LE) was first described in 1960 by Brierley et al. ^[1]. Later, in 1968, Corsellis et al. suggested the term "Limbic Encephalitis" ^[2]. For the next few decades, LE was considered a rare autoimmune disease strictly associated with cancer ^[3]. However, the development of neuroimaging and antineuronal antibodies detection methods demonstrated that LE can be divided in to two main variants: the first variant is LE, associated with paraneoplastic antibodies or cancer (typical LE), and the second variant is LE, without paraneoplastic antibodies or cancer (atypical LE) ^{[4][5]}. Studies in the following years showed that LE can be associated with variative antigen localization and different antibodies ^[6]. Other studies showed that most patients with LE are found to have antibodies to neuronal cell-surface antigens ^[7]. These antigens can be expressed in different regions of the central nervous system (CNS), and the limbic system (especially hippocampal formation) is known as one of the common localizations, followed by the cerebellum.

Now, LE is known as a relatively frequent autoimmune disorder of CNS ^{[8][9]}. Typical LE syndrome includes such symptoms as the development of personality disorders, depression, sleep disorders, epileptic seizures, hallucinations and cognitive disorders ^{[7][8]}.

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