

## Abstract

Anti-NMDAR encephalitis has a psychotic presentation that is difficult to distinguish from primary psychosis. An atypical psychosis that is similar to schizophrenia, mood disorder, and epilepsy, is unique and the original diagnostic criteria exist only in Japan. The clinical symptoms and courses of anti-NMDAR encephalitis and atypical psychosis are very similar. We investigated whether the diagnostic criteria of atypical psychosis are useful to increase the detection rate of anti-NMDAR encephalitis with psychiatric symptoms.

Anti-NR1/NR2B IgG antibodies in the cerebrospinal fluid of 218 newly admitted inpatients initially diagnosed with schizophrenia (n = 151), mood disorder (n = 47), or epilepsy with psychiatric symptoms (n = 20) assessed by a cell-based assay.

Of 218 patients, 123 patients (36.3 years  $\pm$  SD 17.2, 69.9% females) fulfilled the diagnostic criteria of category B for atypical psychosis. All 12 patients (9.8%, 12/123) with anti-NR1/NR2B IgG antibodies fulfilled category B of atypical psychosis statistically better than the patients without anti-NR1/NR2B IgG antibodies ( $P=0.0009$ ). Of the 12 patients with anti-NR1/NR2B IgG antibodies, two patients did not fulfill either criteria of catatonia (DSM-5) or Graus' diagnostic criteria of anti-NMDAR encephalitis during the time course, and 11 patients showed good prognosis with early immunotherapies. In ROC analysis, abnormal electroencephalogram findings showed the highest sensitivity (0.833) for detection of anti-

NR1/NR2B IgG antibodies, and 31.3% of patients with category B atypical psychosis and abnormal electroencephalogram findings had anti-NR1/NR2B IgG antibodies.

Lumbar puncture and detection of anti-NMDAR antibodies are considered for patients who fulfill atypical psychosis diagnosis criteria with an abnormal electroencephalogram.