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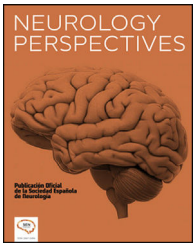

SCIENTIFIC LETTER

Atypical anti-NMDAR encephalitis in a 28-year-old female patient with bilateral ovarian teratoma: A case report

Encefalitis anti-NMDAR atípica en una paciente femenino de 28 años con teratoma de ovario bilateral: reporte de un caso

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Introduction

Most frequently recognized causes of encephalitis are infectious; however, an increasing number of autoimmune encephalitis have been identified that can develop with core symptoms resembling infectious encephalitis, and with neurological and psychiatric manifestations without fever or cerebrospinal fluid (CSF) pleocytosis.[1] To improve the recognition of these disorders, we present the atypical case of a 28-year-old female patient suffering from anti-NMDAR encephalitis associated with bilateral ovarian teratoma.

Case presentation

This is the case of a 28-year-old Mexican Mestizo patient with no significant medical or surgical history, brought in early April 2020 to the emergency room (ER) by her parents for behavioral disorders associating episodes of anxious agitation with phases of decrease of verbal output. Routine lab, CSF studies, and head CT were normal, so she was sent home with sertraline. She was brought back to the ER 2 years later, with a history of episodes of anxiety and disorganized thinking with phases of mutism. Within 9 h, low grade fever, weakness on the right side of the body followed by decreased level of consciousness by stupor appeared. Infectious encephalitis was suspected, and she received empirical antibiotics and acyclovir until the exclusion of infectious causes: CFS, brain IRM, antinuclear antibodies, bacterial and viral PCR panels were negative. In the absence of favorable progress after 3 days of treatment, autoimmune encephalitis was suspected, and she stopped receiving antimicrobials and acyclovir and was empirically started on a 3-day course of methylprednisolone 1 g/day, followed by oral glucocorticoid therapy at 1.0 mg/kg/day of prednisone with a 3-week taper of oral prednisone. After 2 days of the treatment, the patient showed a full recovery of level of consciousness, strength on the right side of the body and no fever but decreased verbal output and memory deficit persisted with no correlation in the electroencephalogram (EEG) patterns. In the presence of prominent psychiatric manifestations and response to immunotherapy, NMDAR encephalitis was suspected. An abdominal-pelvic CT scan and transvaginal ultrasound revealed a probable bilateral ovarian teratoma. A probable diagnosis of anti-NMDAR encephalitis was set. NMDAR antibodies against the GluN1

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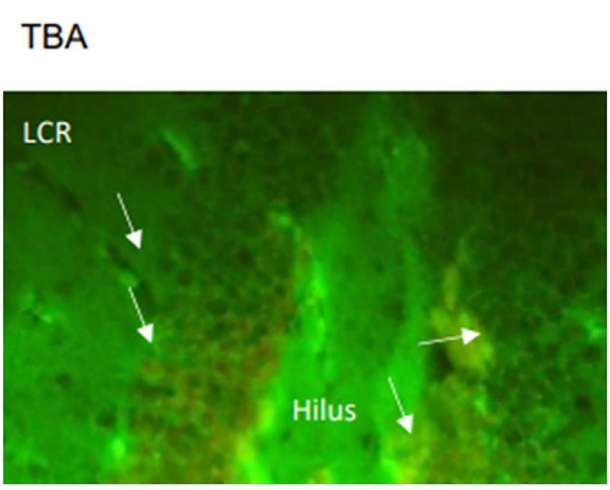

Fig. 1 Antibodies against the GluN1 subunit of the NMDAR (white arrow white arrow pointing to the green dots). TBA: tissue brain adhesion, LCR: Translation from Spanish of cerebrospinal fluid. (For interpretation of the references to color in this figure legend, the reader is referred to the web version of this article.)

subunit in the CSF and serum were positive (Figs. 1 and 2), the definite diagnosis of anti-NMDAR encephalitis with bilateral ovarian teratoma was set. In the presence of an ovarian tumor, its surgical excision is essential since it may be the origin of the autoimmune reaction, so the patient underwent a bilateral oophorectomy, the pathological examination confirmed the diagnosis of a mature teratoma. After 1 day, the evolution was rapidly favorable with gradual return to a normal state of cognitive and neurological functions and the behavioral problems were resolving, with full recovery at 2 months.

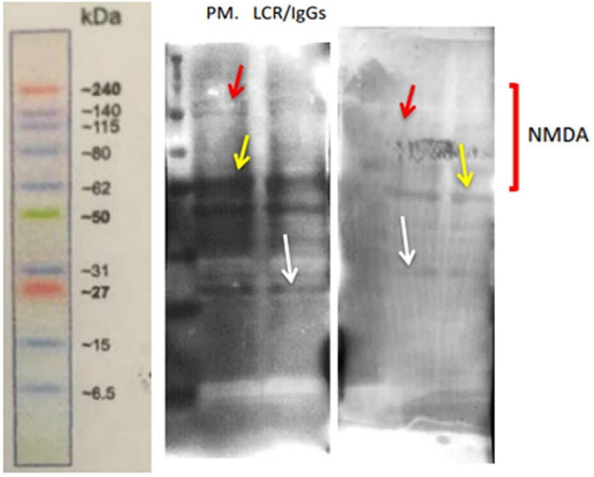

Fig. 2 IgG antibodies against to neuronal proteins have high-affinity against 31–27 kDa (white arrow) and 80–50 kDa proteins (yellow arrow) than 140–115 kDa proteins (red arrow). IgG: immunoglobulin G, IgG, kDa: Kilodalton, LCR: Translation from Spanish of cerebrospinal fluid, NMDA: N-methyl-D-aspartate. (For interpretation of the references to color in this figure legend, the reader is referred to the web version of this article.)

Discussion

Anti-NMDAR encephalitis at onset, about 90% of patients have prominent psychiatric or behavioral symptoms,[2,3] distinguishing the disease from a primary psychiatric disorder, viral encephalitis, and other autoimmune encephalitis is challenging,[4] especially like our case, when weakness on the right side of the body has not been described as a typical symptom and the CSF, EEG studies, and brain MRI were normal, nevertheless, these negative results should not be a reason to discount a possible diagnosis of anti-NMDAR encephalitis,[5,6] since her speech dysfunction, disorganized thoughts, decreased level of consciousness and memory deficit persisted, raised the suspicion of anti-NMDAR encephalitis. The only specific diagnostic test of anti-NMDAR encephalitis is the demonstration of IgG antibodies against the GluN1 subunit of the receptor in patient's CSF, NMDAR antibodies are always present in CSF,[2,4] emphasizing the importance of neuronal antibody testing to confirm the diagnosis, unfortunately they are not usually available in many centers.

We encourage searching specially for ovarian and other tumors according to age, sex, and probably race[2,7,8] given the favorable evolution on the neuropsychiatric symptoms after removal of the secreting ovarian lesion is described in many cases.[9] The impact of tumor excision on the immediate evolution of encephalitis is not demonstrated, but it could improve the effectiveness of medical treatments especially if it is performed early.[9,10] When the treatment is well conducted, the clinical course is most often favorable in80–90% with a regression in a few weeks of abnormalities of the autonomic nervous system, then very gradually after several months to years of the rest of the symptomatology.[8,9]

Conclusion

The diagnosis of NMDAR encephalitis is difficult and time-consuming, and patients may succumb to neurological deterioration, thus necessitating a high index of suspicion and prompt intervention, even in the absence of confirmatory studies.

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Informed consent

An informed consent was obtained from the patient before being published this case.

Ethical considerations

This case presentation didn't need the submission or approval by the local ethics and investigation committee.

Declaration of Competing Interest

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/ or publication of this article.

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