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BACKGROUND

Anti-NMDAR encephalitis, an autoimmune encephalitis caused by CSF IgG antibodies against the GluN1 NMDA receptor (NMDAR) subunit, typically affects young adults and children, predominantly females harboring a mature teratoma^{1,2}. Antibody titers in CSF and serum are higher in patients with teratoma, and titer changes in CSF and serum are related to relapse³. Relapses occur in 12-20% of cases². Patients either unresponsive to treatment or experiencing relapses should be reassessed for a contralateral or recurrent teratoma.

OBJECTIVE

To describe the unusual presentation of a woman successfully treated for anti-NMDAR encephalitis (NMDARE) with ovarian teratoma resection and immunotherapy presenting with biochemical evidence of intrathecal immune reactivation leading to the discovery of a new ovarian teratoma.

CASE REPORT

A 32-year-old female with history of clinically resolved NMDARE treated with left ovarian teratoma resection and methylprednisolone, IVIG, and rituximab presented with eclampsia 1.5 years after initial NMDARE diagnosis. The patient was unaware she was pregnant, and the infant eventually died of eclampsia-induced hypoxic-ischemic injury. The mother's previous NMDARE prompted maternal and infantile NMDAR antibody testing. The mother's serum titer was 1:80 and the infant's was 1:320. The infant's high titer suggested the mother was again producing intrathecal antibodies, and maternal CSF analysis confirmed this condition. Brain herniation prevented CSF analysis in the infant. Although the mother lacked clinical evidence of NMDARE recurrence, the renewed intrathecal immune activation prompted a work up that revealed a new right ovarian teratoma not seen during initial NMDARE work-up.

IMAGING

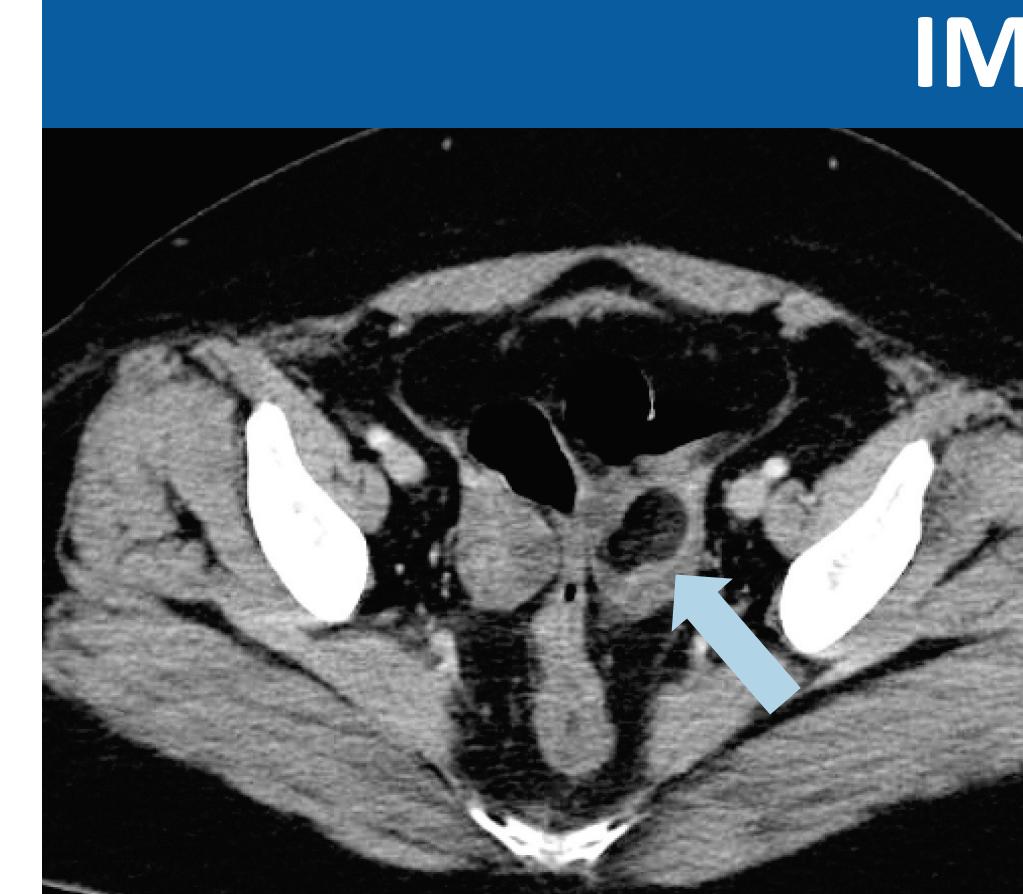


Fig 1. (left):
Axial CT of pelvis shows 2.0 x 3.0 cm left ovarian teratoma (dermoid cyst). The right ovary was normal.

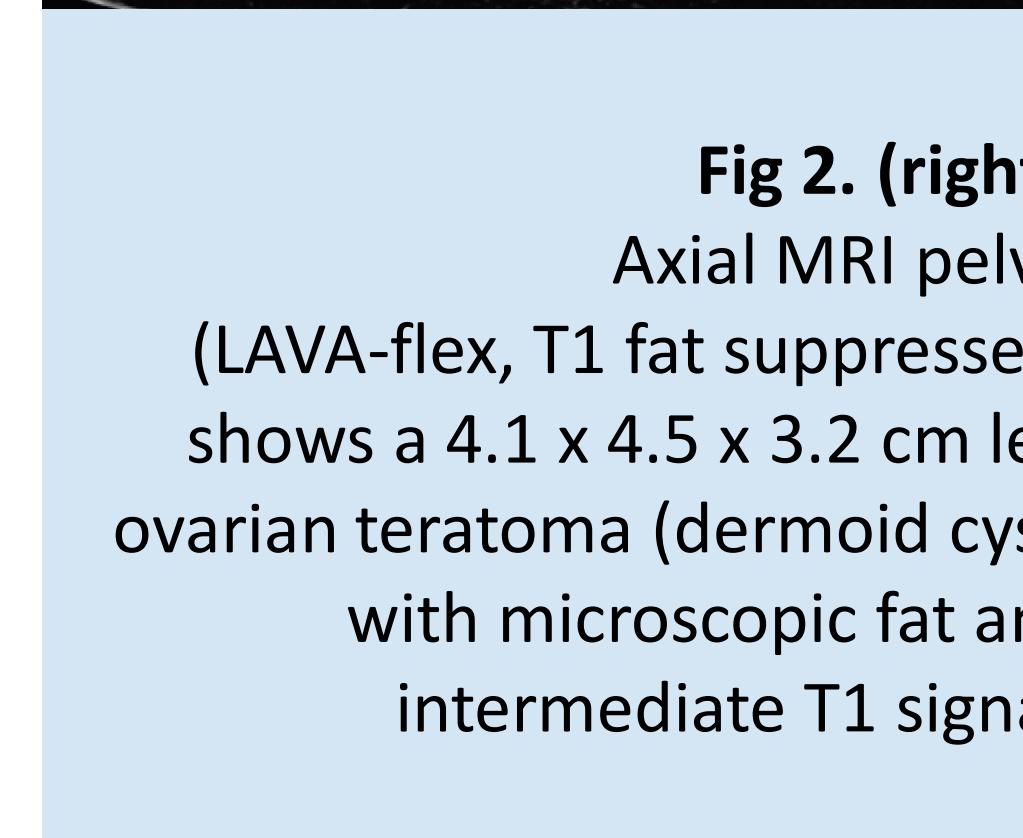


Fig 2. (right):
Axial MRI pelvis (LAVA-flex, T1 fat suppressed) shows a 4.1 x 4.5 x 3.2 cm left ovarian teratoma (dermoid cyst) with microscopic fat and intermediate T1 signal.

DISCUSSION

- Relapse in encephalitis is defined as the new onset or worsening of symptoms occurring after at least two months of improvement. Relapses in NMDARE may occur multiple times and have a higher frequency in patients without a tumor^{2,4}. Compared with the initial episode, relapses are less severe^{2,4}.
- The presence of a teratoma not detected or untreated during the initial episode, or the possibility of tumor recurrence, should be considered in patients with a relapse². A relapse presents as the classic syndrome in only 31% of patients, the majority being incomplete or atypical syndromes⁴.
- Antibodies may persist for several years in the serum and CSF of asymptomatic patients after clinical recovery albeit at lower titers than during the initial episode^{3,5,6}. Self-contained meningeal germinal centers have been purported as a source of antibody synthesis without pathogenic effect on the brain⁵. Relapse is associated with increase in CSF titers³.

DISCUSSION (cont.)

- Our patient reached her pre-morbid baseline within one year after tumor resection and immunotherapy. She unknowingly conceived after a long history of infertility/amenorrhea due to polycystic ovarian syndrome (PCOS). Weight loss and laparoscopic ovarian surgeries are fertility treatments in PCOS⁷. It is plausible that the weight loss of her prolonged admission and teratoma resection restored fertility by altering the hypothalamic-pituitary-ovarian axis.
- It is unclear if the patient would have progressed to relapse had the new teratoma not been resected. CSF titers were not obtained in our patient.
- Mature teratomas are bilateral in 10-17% of patients⁸. Teratomas in asymptomatic patients up to one year after initial NMDARE have been reported⁹. These patients underwent resection for local symptoms, not relapse.
- The significance of antibody titers should be interpreted for each patient per clinical context and immunological follow-up.

CONCLUSION

Our case demonstrates an unusual presentation of immune reactivation in anti-NMDAR encephalitis without evidence of clinical relapse leading to the discovery of a new contralateral teratoma. The role of antibody and tumor surveillance in asymptomatic patients after recovery from NMDARE requires further study.

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DISCLOSURES

The authors have no disclosures.

