A rare case of NMDAR Encephalitis in pregnancy; Case report and literature review

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Background

- Anti-N-methyl-d-aspartate receptor (NMDAR) encephalitis is increasing in incidence.
- Awareness is key to early diagnosis and prompt treatment.
- Rare in pregnancy with 15 published cases.
- Most commonly found in young women, with a mean age of 23.[1]
- Two known triggers are an underlying tumour (usually ovarian teratoma) or herpes encephalitis.[2]
- Pregnancy and the puerperium may exacerbate symptoms; a link between NMDAR antibodies and postpartum psychosis has been postulated.[3]
- Some well-defined features of NMDAR encephalitis include psychiatric and cognitive disturbance, dyskinesias, seizures and central hypoventilation.

Case

- 30-year-old presented with a generalised tonic-clonic seizure, worsening confusion, memory deficits and anomic aphasia.
- She was 7 weeks pregnant with a history of postpartum psychosis.
- Initial investigations showed normal imaging and lumbar puncture. She was admitted to ICU on antibiotics and antivirals for suspected viral encephalitis.
- Deterioration necessitated transfer to a tertiary facility where NMDAR encephalitis was confirmed.
- Further management including steroids, IVIG and plasmapheresis proved unsuccessful.
- Ovarian teratoma was excluded on further imaging, and following careful ethical consideration, a termination of pregnancy was completed.
- Symptoms persisted and second-line immunotherapy commenced (rituximab and monthly cyclophosphamide). After no improvement the family requested bilateral oophorectomy which returned normal histology. In some cases of NMDAR encephalitis, despite normal imaging, oophorectomy has revealed occult teratoma resulting in resolution of symptoms.[4]
- This patient remains ventilated via tracheostomy with a fluctuating GCS, showing no improvement over 7 months.

References

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Discussion

- Care providers in O&G should consider a diagnosis of NMDAR encephalitis in a patient presenting with new onset neuropsychiatric symptoms.
- Prompt treatment is necessary for optimal neurologic recovery.
- Ethical implications of treatment options in a woman of child-bearing age may pose complex diagnostic and management challenges.
- Currently no consensus treatment exists for NMDAR in pregnancy, however corticosteroids, immulomodulators, plasmapheresis and teratoma resection can lead to improved outcomes.
- Second line agents (Rituximab and cyclophosphamide) are considered in patients with high antibody titres or poor response to first line agents[4], and case analysis shows where second-line treatment was required a good response ensued.[5]

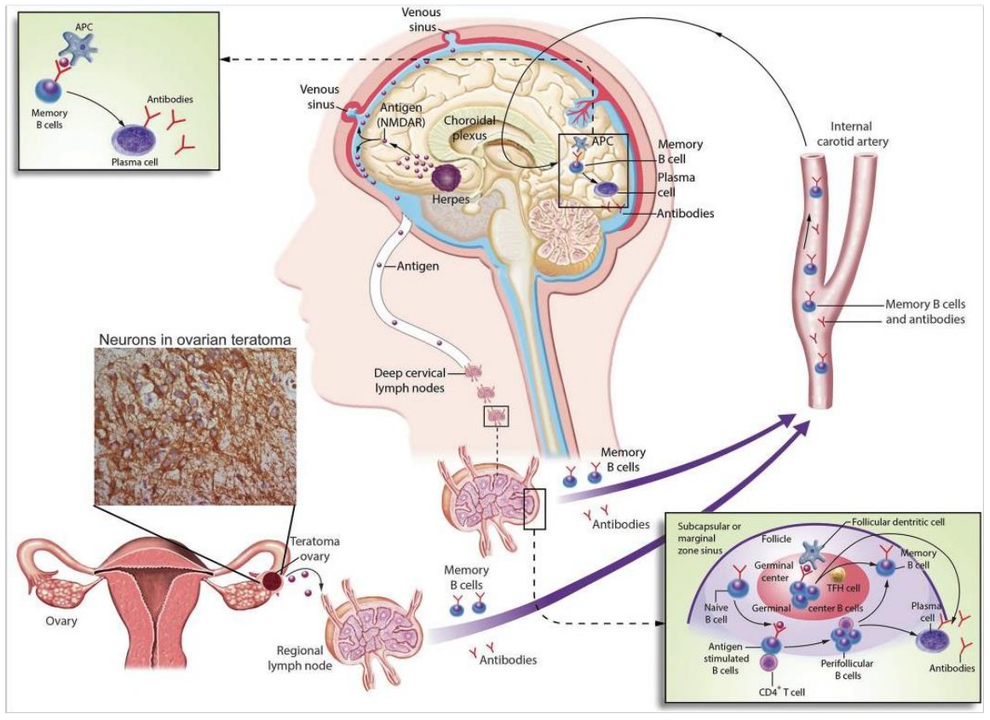

Figure by J. Dalmau[2]

- This figure outlines two known immunologic triggers of anti-NMDAR encephalitis; a tumour (usually ovarian teratoma) and herpes simplex encephalitis.
- The underlying process between these triggers and the CNS production of antibodies is unknown.
- Postulated is that NMDAR expressed in nervous tissue contained in the tumour, or released by viral-induced neuronal destruction, is either in soluble form or loaded in antigen-presenting cells transported to the regional lymph nodes (e.g. pelvic-abdominal in ovarian teratoma, or deep cervical in herpes encephalitis) where it is presented to the immune system triggering a cascade and antibody-producing plasma cells. "Memory B cells cross the blood brain barrier where they undergo restimulation, antigen-driven affinity maturation, clonal expansion, and differentiation into antibody-producing plasma cells." [2]
- Approximately 50% of patients have an unknown immunologic trigger.