Anesthesia Considerations in Patients with Anti-NMDA Encephalitis undergoing Laparoscopic Surgery Requiring General Anesthesia

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Introduction: Anti-N-methyl-D-aspartate (NMDA) Receptor encephalitis is a non-infectious, autoimmune syndrome characterized by neuropsychiatric symptoms and dysautonomia (Helen B., 2015). While its pathophysiology of paraneoplastic production of autoantibodies against NMDA receptors causing receptor dysfunction poses a unique challenge, evidence of optimal anesthetic management remains scarce and undefined.

Case Description: A 19 year-old female presented with emotional liability, new onset seizures, auditory hallucinations with progressive psychosis and aphasia and was found to have NMDA receptor encephalitis. Symptomatic management was initiated with antipsychotics and clonidine patch for sympathetic storming. Immuno-modulatory treatment was initiated with IVIG, steroids and rituximab. Diagnostic imaging showed a left adnexal solid mass suspected for ovarian terotoma/tumor that could be the cause of patient’s anti-NMDA encephalitis. A laparoscopic left salpingo-oophrectomy under general endotracheal anesthesia was planned. Anesthesia was induced with propofol, fentanyl, lidocaine and rocuronium. General anesthesia was maintained with total intravenous anesthesia of continuous remifentanil and propofol infusions. The patient had an unremarkable perioperative course. Pathology of resected fallopian tube and ovary was negative for dermoid cysts or teratoma. Patient’s post-operative recovery course consisted with continued seizures, agitation, dyskinesia, and mild autonomic instability but overall substantially improved along with mental status after medical management.

Discussion: First diagnosed in 2007, anti-NMDA encephalitis is an autoimmune encephalitis syndrome characterized by psychosis, seizures, paroxysmal sympathetic hyperactivity, dyskinesias, memory loss, and language deficits (Dalmau J., 2007). It is seen predominantly in females (>80%) with a high association with uni- or bilateral ovarian teratoma or other tumors that produce autoantibodies that bind to the NR1 or NR2 subunits of NMDA receptors (Dalmau J., 2011). The autoantibodies have also been found to cause cross-linking and selective endocytosis of NMDA receptors (Frank L., 2015). Early diagnosis and treatment including corticosteroids, immunosuppressants, IVIG, and plasmapheresis are critical in achieving the best prognosis. Surgical resection of tumors or ovarian teratoma/dermoid cysts has notably shown near-complete recovery in selected patient population over a period of weeks to months (Dalmau J., 2007). Currently, evidence of optimal anesthesia/sedation for patients with anti-NMDA encephalitis is scarce and undefined in literature. General practice complies with avoiding NMDA antagonists such as ketamine, tramadol, nitrous oxide, xenon, methadone, dextromethorphan, amantadine, and others (Javier PR., 2011). Avoidance of inhalational agents is controversial. More evidence based
clinical practice and understanding of anesthetic implications should be discussed to achieve optimal anesthesia management in patients with anti-NMDA receptor encephalitis.

References:


