Reviewer’s report

Title: Case Report: Anaesthetic management of radical gastrectomy for gastric cancer associated with anti-N-methyl-D-aspartate receptor encephalitis

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Reviewer: Matthew Meyer

Reviewer’s report:

This is a well-written case report on a patient with a disorder (anti-NMDA receptor encephalitis) that can pose multiple intraoperative (and postoperative) challenges for anesthesiologists.

*Abstract

Describe briefly why this patient is "clinically challenging".

In the conclusion section of the abstract, the second sentence is confusing and may need additional commas for clarification.

*Introduction

The first sentence (pg 3-37) personifies antibodies through the use of the word "attack" --> consider alternatives

"Aggressive immunotherapies" are mentioned (pg 3-42); consider listing what is current first-line approach-- steroids v. immunologics v. IV IG v. chemotherapeutics

"...Interactions of various anesthetic drugs" (pg 3-43); please elaborate on what the challenges are for the anesthesiologist during induction and maintenance--is it ineffectiveness, hemodynamic instability, post-op delirium.

*Case presentation

"exacerbated" (pg 3-52) is not the correct word, ?worsened

"pt was diagnosed w/anti-NMDAR encephalitis" (pg 3-55) -- please describe the work-up for identifying the encephalitis--serum v. CSF, etc -- ?time from symptom presentation to diagnosis

"Four months later" (pg 4-57) -- why was there such a delay between the treatment of the NMDAR-encephalitis and the identification of the tumor? What other diagnostics tests were performed?
"Neurologist suggested...periop risk" (pg 4-58) -- what was the specific concern from the neurologist, was it validated by evidence?

"blood tests were all negative for NMDAR antibodies" (pg 4-64) -- this occurred after resolution of the symptoms and chemotherapy (approximately 8 months following initial presentation). Was CSF tested? Was it offered or thought to be of value? Can you still consider the patient to have had NMDAR encephalitis at the time of surgery with negative test results and symptoms? Did the chemotherapy result in successful resolution of this paraneoplastic syndrome?

*Discussion

"first description of anesthetic management in anti-NMDAR encephalitis w/gastric cancer" (pg 6-96) -- Did this patient actually have NMDAR encephalitis at the time of surgery or had it been previously resolved without the operation? The surgery occurred 8mo following initial presentation and a course of immunosuppressants (to treat the encephalitis) and a course of chemotx (to treat the tumor) had already been administered. Was there any interval check on NMDAR antibodies besides initial diagnosis and immediately prior to surgery?

"paraneoplastic syndrome (PNS)" (pg 6-104) -- it does not need an acronym since it is not used again

The discussion regarding relationships between anesthesia medications and intraoperative / postoperative concerns is disjointed at times--please reorganize it so the logic for selecting specific drugs (or selecting against specific drugs) can be easily understood.

"Lapedbie..." (pg 8-149) -- this is an example of the logic for the anesthesia selection being unclear--I guess you chose low-dose propofol because "Lapedbie" attributes the propofol infusion to the recurrence, but it is not clear in this statement.

"In another hospital" (pg 8-142) -- this paragraph cites unreported data about the recurrence of NMDAR encephalitis following surgery / anesthesia. This strikes me as an important issue, the idea of recurrence following surgery / anesthesia is particularly relevant in this case report where the patient was serum negative preoperatively. Are there published case studies that support the supposition made by these unreported cases? Published, peer-reviewed literature will make this case much stronger.

**Are the methods appropriate and well described?**  
If not, please specify what is required in your comments to the authors.

Unable to assess

**Does the work include the necessary controls?**  
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Are the conclusions drawn adequately supported by the data shown?
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