Author's response to reviews

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

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Editor Comments:

Authors' Contributions section: the statement that "All authors read and approved the final manuscript" has been added to line 236-237, page 11.

Matthew John Meyer, M.D. (Reviewer 1):

*The English language (specifically sentence structure and word-choice) needs some improvement--it reads a bit informally and at times can be confusing.

A: We have made some revisions.

Abstract

*P2: 29-30 Adequate preparation for surgery should be included in the anaesthetic management of patients with anti-NMDAR encephalitis. I do not understand this sentence.

A: For this type of patient with a high risk of recurrence and mortality during the perioperative period, anaesthesiologists should prepare more adequately, as explained in the discussion. Preparation should include close and comprehensive monitoring, readily available vasopressors, beta-blockers, anti-hypertensives and anti-cholinergics in case of any autonomic instability, and effective control of the disease by immunotherapy prior to surgery.
As this description is included in the conclusion, further explanations of the above were not added to the main text.

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*P3: 56-57 "Eight months ago" was changed to "Eight months prior to surgery at our hospital."

*P4: 69-73 recommended that this surgery be performed in our hospital. What is so special about "your" hospital? Can you give it a title or explain what particular resources the neurologist thought the clinicians caring for this patient need?

A: Tumour resection is good for earlier functional recovery of patients with anti-NMDAR encephalitis. However, the perioperative risk is extremely high, even if the surgery occurs during a recovery period, according to previous reports. The patient had been diagnosed with gastric cancer, and our hospital is one of the most advanced and authoritative hospitals on gastric cancer surgery in China, employing an experienced perioperative medical management team. These may be reasons why the neurologist recommended the patient to our hospital.

*P5: 93-95 The patient was stable and extubated successfully two days after surgery. Why was the patient kept intubated after surgery? Please discuss the rationale for keeping the patient intubated—was their clinical deterioration? Considering the risk that is mentioned in the paper of propofol, what was the benefit of keeping the patient sedated and intubated if this was in anticipation of potential deterioration?

A: As we mentioned in the discussion, patients with anti-NMDAR encephalitis often exhibit complex conditions, including autonomic dysfunction and central ventilation dysfunction, and some anaesthetic drugs may aggravate or induce adverse symptoms. Therefore, attention should be paid to adverse reactions, such as cardiovascular events, respiratory insufficiency and delayed (or difficult) extubation, during and after anaesthesia (line 154-158, page 8). Several cases deteriorated after extended periods of time following surgery. Early extubation without adequate time for observation and assessment or, in some cases, medication may induce or worsen cardiovascular events and result in reintubation if the patient relapses (line 182-184, page 9). The earliest extubation reported was on the 1st day after surgery. One patient was extubated on the 90th day because of difficulty in spontaneous breathing and unstable conditions. Furthermore, several patients did not survive (line 189-191, page 9). Thus, we dealt with the case reported here with extreme caution. Referring to the neurologist's opinion, for safe and stable postoperative recovery, we kept the patient intubated while sedated for an adequate time to nurse and monitor after surgery. The patient slowly recovered from sedation, was extubated after observation for one day, and was monitored to ensure no sign of deterioration or dysfunction of spontaneous breathing.

The effect of propofol on NMDARs is still unclear, and it has been well tolerated during surgery in certain reported cases. The deterioration in Lapebie’s report was mainly attributed to the combination of sevoflurane and propofol. We believed that the high dose of propofol (in both
intraoperative and postoperative use) may have been another cause. Other drugs can be used for postoperative sedation, such as dexmedetomidine. However, as there is no clinical evidence to support the safety of dexmedetomidine for patients with anti-NMDAR encephalitis, we decided to not risk using this drug. Thus, we did not use propofol during surgery to avoid the combination of sevoflurane and propofol and used only a very low dose of propofol for post-surgery sedation, as propofol is a short-acting drug that might not affect NMDARs sufficiently to worsen neurologic symptoms (line 172-179, page 9).

Comparing the high risk of early extubation and the potential risk of propofol, we still believe that it is beneficial to keep the patient sedated and intubated after surgery. Due to limitations regarding the length of the manuscript, we focused mainly on anaesthetic management during surgery and only briefly discussed the postoperative management (added on lines 179-195, page 9-10).