The Show Must Go On: Evidence-Based Neuroanaesthesia Practices in a Tertiary Care Hospital in India During the COVID-19 Pandemic

Jhanvi Bajaj
Department of Anaesthesia, Seth G. S. Medical College, KEM Hospital, Mumbai, India

Cite this article as: Bajaj J. The show must go on: Evidence-based neuroanaesthesia practices in a tertiary care hospital in India during the COVID-19 pandemic. Turk J Anaesthesiol Reanim. 2022;50(Suppl 1):S76-S78.

Dear Editor,

The management of neurosurgical patients during the coronavirus disease 2019 pandemic requires special considerations like precautions to be taken during emergency airway access in case of deterioration in neurological status, caring for critically ill patients, protecting health care workers from exposure during the surgery, and post-operative recovery stage. Through this review, we aim to provide evidence-based recommendations and expert opinions for anaesthesiologists caring for neurosurgical practices during the coronavirus disease 2019 pandemic with a focus on preparedness and good clinical neuroanaesthesia practice.

Clinical Manifestations of COVID-19 in Neurosurgical Patients

The most common clinical manifestations of COVID-19 have been described as fever, respiratory symptoms, myalgia, and fatigue. Neurological symptoms like dizziness, headache, loss of sense of smell and taste, encephalopathy, and altered mental status have also been found to be common in patients with COVID-19. There have been many reports about acute ischemic stroke also being one of the common presentations of patients suffering from COVID-19. These patients may often come for endovascular treatment or open surgeries.

Considerations for Testing Pre-operatively

The goals of COVID-19 testing specific neurosurgical patients are (a) to protect health care workers by ensuring the use of appropriate personal protective equipment (PPE) and (b) to prevent other post-operative patients from contracting the infection in the recovery room. As our hospital is surrounded by many containment zones that form the major source of our patients, we perform a preliminary temperature check and ask for a verbal history of cough or fever as part of the screening policy set by our municipal health authorities and the Indian Council of Medical Research. Patients with positive history or temperature >38°C are then sent for real-time quantitative fluorescence polymerase chain reaction test and COVID-19-specific IgM and IgG antibody test. If found positive, these patients are admitted to the COVID-dedicated isolation rooms in the hospital which are suitable for droplet and contact precautions as recommended.
Pre-operative Anaesthesia Evaluation

Irrespective of the COVID status of the patient, the preanesthesia evaluation of all patients is done by the neuroanesthesiologist wearing full PPE. A distance of 2 m is maintained during the interaction and the patient is made to wear a surgical mask throughout. History about specific neurological symptoms related to COVID like hypogeusia and hyposmia are elicited along with other common symptoms like headache, vomiting, loss of motor or sensory power, and vision disturbances. Complete neurological examination is done (higher mental functions, cranial nerve exam, superficial and deep reflexes, and motor exam). Cough and gag reflex are not elicited while checking for cranial nerve (CN) IX and X. Special attention is paid to the function of CN I (sense of smell). In the general examination of other systems, special attention is given to inspection of the respiratory system for respiratory rate and signs of respiratory distress if any. Auscultation of all respiratory zones is performed thoroughly. Pre-operative oxygen saturation of every patient is noted during pre-operative anaesthesia evaluation. Among the pre-operative tests, chest x-ray of every patient is reviewed, or lung CT if available.1

Intra-operative Management

Minimum number of operating room (OR) personnel required are allowed inside the theater, and everyone has to strictly wear PPE for every case. The patient is wheeled inside once all preparations are completely done wearing a 3 ply surgical mask and a disposable sheet covering his body. All monitors are done as per American Society of Anesthesiology (ASA) standards of monitoring.7 In our hospital, general anaesthesia is the anaesthesia of choice for neurosurgical procedures. We use an aerosol protection box described by Tseng and Lai8 for intubation and extubation around the procedures. We use an aerosol protection box described by anaesthesia is the anaesthesia of choice for neurosurgical procedures. Irrespective of the COVID status of the patient, the preanesthesia evaluation of all patients is done by the neuroanesthesiologist wearing full PPE. A distance of 2 m is maintained during the interaction and the patient is made to wear a surgical mask throughout. History about specific neurological symptoms related to COVID like hypogeusia and hyposmia are elicited along with other common symptoms like headache, vomiting, loss of motor or sensory power, and vision disturbances. Complete neurological examination is done (higher mental functions, cranial nerve exam, superficial and deep reflexes, and motor exam). Cough and gag reflex are not elicited while checking for cranial nerve (CN) IX and X. Special attention is paid to the function of CN I (sense of smell). In the general examination of other systems, special attention is given to inspection of the respiratory system for respiratory rate and signs of respiratory distress if any. Auscultation of all respiratory zones is performed thoroughly. Pre-operative oxygen saturation of every patient is noted during pre-operative anaesthesia evaluation. Among the pre-operative tests, chest x-ray of every patient is reviewed, or lung CT if available.1

Usage of drills increases the risk of aerosol contamination of the theater milieu. Thus, all craniotomies in our institute are currently done using Gigli saw and Hudson’s brace. During the procedure, the scrub nurse irrigates the surgical site to reduce aerosol formation.

Conclusion

As the COVID-19 pandemic continues to progress throughout the world, neuroanesthesiologists should educate themselves of the various difficulties related to patient care during the pandemic and they should continue to update their knowledge, practice, and skills to provide a safe environment for the patient as well as fellow health care workers.

Peer-review: Externally peer-reviewed.

Author Contributions: Concept - J.S.B.; Design - J.S.B.; Supervision - J.S.B.; Funding - J.S.B.; Materials - J.S.B.; Data Collection and/or Processing - J.S.B.; Analysis and/or Interpretation - J.S.B.; Literature Review - J.S.B.; Writing - J.S.B.; Critical Review - J.S.B.

Declaration of Interests: The authors declare that they have no competing interest.

Funding: The authors declared that this study has received no financial support.

References

1. Han R, Huang L, Jiang H, Dong J, Peng H, Dongyou Z. Early clinical and CT manifestations of coronavirus Disease 2019 (COVID-19) pneumonia. AJR Am J Roentgenol. 2020;215(2):338-343.
2. Mao L, Wang M, Chen S, et al. Neurological manifestations of hospitalized patients with COVID-19. In: Wuhan, China: a Retrospective Case Series Study. medRxiv; 2020. Available at: https://medrxiv.org/content/10.1101/2020.02.22.20026500v1. Accessed April 9, 2020.

3. Filatov A, Sharma P, Hindi F, Espinosa PS. Neurological complications of coronavirus disease (COVID-19): encephalopathy. Cureus. 2020;12(3):e7352. [CrossRef]

4. Li Y, Li M, Wang M, et al. Acute cerebrovascular disease following COVID-19: a single center, retrospective, observational study. Stroke Vasc Neurol. 2020;5(3):279-284. [CrossRef]

5. Indian Council of Medical Research Department of Health Research, Ministry of Health and Family Welfare, Government of India. Advisory on use of rapid antigen detection test for COVID-19; 2020-2020 [Internet]. [cited 2020 May 30]. Available from: https://s3.amazonaws.com/cdn.smfm.org/media/2277/SMFM-SOAP_COVID_LD_Considerations_3-27-20_(final)_PDF.pdf.

6. Society for Maternal-Fetal Medicine, Society for Obstetric and Anesthesia and Perinatology. Labor and Delivery COVID-19 Considerations; 2020.

7. https://www.asahq.org/standards-and-guidelines/standard-s-for-basic-anesthetic-monitoring

8. Tseng J-Y, Lai H-Y. Protecting against COVID-19 aerosol infection during intubation. Journal of the Chinese Medical Association. 2020;83(6):582. [CrossRef]

9. Bajwa SJS, Sarna R, Bawa C, Mehdiratta L. Peri-operative and critical care concerns in coronavirus pandemic. Indian J Anaesth. 2020;64(4):267-274. [CrossRef]

10. Wax RS, Christian MD. Practical recommendations for critical care and anesthesiology teams caring for novel coronavirus (2019-nCoV) patients. Can J Anaesth. 2020;67(5):568-576. [CrossRef]

11. Cook TM, El-Boghdadly K, McGuire B, McNarry AE, Patel A, Higgs A. Consensus guidelines for managing the airway in patients with COVID-19. Guidelines from the Difficult Airway Society, the Association of Anaesthetists the Intensive Care Society, the Faculty of Intensive Care Medicine and the Royal College of Anaesthetists. Anaesthesia. 2020. [CrossRef]

12. Gefke K, Andersen LW, Friesel E. Lidocaine given intravenously as a suppressant of cough and laryngospasm in connection with extubation after tonsillectomy. Acta Anaesthesiol Scand. 1983;27(2);111-112. [CrossRef]

13. Kolias A, Tysome J, Donnelly N, et al. A safe approach to surgery for pituitary and skull base lesions during the COVID-19 pandemic. Acta Neurochir (Wien). 2020;162(7):1509-1511. [CrossRef]