

Letter to the Editor:

Prioritizing the Neurosurgical Patients' Care: Limited Resources and Successful Management in COVID-19 Pandemic



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The novel Coronavirus (SARS-CoV-2) has spread worldwide, contributing to the COVID-19 pandemic [1]. Several reports regarding the spread of COVID-19 infection among the institutions during various neurosurgical procedures especially endoscopic endonasal surgery have been published to provide recommendations for the safety of health professionals and safe management of patients [2-4]. All outpatient neurosurgical activities need to be re-prioritized except for selected patients who need post-operative check-ups and suture removal [5]. The present medical treatment system needs to be remodeled by identifying main neurosurgical emergency hospitals, including acute traumatic and non-traumatic intracranial hemorrhage, symptomatic hydrocephalus, and tumors with elevated intracranial pressure, spinal cord compression with focal deficits, as well as traumatic cranial and spinal emergencies. One of the "main" hospitals can be chosen as the regional neuro-oncological center for management of all patients referred from other neurosurgical oncology departments. Also, a 24/7 on-call system can provide services for spine and cranial non-emergency treatment to patients.

Although controversial, a COVID-19 swab can be routinely carried out for all patients who need emergency neurosurgical intervention or admission in an intensive care unit [6]. In patients needing urgent surgery who are COVID-19 positive or unable to participate in screening, the following precautions need to be followed:

1. Intubation and operation in a negative pressure room;
2. Limiting the number of medical personnel in the operation theatre;
3. Proceeding with strict precautions;
4. Depending on the urgency, skull base surgeries involving paranasal sinuses or mastoidectomy can be deferred by at least two weeks until it is safe to do (2 negative screening tests of the patient for COVID-19 should be obtained at least 24 hours apart).

Conservative treatment may also be considered in cases where applicable [5]. A triage system can be de-

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vised for neurosurgical scenarios by stratifying into the following categories: emergent, urgent, elective, and cosmetic. Emergent cases need surgery within an hour including trauma and lesions requiring decompression. Urgent cases need surgery within hours to days such as pituitary apoplexy. Elective cases can be delayed by 6 to 12 weeks with varying degrees of potential harm and the cases include tumors, radiculopathy without weakness, claudication, unruptured aneurysms, arteriovenous malformations, and cosmetic cases including cranioplasty [5].

Restructuring of the inpatient service is required. Physical distancing and minimizing the number of care providers to a given patient to limit mutual exposure to SARS-CoV-2 should be of utmost priority. Daily rounds can be conducted by a team of 2 doctors - a senior resident and a junior resident, each visiting separate patients. It can be followed by a virtual round. A rotating call schedule can be used for consultants. Residents who are assigned to operative cases by the chief resident will limit their interactions with their assigned patients for that day. The aerosol-generating procedure can be done without resident in confirmed or suspected COVID-19 patients, if possible [5].

As thromboembolic events have increased during the COVID-19 era, ischemic stroke has been three-fold higher than previous experiences. For this reason, the society of neurointerventional surgery has recommended some considerations for stroke patient management like good documentation of COVID-19 negative status 48 hours before mechanical thrombectomy and instructions to take standard Personal Protective Equipment (PPE) [7]. There are also some recommendations for COVID-19 positive patients like maximum safety during intubation, extubation, suction, and active CPR to reduce aerosol generation from respiratory secretions, intubation, and management in the close circuit, negative pressure environment in the angiography suite, all of the treating physicians should have ideal personal protection including surgical cap, protection of eyes (goggles and face shield), full gown/gloves, shoe covers, and N95 mask or Powered Air-purifying Respirator (PAPR).

In the case of undocumented COVID-19 status, fever and respiratory symptoms should be well screened and intubation should be done before transportation to the angiography suite [8]. Teleconference with screen sharing can be used for morbidity and mortality conferences and educational lectures. A patient service coordinator position can be created who can provide check-in service for telemedicine or in-person visits and communi-

cate with their offsite consultants to organize follow-up visits, any radiological imaging, and prioritization of the surgeries if necessary [5].

In this pandemic crisis, choosing the necessary cases for treatment can be challenging for medical practitioners. Neurosurgeons should aim for an amendment in terms of a decent life, while also prioritizing equity in the distribution of services and safety for all.

Ethical Considerations

Compliance with ethical guidelines

There were no ethical considerations to be considered in this research.

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Authors' contributions

All authors contributed equally in writing this letter.

Conflict of interest

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References

- [1] Zhu N, Zhang D, Wang W, Li X, Yang B, Song J, et al. A novel Coronavirus from patients with pneumonia in China, 2019. *New England Journal of Medicine* 2020; 382:727-33. [DOI:10.1056/NEJMoa2001017] [PMID] [PMCID]
- [2] Germanò A, Raffa G, Angileri FF, Cardali SM, Tomasello F. Coronavirus Disease 2019 (COVID-19) and neurosurgery: Literature and neurosurgical societies recommendations update. *World Neurosurgery*. 2020; 139:e812-e817. [DOI:10.1016/j.wneu.2020.04.181] [PMID] [PMCID]
- [3] David AP, Jiam NT, Reither JM, Gurrola II JG, Aghi MK, El-Sayed IH. Endoscopic skull base and transoral surgery during COVID-19 pandemic: Minimizing droplet spread with negative-pressure otolaryngology viral isolation drape. *Head & Neck*. 2020; 42(7):1577-1582. [DOI:10.1002/hed.26239] [PMID] [PMCID]
- [4] Bann DV, Patel VA, Saadi R, Gniady JP, Goyal N, McGinn JD, et al. Impact of Coronavirus (COVID-19) on otolaryngologic surgery: Brief commentary. *Head & Neck*. 2020; 42(6):1227-34. [DOI:10.1002/hed.26162] [PMID] [PMCID]
- [5] Arnaout O, Patel A, Carter B, Chiocca EA. Letter: Adaptation under fire: Two harvard neurosurgical services during

- the COVID-19 Pandemic. *Neurosurgery*. 2020; 87(2):E173-E177. [DOI:10.1093/neuros/nyaa146] [PMID] [PMCID]
- [6] Zoia C, Bongetta D, Veiceschi P, Cenzato M, Di Meco F, Locatelli D, et al. Neurosurgery during the COVID-19 pandemic: Update from Lombardy, northern Italy. *Acta Neurochirurgica (Wien)* 2020; 162:1221-2. [DOI:10.1007/s00701-020-04305-w] [PMID] [PMCID]
- [7] Fraser JF, Arthur AS, Chen M, Levitt M, Mocco J, Albuquerque FC, et al. Society of NeuroInterventional Surgery recommendations for the care of emergent neurointerventional patients in the setting of COVID-19. *Journal of NeuroInterventional Surgery* 2020; 12(6):539-41. [DOI:10.1136/neurintsurg-2020-016098] [PMID]
- [8] Wong P, Kim Ong SG, Lim WY. COVID-19 and cardiopulmonary resuscitation: The recommended N95 mask may not be adequate. *British Journal of Anaesthesia*. 2020; 125(3):e319-e322. [DOI:10.1016/j.bja.2020.05.008] [PMID] [PMCID]