

Neurosurgical Practice during Coronavirus Disease-2019 Pandemic

The novel coronavirus disease-2019 (COVID-19) outbreak originated from Wuhan, Hubei province, China, at the end of 2019 was declared as a public health emergency globally on January 30, 2020, by the World Health Organization (WHO). “Severe acute respiratory syndrome coronavirus-2” became the official term later, only to be renamed by the WHO as COVID-19.

These are indeed crazy times – unlike anything we have lived through. As individuals, we are all impacted by travel restrictions, school closings, shuttered restaurants, and empty grocery shelves. These all have far-reaching consequences for neurosurgeons, our staff, and support systems and are constantly changing. Remaining healthy, active, mentally well and supported is increasingly difficult. So much about our lives has been turned upside down.

With elective surgeries and meetings postponed in most countries at this moment, these are nevertheless testing times. There are three important factors in the management strategy of neurosurgical procedures in times of COVID-19:

1. Availability of protective gears, personal protective equipment, powered air-purifying respirators, ventilators, and patient beds
2. Triage of cases available
3. Distribution of neurosurgeon consultants, residents, and nursing staff.

Utilization of the available resources (protective gears, ventilators, and patient beds) depends a lot on the country in question, local factors, and financial availabilities. Decisions remain the responsibility of local healthcare delivery systems, including state and local health officials and those surgeons who have direct responsibility to the patients. A 30% complete utilization of available neurosurgical resources in these times is an appreciable number, keeping in view to hand over the rest 70% to the COVID patients, whether it be ventilators, beds, or workforce.

A worthwhile pondering list of neurosurgical emergencies to be carried during these testing times has been summarized:

1. Trauma
 - a. Contusions/hematoma with mass effect and midline shift
 - b. Open depressed fractures
 - c. Empyema/abscess
 - d. Cerebrospinal fluid (CSF) rhinorrhea not responding to lumbar drain.
2. Vascular
 - a. Hypertensive bleed requiring evacuation
 - b. Subarachnoid hemorrhage requiring clipping/coiling of aneurysms

- c. Arteriovenous malformation/fistulas may be deferred (individual basis).
3. Spine
 - a. Spinal cord compression from fractures
 - b. Cauda equine syndrome
 - c. Nerve root compression with progressive motor deficit or bowel/bladder involvement.
4. Tumor
 - a. Pituitary apoplexy
 - b. Tumors with mass effect
 - c. Requiring shunting due to obstructive hydrocephalus.
5. Functional
 - a. Hardware infections
 - b. Battery failure.
6. Pediatric
 - a. Ruptured meningomyeloceles
 - b. Congenital hydrocephalus with features of raised increased intracranial pressure requiring CSF diversion.

All transnasal surgeries should be exclusively deferred, and if an emergent condition arises, a cranial approach should be done.

Further availability of blood, protective gears, and ventilatory support for patients needs to be considered by an in-charge consultant, in the absence of which the necessary arrangements of either procuring the same or referring the patient to another available nearest center be the target.

A very important factor to understand during this pandemic is the preservation and avoidance of unnecessary exhaustion and contamination of health workers. The state, federal, and central healthcare delivery systems should have to formulate the guidelines for the same, along with the development of reserve teams.

To meet the goals of 24-h in-house neuroemergency coverage by two nonoverlapping teams is an appreciable recommendation. The different neurosurgical units and subspecialties need to be merged in a single unit in these unprecedented times. Further, the two teams need to rotate in 3–6 days working cycle, i.e., each team covers 3–6 days, and then have 3–6 days off, depending on the local institutional workforce and available resources. The reserve team takes over the work in case any member of the working team develops symptoms of corona. No 65+ personnel should be included in the team or visit hospital. All research faculties and research fellows should stay at home and should utilize their time in writing their research work or analyzing data.

Although we cannot expect that every neurosurgical facility can strictly adhere to these goals owing to the limitation

of workforce, nursing staff, and protective gears at their center, it can be curbed as per their requirements and limitations.

If what life gives you is lemons, as the saying goes, then make the best damn lemonade in the world. These are indeed some of the most testing times we are facing on the face of this earth, but together, this should all pass!

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