

In Reply: The Coronavirus Disease 2019 Global Pandemic: A Neurosurgical Treatment Algorithm

To the Editor:

We read with great interest the highly relevant article from Burke and colleagues¹ in which they proposed a set of algorithms and checklists with the aim of helping neurosurgeons to reorganize their activity in the Coronavirus disease 2019 (COVID-19) pandemic.

However, in the face of the extremely rapid spread of the disease (more than 1700 000 cases in 185 countries² as of the 11th of April, 2020), we would provide more detailed considerations dictated by our experience of neurosurgeons working in a “black level” COVID-19 emergency setting.

COVID-19 has spread fast to Italy where it has already caused more than 147 000 cases and 18 000 deaths.^{2,3} According to the algorithm from Burke et al,¹ the whole Italian territory is currently in the fourth level, the black one.

In agreement with the authors’ suggestions, with the aim to control the spread of the disease anything that was not strictly necessary was avoided. Most Italian neurosurgical units have been closed or converted to units for treatment of COVID-19 patients.⁴ However, as Burke et al¹ suggested, some neurosurgical activity had to be guaranteed even in times of COVID-19 emergency. Thus, a few neurosurgery departments are still working in Italy, covering the whole national territory for urgent cases and oncological patients whose treatment cannot be delayed.⁴ The Neurosurgery Unit of the San Martino Polyclinic Hospital in Genoa is one of those, we report hereby our experience.

Reorganization of the neurosurgical activity at our institution aimed at 2 major goals: to prevent people from moving out of their homes and to rationalize health resources preventing overload of already stressed intensive care units (ICUs).

While measures for the reduction of people’s movements, mostly consisting in avoidance of unneeded hospital accesses, may be managed by neurosurgeons alone, measures aiming at not overloading critical wards (as the ICUs⁵) that are already working at the limit of their capacity must be carefully discussed with all the other involved specialists. Some considerations that gave us guidance include:

1. All elective neurosurgical cases that may be delayed over a period of a few months without affecting healing chances or patients’ prognosis have been postponed. Nosocomial transmission of COVID-19 has been widely reported,⁶⁻⁸ thus decisions to delay not urgent procedures were based on a risk/benefit assessment that saw on one side protection of both patients and healthcare workers from possible COVID-19 infection and on the other side patients’ risk of neurological complications due to the untreated disease. It would be theoretically useful to assess the nosocomial infection risk, in order to allow a risk/benefit assessment of hospital admission for every patient. However, we took into consideration the need to avoid spreading the disease even if such datum was not available.
2. Moreover, according to Burke et al,¹ neurosurgical units operating in the black level, should cancel all outpatient clinics. We agree that this measure plays a crucial role in reducing people’s movements; however, we think that reorganization of outpatient clinics should follow the same criteria used for elective surgery: all cases that may be delayed over a period of a few months without clearly affecting healing chances or prognosis should be delayed. Therefore, few outpatient visits that were considered undelayable were still performed at our Hospital, with due protection of both patients and healthcare. Furthermore, all patients whose admissions, surgery or outpatient visits have been cancelled were telephonically screened to evaluate for any need for urgent evaluation or treatment. They were also informed on how to contact us in case of clinical changes.
3. The goal of not overloading already stressed ICUs was also a factor in the decision whether to operate or not. For this, we considered the total and available capacity of the ICUs and the possible availability of COVID-19-free ICUs. All of these are risk-benefit decisions. Even if we are used to risk-benefit assessments in our daily neurosurgical activity, we think that during the COVID-19 emergency period these decisions are quite different. We usually consider risks and benefits related to the single patient, in these times we should think at a community level, too. With our decisions we may affect healing chances and prognosis of other patients who may need an ICU bed that may not be available anymore if our patient occupies it.
4. Furthermore, it is critical to preserve the few remaining operational neurosurgical units from COVID-19 spread. By doing this we will ensure the best treatment to all the neurosurgical emergencies with the lowest risk of nosocomial transmission. At our institution, all patients are screened for COVID-19 before admission, regardless of symptoms. Patients whose conditions allow waiting for the results will be admitted only once the test is found to be negative. Those who need an urgent hospitalization or surgical treatment will still be screened at admission but will be treated as COVID-19-positive patients until the contrary is possibly demonstrated. All demonstrated COVID-19-positive cases will undergo a surgical operation if needed but will be admitted afterwards to dedicated COVID-19 wards and ICUs.
5. Finally, as long as just 1 positive visitor may theoretically cause a viral outbreak,⁸ a strict policy for visitors is also needed

to control nosocomial infections. Currently, visitors are not allowed access to our department; information regarding patients' conditions is given daily by telephone to the families.

At this point of the pandemic is not possible to define acceptable universal guidelines. Our report reflects policies and indications applied at our institution. Indications proposed by Burke et al are useful, but we think additional considerations should be made for high COVID-19 surge level situations.

Formal patient consent is not required for this paper. No data from which individual can be identified are present.

Disclosures

The authors have no personal, financial, or institutional interest in any of the drugs, materials, or devices described in this article.

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REFERENCES

1. Burke JF, Chan AK, Mummaneni V, et al. Letter: the coronavirus disease 2019 global pandemic: a neurosurgical treatment algorithm. *Neurosurgery*. published online: April 3, 2020 (doi:10.1093/neuros/nyaa116).
2. COVID-19 Map - Johns Hopkins Coronavirus Resource Center. <https://coronavirus.jhu.edu/map.html>. Accessed April 11, 2020.
3. Buoro S, Di Marco F, Rizzi M, et al. Papa giovanni XXIII bergamo hospital at the time of the COVID-19 outbreak: letter from the warfront. *Int J Lab Hematol*. published online: 2020 (doi:10.1111/ijlh.13207).
4. Zoia C, Bongetta D, Veiceschi P, et al. Neurosurgery during the COVID-19 pandemic: update from lombardy, northern italy. *Acta Neurochir (Wien)*. published online: 2020 (doi:10.1007/s00701-020-04305-w).
5. Sorbello M, El-Boghdady K, Di Giacinto I, et al. The italian coronavirus disease 2019 outbreak: recommendations from clinical practice. *Anaesthesia*. published online: 2020 (doi:10.1111/anae.15049).
6. Yu J, Ouyang W, Chua MLK, Xie C. SARS-CoV-2 transmission in patients with cancer at a tertiary care hospital in wuhan, china. *JAMA Oncol*. published online: 2020 (doi:10.1001/jamaoncol.2020.0980).
7. Kimball A, Hatfield KM, Arons M, et al. Asymptomatic and presymptomatic SARS-CoV-2 infections in residents of a long-term care skilled nursing facility - King County, washington, march 2020 *MMWR Morb Mortal Wkly Rep*. 2020;69(13):377-381.
8. Klompas M. Coronavirus disease 2019 (COVID-19): protecting hospitals from the invisible. *Ann Intern Med*. published online: 2020 (doi:10.7326/m20-0751).

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