

Coronavirus pandemic: how is neurosurgical-oncology practice affected?

Mustafa Aziz Hatiboglu & Georges Sinclair

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LETTER TO THE EDITOR

Coronavirus pandemic: how is neurosurgical-oncology practice affected?

Wash your hands well

Do not melt into the crowd

Say 'Hi' from far

Eat and drink well

Rest if you are sick

Do not go out

Cover your face while outside

Nothing will affect you during the pandemic, God willing

Sabuncuzade Şerafeddin Efendi, 1468

Sir,
552 years ago, Dr. Sabuncuzade Şerafeddin Efendi, an eminent pioneer in Turkish medicine, suggested the above mentioned rules to effectively counteract the spread of pandemics. The outbreak of the novel severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) emanated from China, rapidly disseminating across the globe. So far, the pandemic has affected over 213 countries.¹ Unfortunately, unpreparedness in the face of such aggressive propagation has had devastating consequences. To fight the pandemic, governments as well as medical authorities have had to take strict, quick and effective steps to prevent further spread of the SARS-CoV-2 at regional and national levels. As a consequence, most medical disciplines, including neurosurgical-oncology, have been deeply affected.² Indeed, these actions have had a negative impact on the therapeutic management of patients with central nervous system malignancies, such as elective surgical interventions, radiation therapy, systemic treatment, use of steroids and routine clinical and radiological follow-ups. Other nosocomial measures include the cancelation or reduction of outpatient capacity, and the conversion of inpatient neuroservices to specific SARS-CoV-2 services.

Turkey's experience in retrospect

In our case, the decision on suspending neurosurgical procedures for brain and spine tumours has been complex, taken on a 'case-by-case' basis. In general, benign tumours with 'indolent' evolution (i.e. meningiomas, acoustic neuromas and pituitary tumours) were actively postponed; only malignant neoplasms such as glioblastoma and metastatic brain lesions as well as acute life-threatening tumours presenting with shift or herniation were assessed for surgery. This was mainly due to (i) the inherent risk of nosocomial infection by coronaviruses³ (ii) a further risk for contamination in the event of postoperative complications requiring longer hospital stay and the use of steroids further enhancing immunosuppression, and (iii) an alleged higher incidence and severity of SARS-CoV-2 infection in cancer patients⁴.

Following the first reports of SARS-CoV-2 from East Asia, a series of preventive measures were undertaken by the Turkish Ministry of Health as early as mid-January. In view of the spread dynamics of SARS-CoV-2 around the world throughout February, our university hospital's scientific board conceived a number of escalation plans targeting a systematic decrease in outpatient activity, postponing non-urgent surgical procedures and discharging ward patients to create SARS-CoV-2 beds; these contingency plans became effective on 10 March. Indeed, our hospital (along with other state and private hospitals) was swiftly converted into a pandemic-treatment facility (20 March) after confirmation of Turkey's first case of SARS-CoV-2 on 11 March.

SARS-CoV-2: impact on clinics and neurosurgical procedures

Beznialem Vakif University Hospital has 600 inpatient beds, 21 operating rooms, 73 intensive care unit (ICU) beds (27 Postoperative/Anesthesiology and Reanimation, 15 pediatric, 9 cardiovascular, and 22 coronary). Our neurosurgery department has 20 inpatient beds, not seldom utilising 'satellite' beds from other services. We use two operating rooms per day, performing brain or spine tumour surgery at least 4 days per week (15–20 cases per month); to sustain the rate of procedures, 7–8 postoperative and Anesthesiology and Reanimation ICU beds are continuously required. Complying with the hospital scientific board, new admission of neurosurgical patients was nearly halted from 17 March; inpatients were moved to another floor devoted for all surgical departments. Finally, by 21 March three floors including our service were spared and prepared for SARS-CoV-2 infected patients and all ICUs stopped receiving new patients. We only had three neurosurgical patients remained in the surgical ward: one underwent surgery for metastatic brain tumour, one who had systemic medical problems after undergoing surgery for acoustic neuroma and one with subarachnoid haemorrhage. The above mentioned restrictions provided an additional 200 SARS-CoV-2 beds on the floors and an extra 60 ICU beds. Of note, a total of 160 SARS-CoV-2 infected patients on the floors and 40 in the ICUs were hosted during this pandemic. Overall, non-urgent neurosurgical procedures were halted from 17 March up to the end of April; an exception was made for five patients with subacute/acute life-threatening conditions (one posterior fossa tumour, one thoracic metastatic lesion, one metastatic brain haemorrhage from renal cell carcinoma and two recurrent glioblastomas). Under the same period of time, the number of outpatient clinic dropped to 20 from 120 patients daily. Figure 1 summarized how this pandemic affected Neurosurgical-oncology practice and our measures taken for our patients with brain and spine tumours.

Gladly, with a sustained decrease in the number of SARS-CoV-2 cases at hospital and the country in general, the situation is normalising. Around 15 patients, with stable neurological condition, suffering from benign tumours are still waiting for surgery. As a result, some patients have opted to undergo surgery in other hospitals. Fortunately, elective brain and spine tumour

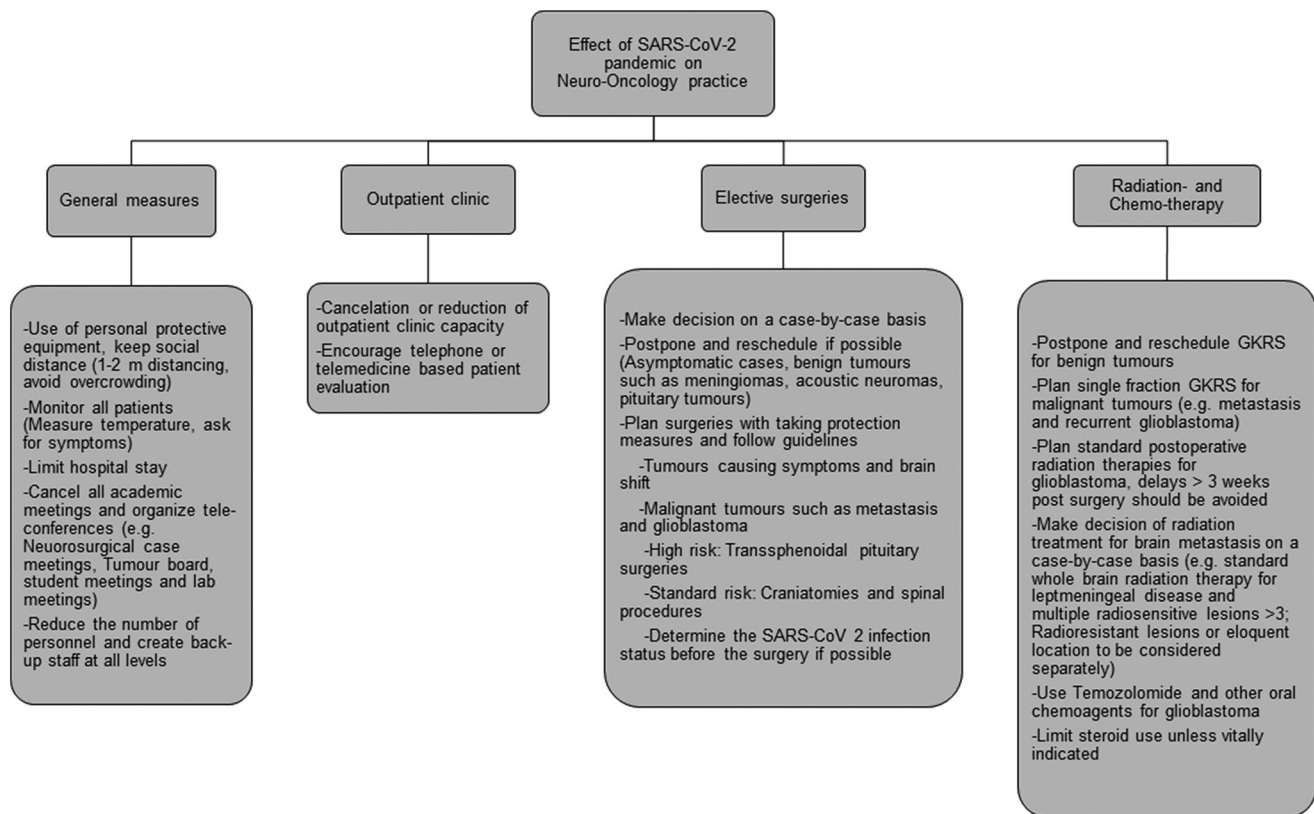


Figure 1. Schema showing the effect of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) on neurosurgical-oncology practice.

procedures restarted on 11 May; however, procedures are limited to one per day as 14 ICU beds are still allocated for SARS-CoV-2 patients. Also, with an increase in outpatient clinics, we now serve around 50 patients daily.

SARS-CoV-2: consequences on brain radiosurgery

The Gamma Knife radiosurgery (GKRS) unit is a fundamental part of the department. We normally treat 25–30 cases per month; 50% are benign tumours (i.e. meningioma, acoustic neuroma and pituitary tumour), 30% malignant tumours (i.e. metastasis and recurrent glioma) and 20% non-tumoural lesions (i.e. arteriovenous malformation and trigeminal neuralgia). Because of heavy load of SARS-CoV-2 infected patients in our hospital, we forced to reduce the number of patients undergoing GKRS treatments to four by 13 March and halted treating patients by 25 March. The main concerns with GKRS are: (1) The application and removal of the stereotactic frame obliges near contact between the attending medical staff and the patient; (2) Prior to treatment, the patient is transported to the magnetic resonance suite; this area is heavily trafficked by patients and staff alike, rendering dissemination possible despite disinfection guidelines; (3) Technicians, nurses, and doctors need to interact with patients at different stages of the treatment; (4) Not seldom do patients require hospital observation following post-GKRS events, such as seizures, bleeding or frame-associated cluster headaches and nausea; (5) GKRS may induce symptomatic brain oedema which requires the use of corticosteroids (days to weeks), ultimately enhancing immune-suppression; (6) Repeated visits to the Emergency Department and imaging department in cases with severe adverse radiation effects. We restarted treating patients

with GKRS on 4 May yet limiting the number of procedures to one patient per day to decrease the risk of contamination.

Further aspects

Two important entities, brain metastasis and glioblastoma, are not uncommonly demanding in neurosurgical-oncology practice. Therefore, we would like to give a couple of specific comments on the subject. The management algorithm of brain metastasis is sometimes difficult and complicated. More than one procedure including surgical resection, and/or stereotactic radiosurgery, and/or whole brain radiation in addition to systemic treatment targeting the primary may be required.⁵ As mentioned before, due to the current pandemic, we try to restrain these patients from staying at hospital. For this, if no urgent surgery is required and whole brain radiation (e.g. for leptomeningeal dissemination or multiple metastases) is not indicated, patients are referred for single fraction Linac-based radiosurgery as it was the case with two patients with brain metastases. Although the unit has special protocols for metastatic lesions requiring next-to emergency GKRS,^{6,7} we could not treat urgent cases. For glioblastoma patients, unfortunately, the options are more limited. In accordance with our protocols, we routinely treat recurrent high-grade glioma aggressively. This includes microsurgery, and/or hypofractionated GKRS, as our unpublished data has proven it to be effective. However, latter requires three days and two nights hospital stay for patients with head-frame. Therefore, in this period of limitations, we referred two patients with recurrent glioblastoma for linac-based radiotherapy. Also, to our clinical experience the use of concurrent Bevacizumab with GKRS for recurrent glioblastoma is effective and safe. However, during the pandemic we

halted using Bevacizumab in this group patients and plan to reevaluate using this chemotherapy by the end of May.

This outbreak of SARS-CoV-2 has given us the opportunity to test our thresholds of health crisis management; robust guidelines are warranted to help health care professionals maintain a proper patient-focused work-flow in times of global crisis by novel infectious agents. Also, the care of the patients with SARS-CoV-2 and those without virus infection should be balanced; as such, enough resources should be spared and allocated for routine patients, which may be demanding.

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Disclosure of interest

No potential conflict of interest was reported by the author(s).

References

1. Di Saverio S, Pata F, Gallo G, *et al.* Coronavirus pandemic and Colorectal surgery: practical advice based on the Italian experience. *Colorectal Dis* 2020.
2. Murthy S, Gomersall CD, Fowler RA. Care for critically ill patients with COVID-19. *JAMA* 2020;323:1499.
3. Yin Y, Wunderink RG. MERS, SARS and other coronaviruses as causes of pneumonia. *Respirology* 2018;23:130–7.
4. Liang W, Guan W, Chen R, *et al.* Cancer patients in SARS-CoV-2 infection: a nationwide analysis in China. *Lancet Oncol* 2020;21:335–7.
5. Hatiboglu MA, Kocyigit A, Guler EM, *et al.* Gamma knife radiosurgery compared to whole brain radiation therapy enhances immunity via immunoregulatory molecules in patients with metastatic brain tumours. *Br J Neurosurg* 2019;18:1–7.
6. Sinclair G, Benmakhlouf H, Brigui M, Maeurer M, Dodoo E. The concept of rapid rescue radiosurgery in the acute management of critically located brain metastases: a retrospective short-term outcome analysis. *Surg Neurol Int* 2018;9:218.
7. Sinclair G, Benmakhlouf H, Martin H, Maeurer M, Dodoo E. Adaptive hypofractionated gamma knife radiosurgery in the acute management of brainstem metastases. *Surg Neurol Int* 2019;10:14.

Mustafa Aziz Hatiboglu

Department of Neurosurgery, Bezmialem Vakif University

Medical School, Vatan Street, Fatih, Istanbul, Turkey

Department of Molecular Biology, Beykoz Institute of Life

Sciences and Biotechnology, Bezmialem Vakif University,

Yaliköy St, Beykoz, Istanbul, Turkey

✉ mhatiboglu@bezmialem.edu.tr,

✉ azizhatiboglu@yahoo.com

Georges Sinclair

Department of Neurosurgery, Bezmialem Vakif University

Medical School, Vatan Street, Fatih, Istanbul, Turkey

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