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Letter to the Editor: Risk of Hospital-Acquired Coronavirus Disease 2019 (COVID-19) Infection During Admission for Semiurgent Neurosurgical Procedures



LETTER:

The coronavirus disease 2019 (COVID-19) pandemic has posed unprecedented challenges to modern health care systems. Clinical attention and resources have shifted toward the implementation of transmission-containment measures and the management of patients diagnosed with this disease. This has inevitably caused reorganization of the service provided in all medical specialties, including neurosurgery. Cancellation of elective neurosurgical cases and significant reductions in the number of neurosurgical operations have occurred worldwide.¹⁻⁷ Moreover, it has been demonstrated that patients with a perioperative diagnosis of COVID-19 have greater risk of mortality when undergoing surgery (23.8%).⁸ The next challenge for neurosurgical practices will be to find a balance between the benefits of surgery and the risk of nosocomial infection, to allow neurosurgical services to resume in a safe and sustainable manner. Information on the risks of nosocomial acquisition of COVID-19 will be essential to achieve this balance and to counsel surgical patients appropriately.

In this letter, we report the risk of hospital-acquired COVID-19 infection in a group of 55 consecutive patients undergoing semiurgent neurosurgical procedures at the National Hospital for Neurology and Neurosurgery (London, United Kingdom) during the lockdown period (March 23, 2020, to May 4, 2020). This study was conducted as part of a governance service evaluation in accordance with the departmental and hospital guidelines of the National Hospital for Neurology and Neurosurgery (registration number 30-202021-SE) and did not require formal ethical approval. All patients provided verbal consent to participate in the telephone survey and to be included in the study.

Patients were retrospectively identified through screening the theater lists database. Data collection was performed through the hospital electronic records and a short patient telephone survey. Patients who were discharged from hospital for at least 14 days (at the time of the study) were contacted for a short telephone survey including the following 2 questions: 1) Have you had a diagnosis of COVID-19 in the 14 days following your discharge from hospital? 2) Have you experienced any of the following symptoms in the 14 days following your discharge from hospital: cough, shortness of breath/difficulty breathing, fever, chills, muscle pain, headache, sore throat, or loss of taste/smell?⁹ A diagnosis of COVID-19 was confirmed when a respiratory swab sample tested positive for severe acute respiratory syndrome coronavirus 2 by quantitative reverse transcription polymerase chain reaction, clinically suspected when the patient presented 2 of the 8 previously listed symptoms, and was excluded in patients with a negative COVID-19 swab test and patients who did not present the typical symptoms. Table 1 provides information on the reorganization of the neurosurgical services in our center.

Fifty-eight neurosurgical procedures were planned in the period between the March 23, 2020, and May 4, 2020. Two of these

procedures were postponed and did not take place during the study period due to positive preoperative COVID-19 test results of the patients. Fifty-five consecutive patients undergoing 56 neurosurgical procedures were included in the study. The patients' baseline clinical characteristics are described in Table 2. Compared with the neurosurgical case load observed in the same dates of 2019, the number of operations performed in 2020 was significantly lower (373 and 56 respectively, Wilcoxon–Mann–Whitney U test $P < 0.001$). All neurosurgical subspecialties were affected (Figure 1).

Most patients (68%) were admitted on the day of surgery or the day before. Preoperative COVID-19 tests were performed in 24 of the 58 planned procedures; 4 of these tests were positive and the procedures were postponed. Two of the procedures were postponed to later than the study period and are therefore not included in these results. Three of the 4 patients with positive preoperative COVID-19 diagnosis were tested on the day of admission and the fourth was tested before hospital admission (in the community). Among the operations performed, 30 (54%) were oncological, 10 (18%) spinal, 10 (18%) functional, 4 (7%) cerebrospinal fluid-related, and 2 (4%) were explorations of intrathecal drug delivery systems. The mean operations duration (from start to stop of anesthesia) was 195 (± 110) minutes. The average in-hospital length of stay was 4 (± 5) days. Two patients died, 1 of severe intraoperative bleed during a brain tumor excision and 1 of postoperative cardiac arrest. Both patients were considered at high surgical risk and had an American Society of Anesthesiologists (ASA) grade of IV. No other complication occurred. Our mean follow-up was 42 days (± 14 , range 18–60).

Fifty patients took part in the telephone survey. None of the patients had diagnosis of COVID-19 in the 14 days following hospital discharge. Three patients had clinically suspected COVID-19, describing 2 or more of the 8 typical symptoms; however, they tested negative for severe acute respiratory syndrome coronavirus 2 on

Table 1. Reorganization of Neurosurgical Services During the COVID-19 Pandemic at the National Hospital for Neurology and Neurosurgery

Start Date	Preventive Measure
March 13, 2020	Restricted visitors' access.
March 15, 2020	Active case-finding and isolation of symptomatic patients with transfer of confirmed positive patients in designated COVID-19 wards.
March 21, 2020	Cancellation of all elective operations.
March 23, 2020	National United Kingdom lockdown.
April 1, 2020	Testing of symptomatic staff members.
April 1, 2020	Use of appropriate personal protective equipment (PPE) as defined by Public Health England for staff in all clinical areas.
April 13, 2020	In-hospital preoperative routine COVID-19 swab testing for all newly admitted patients.
COVID-19, coronavirus disease 2019.	

Table 2. Baseline Clinical Characteristics of 55 Patients Undergoing Neurosurgical Procedures During the Study Period (March 23, 2020, to May 4, 2020)

Characteristics	
Age	
Mean age, years (SD)	56 (15)
Age ≥ 65 years, patients, <i>n</i> (%)	17 (31)
Age ≥ 70 years, patients, <i>n</i> (%)	9 (16)
Age ≥ 75 years, patients, <i>n</i> (%)	3 (5)
Sex, <i>n</i> (%)	
Male	28 (51)
Female	27 (49)
Medical history, <i>n</i> (%)	
Cardiac	17 (31)
Previous cancer	15 (27)
Previous neurologic disease	14 (25)
Respiratory	7 (13)
Diabetes	6 (11)
Endocrine	5 (9)
Hypercholesterolemia	5 (9)
CVA/TIA	2 (4)
Obesity	2 (4)
Anemia	2 (4)
Renal	1 (2)
Smokers, <i>n</i> (%)	
Current smokers	9 (16)
Ex-smokers	6 (11)
Alcohol consumption, <i>n</i> (%)	23 (42)
ASA score, <i>n</i> (%)	
I	1 (2)
II	33 (60)
III	15 (27)
IV	2 (4)
V	0 (0)
Not recorded	4 (7)

SD, standard deviation; CVA, cerebrovascular accident; TIA, transient ischemic attack; ASA, American Society of Anesthesiologists.

quantitative reverse transcription polymerase chain reaction of respiratory tract swabs. Nine patients reported only 1 of the typical symptoms; this was most commonly headache (5 patients) or muscle pains (2 patients). Thirty-eight of the patients had none of the typical COVID-19 symptoms in the 14 days following hospital discharge.

In conclusion, none of the 55 consecutive patients contracted COVID-19 as a result of their hospital admission. Moreover,

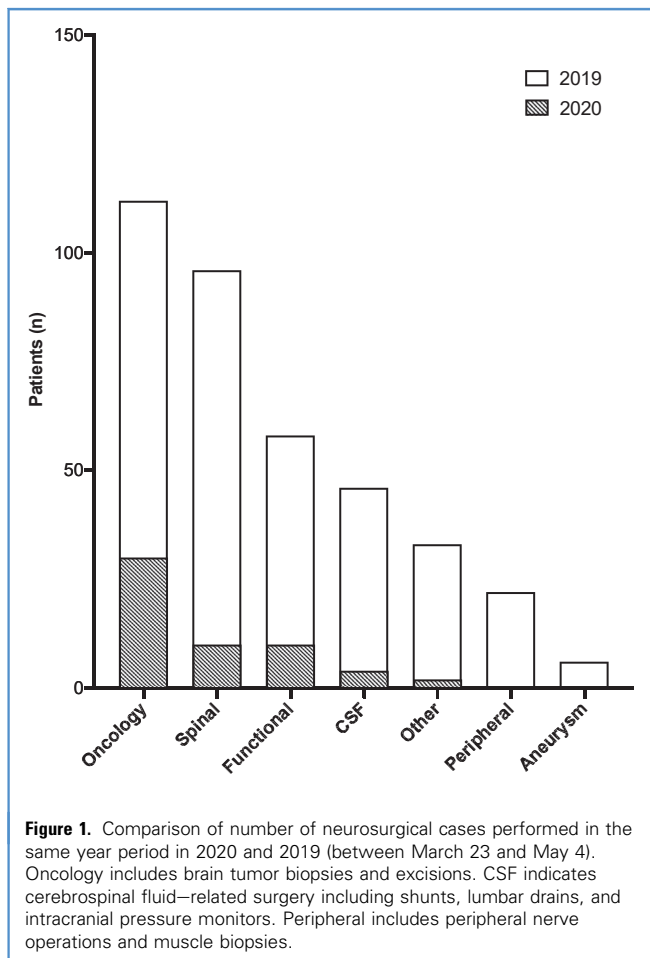


Figure 1. Comparison of number of neurosurgical cases performed in the same year period in 2020 and 2019 (between March 23 and May 4). Oncology includes brain tumor biopsies and excisions. CSF indicates cerebrospinal fluid-related surgery including shunts, lumbar drains, and intracranial pressure monitors. Peripheral includes peripheral nerve operations and muscle biopsies.

preoperative testing identified 4 patients positive to COVID-19 and led to postponement of their operations. This is particularly important if we consider the previous report of worse surgical outcomes in patients with COVID-19 disease.^{8,10} In this climate of uncertainty, it is fundamental to maintain continuous active surveillance, but a cautious restart of neurosurgical services is possible. These results suggest that, by reducing the neurosurgical case load, following infection prevention and control measures, and maintaining a high level of vigilance, the risk of nosocomial contraction of COVID-19 can be well controlled.

Linda D'Antona^{1,2}, Joanna Palasz¹, Huzaifah Haq¹, Inga Usher¹, Sophia De-Saram³, Carmel Curtis³, Lewis Thorne¹, Laurence Dale Watkins¹, Ahmed Kassem Toma^{1,2}

From the ¹Victor Horsley Department of Neurosurgery, The National Hospital for Neurology and Neurosurgery, Queen Square; ²UCL Queen Square Institute of Neurology; and ³Department of Clinical Microbiology, University College London Hospitals NHS Foundation Trust, London, United Kingdom

To whom correspondence should be addressed: Linda D'Antona, M.D., M.B.B.S.

[E-mail: linda.d'antona@nhs.net]

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