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**Letter to the Editor: "COVID-19 Pandemic in Developing Countries: Effects on Urgent Neurosurgical Consultation and Patients' Care: Experience from North Africa"**



**LETTER:**

**T**he coronavirus disease 2019 (COVID-19) pandemic has presented a great challenge to most health care systems across the world, especially in developing countries, which already have a fragile system with many deficiencies (e.g., few medical centers, lack of medical teams and equipment).

Since the beginning of the COVID-19 pandemic, serious actions have been taken to help control the disease and deal with potentially affected patients. Lockdown of public areas, restricted mobility, social distancing, and shutdowns of schools and factories were adopted, in addition to reorganizing hospitals and medical staff, with near-total cessation of elective surgeries and strengthening medical teams at the frontline beating the COVID-19 pandemic.

These measures were efficient and helped avoid a high number of affected patients and deaths related to the COVID-19 pandemic. Indeed, approximatively 3 months after the outbreak in Morocco, we are counting only 7833 cases with 205 deaths.<sup>1</sup>

However, the impact of the COVID-19 pandemic and related measures on neurosurgical activity is expected to be substantial. Indeed, neurosurgery is a challenging endeavor requiring complex resources and a specialized workforce; it is often limited to tertiary care hospitals in major cities, especially in developing countries.<sup>2</sup> In addition, neurosurgical practice includes a high rate of emergencies and time-critical treatment and may be further compromised by other factors unlikely to be present in normal times, such as the reluctance to seek emergency department care for fear of becoming infected with COVID-19 while in the hospital. Thereby we are seeing a significant increase in delayed neurosurgical admissions during the lockdown.

We have retrospectively analyzed the length of time from symptom onset to neurosurgical consultation in patients who received

neurosurgical care in Al-Ghassany Hospital in Fez between March 1 and May 30, 2020, and the same period in 2019. We noticed a remarkable increase in neurosurgical admissions delay in 2020, in comparison with the same period in 2019, as a result of the COVID-19 pandemic and related measures.

It is evident that delayed neurosurgical consultations, often with neurologically altered patients, have a negative effect on the management of these patients, who are often nonoptimally treated (e.g., surgery at night, with no preoperative laboratory assessment) and subject to an extended stay in the intensive care unit and high morbidity and mortality.

Delayed neurosurgical care related to the COVID-19 pandemic comes with a high personal, social, and economic cost. The global anti-COVID-19 strategy should take into account particular medical care, such as neurosurgery. Thereby, special attention will be needed to safeguard the continuity of prevention, diagnosis, treatment, and care for non-COVID-19 patients and several measures should be considered, such as distant medical advice services or telemedicine to assist patients and sufficient emergency services with medical and paramedical teams with rapid referral of neurosurgical patients.

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