



The COVID-19 Pandemic Sacrificed the Excellence of Stroke Care Worldwide

Bruno Kuszniir Vitturi¹

Accepted: 22 April 2021 / Published online: 3 May 2021

© The Author(s), under exclusive licence to Springer Nature Switzerland AG 2021

Abstract

The COVID-19 pandemic has had not only a tremendous impact on public health but also on the care of many pre-COVID-19 diseases, such as stroke. The pandemic has tested the robustness of comprehensive stroke care programs. Especially during the months of confinement, an alarming increase in the incidence of several risk factors for cerebrovascular diseases was noticed, without, however, the proportional strengthening of strategies for the prevention and/or control of comorbidities. Patients who had already suffered a stroke were neglected from the secondary prevention routine and neurological rehabilitation therapies. Regarding the acute treatment, the fear of contagion in the hospital environment promoted a significant delay in the time from the onset of symptoms to admission to an emergency department as well as in the door to imaging and door to needle times. Moreover, the pandemic also exposed the enormous inequalities in the approach to cerebrovascular diseases worldwide. Actually, many consequences of COVID-19 in stroke care will persist for months even after pandemic control. Strategies to combat the pandemic must be reconciled with the fight against stroke in a way that does not exclude any patient from access to the best possible care.

Keywords Stroke · Stroke care · COVID-19 · Pandemic · Stroke treatment

Dear Editor,

The world is experiencing an extraordinary, life-altering challenge due to the outbreak of the novel coronavirus disease (COVID-19) in 2019. The COVID-19 pandemic has had not only a tremendous impact on public health but also on the care of many pre-COVID-19 diseases. The effects of COVID-19 on the treatment of other diseases are often invisible, underestimated, and are in permanent danger of losing prominence due to the avalanche of daily published data about the advance/control of the pandemic. Actually, in spite of the undeniable and spectacular advances in the management and understanding of the COVID-19 infection, it is imperative to recognize the immaturity and fragility of public health management with regard to maintaining the excellence of prevention, diagnosis, and treatment of the multitude of other diseases. Almost untimely, there was a readjustment in the provision of

services in favor of the assistance to COVID-19's cases. Outpatient consultations and elective surgeries were suspended and the emergency service became overloaded, compromising the assistance of the general population. Several wards and intensive care beds had to be assigned to the treatment of COVID-19 patients. Health resources have turned almost exclusively to the direct assistance of patients infected with new virus, albeit numerous diseases continued to require the same pre-COVID-19 care. In this scenario, neurology did not pass unscathed from the pandemic and inevitably echoed the global health crisis. It is now clear that the health of several patients with neurological diseases has been affected in some way this year [1, 2]. The pandemic's reflexes on stroke care have become the corollary of COVID-19's impact on neurology, as the chaos in global public health contaminated the integral approach to cerebrovascular diseases [1, 2].

The pandemic has tested the robustness of comprehensive stroke care programs. Especially during the months of confinement, it was observed an alarming increase in the incidence of several risk factors for cerebrovascular diseases, such as obesity, physical inactivity, drug abuse, and mental disorders. Mental health in particular, which was particularly knocked out by the pandemic, is an important factor associated with the prognosis of several neurological diseases [3]. Patients with

This article is part of the Topical Collection on *Covid-19*

✉ Bruno Kuszniir Vitturi
z_azul@hotmail.com

¹ Department of Neurology, Faculty of Medical Sciences of Santa Casa de São Paulo, Dr. Cesário Motta Júnior Street 112, São Paulo 01221-020, Brazil

chronic diseases that increase the risk of stroke also faced enormous difficulties to maintain preventive medical monitoring and keep their illness under control. In most countries, there was no concomitant and proportional strengthening of strategies of prevention and/or control of comorbidities. Therefore, it might be taken into account that the ignorance of these comorbidities may reverberate in the near future with the increase of the incidence of stroke and associated disabilities. Likewise, patients who had already suffered a stroke and, therefore, have a proven high risk of stroke recurrence, were neglected from the routine of secondary prevention. It is well known that the medical follow-up in the months that follow an acute stroke is of paramount importance in preventing new events, reducing mortality, and promoting the quality of life of patients [4]. Regarding the context of tertiary prevention, rehabilitation centers have drastically reduced the capacity of care as well. Tele-rehabilitation, whether was proved to be a valid alternative, did not, however, show to be accessible to the vast majority of stroke patients in the world and remained restricted to only a few patients [3]. Other important preventive therapeutic interventions for stroke have also been completely suspended, such as carotid endarterectomy.

In many countries, the pandemic compromised the mainstay of the acute stroke management: time. There was a significant and worrying delay in the time from the onset of symptoms to admission to an emergency department and in the door to imaging and door to needle times [1, 5, 6]. The reason perhaps stems from patients' fear of infection if they are referred to the hospital during periods of social detachment and lockdown. The World Stroke Organization issued an important campaign highlighting the importance of not wasting time in the search for an emergency medical service in case of suspected stroke. Notwithstanding this initiative, it is undeniable that the delays in the acute stroke management caused by COVID-19 highlight the long road that still needs to be taken towards a satisfactory education of the population for stroke. As if that were not enough, the “new normal” imposed a reallocation of neurology and stroke beds, including intensive care and stroke unit facilities for patients with COVID-19, subjecting stroke patients to sub-ideal hospitalization conditions [7]. The ability to offer endovascular treatments has been reduced or stopped in many units worldwide as well.

During the current COVID-19 pandemic, there has been a decline in stroke admissions in centers all over the world [1]. It is illusory to imagine that the incidence of stroke has decreased significantly during this period [5]. Patients with mild stroke and transient ischemic attack were the ones who decided not to go to the emergency service, probably due to the fear of being infected in the hospital environment. If patients with minor strokes have been stayed away from stroke inpatient services, then this is a worrying conclusion. Without treatment, about 10% of these patients will have a recurrent stroke within a week [7]. In some countries, the reported number of

acute stroke admissions has fallen by as much as 80%, suggesting that many patients with moderate and even severe stroke, that can be highly benefited by acute stroke therapies, have not sought specialized medical care as well [6]. As patients with TIA or minor strokes have been stayed away from proper initial neurological care, they also may have an additional increased risk of stroke recurrence due to the absence of an adequate secondary prevention.

The pandemic also exposes the enormous inequalities in the approach to cerebrovascular diseases worldwide. If on the one hand it is undeniable that all countries are dealing with challenges related to the pandemic, on the other the potential impact of COVID-19 on developing countries is particularly concerning. In developed countries, the effects of COVID-19 on the prevention and treatment of stroke could be partially mitigated as a result of past fruitful investments in the consolidation of comprehensive programs of stroke care. In developing countries, the pandemic exacerbated previous deficiencies, and the goal of a standard of excellence in stroke care became even more utopian [8]. In spite of remarkable efforts in standardizing and publishing stroke treatment guidelines adapted to this sanitary crisis in the less economically developed countries, the gap between the ideal recommendations and the clinical practice of “what is really possible to do” was accentuated [9, 10]. If in some countries the readjustments of the health system did not have a significant and visible impact, in developing countries it was observed regrettable descriptions of increased mortality from stroke due to the sanitary burden. The pandemic attested the increased vulnerability of the population of the least developed countries to stroke and how the huge inequalities that permeate our world can increase the fatality of a neurological disease.

There is no doubt that situations of global health emergencies demand an adaptation of health care. Nevertheless, it is definitely unacceptable that a disease that annually accounts for 10.3 million new cases and leaves 25.7 million survivors, 6.5 million deaths, 113 million disability-adjusted life years is neglected [11]. Many consequences of COVID-19 on stroke care will persist for months even after the pandemic control. Strategies to combat the pandemic must be reconciled with the fight against stroke in a way that no patient is excluded from the right to have the best possible treatment.

Code Availability Not applicable

Author's Contributions The author read and approved the final manuscript.

Data Availability Not applicable.

Declarations

Ethics Approval Not applicable.

Consent to Participate Not applicable.

Consent for Publication Not applicable.

Conflict of Interest The authors declare that they have no competing interests.

References

1. Sacco S, Ricci S, Ornello R, Eusebi P, Petraglia L, Toni D. **Reduced admissions for cerebrovascular events during COVID-19 outbreak in Italy.** *Stroke.* 2020;51:3746–50.
2. Tsiygoulis G, Katsanos AH, Ornello R, Sacco S. **Ischemic stroke epidemiology during the COVID-19 pandemic: navigating uncharted waters with changing tides.** *Stroke.* 2020;51(7):1924–6. <https://doi.org/10.1161/STROKEAHA.120.030791>.
3. Vitturi BK, Kim AIH, Mitre LP, Pellegrinelli A, Valerio BCO. Social, professional and neuropsychiatric outcomes in patients with myasthenia gravis. *Neurol Sci.* 2020;42(1):167–73. <https://doi.org/10.1007/s10072-020-04528-w>.
4. Hsiao J, Sayles E, Antzoulatos E, Stanton RJ, Sucharew H, Broderick JP, et al. Effect of COVID-19 on emergent stroke care: a regional experience. *Stroke.* 2020;51(9):e2111–4.
5. Wang CC, Chao JK, Wang ML, Yang YP, Chien CS, Lai WY, et al. Care for patients with stroke during the COVID-19 pandemic: physical therapy and rehabilitation suggestions for preventing secondary stroke. *J Stroke Cerebrovasc Dis.* 2020;29(11):105182.
6. Vitturi BK, Gagliardi RJ. The influence of statin withdrawal and adherence on stroke outcomes. *Neurol Sci.* 2020. <https://doi.org/10.1007/s10072-020-04790-y>.
7. Markus HS, Brainin M. COVID-19 and stroke—a global world stroke organization perspective. *Int J Stroke.* 2020;15(4):361–4.
8. Dafer RM, Osteraas ND, Biller J. Acute stroke care in the coronavirus disease 2019 pandemic. *J Stroke Cerebrovasc Dis.* 2020;29(7):104881.
9. Coull AJ, Lovett JK, Rothwell PM. Population based study of early risk of stroke after transient ischaemic attack or minor stroke: Implications for public education and organisation of services. *Br Med J.* 2004;328(7435):326.
10. Vitturi BK, Gagliardi RJ. Effects of statin therapy on outcomes of ischemic stroke: a real-world experience in Brazil. *Arq Neuropsiquiatr.* 2020;78(8):461–7. <https://doi.org/10.1590/0004-282x20200027>.
11. Mont'Alverne FJA, Lima FO, Nogueira RG, Freitas CCM, Neto OMP, Silva GS, et al. Management of acute stroke and urgent neurointerventional procedures during COVID-19 pandemic: recommendations on the Scientific Department on Cerebrovascular Diseases of the Brazilian Academy of Neurology, Brazilian Society of Cerebrovascular Diseases and. *Arq Neuropsiquiatr.* 2020;78(7):440–9.

Publisher's Note Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.