Malaysia Stroke Council guide on acute stroke care service during COVID-19 Pandemic

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ABSTRACT

On the 18th of March 2020, the Malaysia government declared a movement control order (MCO) due to the unprecedented COVID-19 pandemic. Although the majority of patients presented with respiratory-related symptoms, COVID-19 patients may present atypically with neurological manifestations and may even have an increased risk of stroke. The Malaysia Stroke Council is concerned regarding the level of care given to stroke patients during this pandemic. During the recent National Stroke Workflow Steering Committee meeting, a guide was made based on the currently available evidences to assist Malaysian physicians providing acute stroke care in the hospital setting in order to provide the best stroke care while maintaining their own safety. The guide comprises of pre-hospital stroke awareness, hyperacute stroke care, stroke care unit and intensive care unit admission, post-stroke rehabilitation and secondary prevention practice. We urge continuous initiative to provide the best stroke care possible and ensure adequate safety for both patients and the stroke care team.

KEY WORDS:
COVID-19, pandemic, stroke

INTRODUCTION

In December 2019, a novel viral infection emerged in Wuhan, China, which rapidly attracted worldwide attention.[1] Later in January 2020, the World Health Organization (WHO) recognised this new viral infection as Novel Coronavirus 2019 which was subsequently named as Coronavirus Disease (COVID-19). The genomic analysis of the virus has shown that COVID-19 is similar to the SARS-like coronavirus.[2] Till the 16th of May 2020, a total of 6872 patients had contracted COVID-19 in Malaysia with 113 fatalities. The COVID-19 infection, which is commonly associated with respiratory symptoms, has been reported to also be associated with neurological manifestations that may precede respiratory complaints and in more severe COVID19 cases, 5.9% suffered an ischemic stroke.[2]

COVID-19 had significant impact on stroke services worldwide where reports have shown reduction in endovascular treatment, delays in thrombolysis services, limitation in stroke acute care beds and reduction in the number of stroke admission.[3] This correlate with a preliminary survey done by Malaysia Stroke Council involving 47 public and private hospitals (pending publication) which shows reduction in stroke admission and challenges in managing stroke services in view of the current pandemic. However, a national clinical practice guideline will need a rigorous process of extensive literature review, and it is not feasible at the moment. Therefore, the National Stroke Workflow Steering Committee which consists of neurologists from government (Ministry of Health, Malaysia and university hospitals) and private hospitals has produced the following temporary guidance with the aim to provide a guide for physicians and healthcare workers in the hospital setting who are managing acute stroke until further evidence is available. This guidance is essential to provide the best stroke care and ensure adequate protection to prevent and reduce the risk of acquiring COVID-19 infection.

Pre-hospital: Stroke Admissions and Public Awareness

The movement control order (MCO) and social distancing campaign has possibly contributed to reduction in the number of stroke admissions worldwide and in the majority of the hospitals in Malaysia based on our preliminary survey.[3] One of the possible factor leading to this trend of reduction is the public aversion to visit hospitals, especially owing to the spike of COVID-19 admissions. This public aversion towards hospitals may lead to delay in arrival and seeking treatment which subsequently results in more severe stroke with higher morbidity and mortality.[4] Therefore it is essential to provide stroke and transient ischemic attack awareness program for the community to ensure their understanding of stroke as one of the medical emergencies during this pandemic.

Hyperacute Stroke Care

It is essential to emphasise about the hyperacute stroke treatment, which includes intravenous thrombolysis (IVT), endovascular thrombectomy (EVT) and stroke care unit are level 1 evidence-based treatment. The number of patients needed to treat (NNT) for IVT is 10, EVT is five, and stroke care unit is 20.[5] Therefore, our recommendation is to maintain these stroke care services so that these treatment modalities provide benefit for stroke patients.

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Code Stroke

The code stroke or stroke activation should be activated as fast as possible when a stroke case is detected. However, the stroke team involved should also prioritise their own safety by attending to the patient with adequate personal protective equipment (PPE) according to local guidelines.[6] Triaging may vary according to different hospital settings and resources. Appropriate PPE as per COVID risk is warranted prior to patient consult. A patient who has encephalopathy, aphasia, severe dysarthria or the risk of not being confirmed as a covid patient, should be treated as potentially a COVID-19 patient. The number of personnel involved during the stroke activation should be minimized to prevent the waste of PPE and unnecessary exposure to COVID-19. The pre COVID-19 code stroke may involve more than two personnel (neurologist, neurology registrar, medical officer and a stroke nurse), this can be reduced to two persons e.g. a neurologist/neurology registrar with additional one team member. Innovative methods to provide telemedicine service *via* Whatsapp, Facetime, Microsoft team or other real-time platform including phone consult can be encouraged. The patients who are stable during the stroke activation should wear a surgical facemask at all times. Any unnecessary procedure e.g. nasogastric tube should be avoided if not required.

Acute Stroke Imaging

Stroke imaging is an integral part of the stroke activation and should remain as an emergency, and made immediately available. The imaging protocol is important to ensure smooth transfer of patients and the availability of adequate PPE for all staff. Non-contrasted computed tomography (CT) of brain and CT angiography with or without CT perfusion should be done within the same setting to prevent multiple transfers. CT-thorax as a standard diagnostic tool to diagnose COVID-19 is not recommended during the code stroke.[4] Magnetic resonance imaging (MRI) brain should be carefully selected and should be avoided to confirm stroke in a clinically evident patient as MRI imaging preclude longer imaging acquisition and may delay decision making.

Intravenous thrombolytic agent

IVT with Alteplase is the standard of care and eligible patients should be treated if possible and to be given as a 10% bolus and follow by 90% infusion over one hour. We do not recommend using single bolus intravenous Tenecteplase (TNK) in order to minimise exposure to patient.[4] Nonetheless, in limited resource settings, intravenous TNK may be considered as a cheaper alternative to Alteplase as recent evidence showed benefit in a patients with large vessel occlusion.[7]

Endovascular stroke thrombectomy

EVT should be done in a negative pressure room if available. Personnel performing EVT should wear full PPE given the longer duration and complexity of the procedure. Local sedation or conscious sedation should be preferred, and intubation should be avoided in patients who are able to cooperate during the procedure. If intubation is required, it should be done in full PPE by an experienced anesthesiologist.

Stroke Care Unit and Intensive Care Unit Admission

In majority of public hospitals, the redeployment of personnel due to COVID-19 may lead to a lack of staff to provide the stroke care service in both the stroke unit and intensive care unit (ICU).The consensus from other regional stroke societies around the world is that whenever possible the stroke care unit should be maintained to provide evidence-based treatment.[4,8] In order to prevent any in-patient transmission of COVID-19, we recommend the positioning of beds of patients to be ≥ 2-meter apart. All patients should be provided with surgical face masks, and to advocate social distancing. Any admission of stroke patients to the ICU should be reviewed with attending consultants to provide fair treatment of both the COVID-19 and non-COVID-19 patients. A discussion among multidisciplinary consultants is recommended to facilitate a smooth admission process, and to avoid unnecessary stay in the ICU.

Post-Stroke Rehabilitation and Secondary Prevention

After a stroke, the patients are unable to access the post-stroke rehabilitation programme and this is one of the main challenges encountered during the COVID-19 pandemic. Thus we urge the immediate planning of a community rehabilitation program and innovative methods to be initiated via telerehabilitation program. Poor access to the rehabilitation and secondary prevention consultation may hinder the recovery process of the patients.

Secondary stroke prevention which includes early detection of carotid artery stenosis, atrial fibrillation via carotid doppler, CT cerebral angiogram, echocardiogram and holter should be continued to prevent the recurrence of a more severe stroke.

LIMITATION

The committee acknowledges the limitation of the current guide as further research is needed to guide healthcare workers outside hospital setting in managing acute stroke patients. This guide needs to be further updated and improved once more evidence is available in the future. Further studies need to be carried out for managing acute condition during this unprecedented pandemic. The Malaysia Stroke Council is collaborating with international investigators to determine the effect of COVID-19 towards incidence and outcome of stroke and will be looking forward to the results.[9]

CONCLUSION

The COVID-19 pandemic challenges the Malaysian healthcare provider. However, the best standard of care should be provided whenever possible despite these challenges. Multidisciplinary team work is essential. The National Stroke Workflow Steering Committee acknowledges the need for further updates on this subject. We believe there is a need for such documentation to be maintained and updated for all of us to be better prepared for similar outbreaks in future. We hope our consensus on this matter will be able to assist physicians and healthcare workers in providing the best stroke care. The document strongly supports the continuation of stroke care, which possibly involve more non-COVID-19 patients.

REFERENCES

1. Li Q, Guan X, Wu P, Wang X, Zhou L, Tong Y, et al. Early transmission dynamics in Wuhan, China, of Novel Coronavirus–infected pneumonia. N Engl J Med 2020; 382: 1199-207.
2. Huang C, Wang Y, Li X, Ren L, Zhao J, Hu Y, et al. Clinical features of patients infected with 2019 novel coronavirus in Wuhan, China. Lancet 2020; 395: 497-506.
3. Markus HS, Brainin M. EXPRESS: COVID-19 and stroke - a global World Stroke Organization perspective. Int J Stroke 2020; 174749302092347.
4. Smith EE, Mountain A, Hill MD, Wein TH, Blaquiere D, Casaubon LK, et al.Canadian stroke best practice guidance during the COVID-19 pandemic. Canadian Journal of Neurological Sciences/Journal Canadien des Sciences/Neurologiques. Cambridge University Press 2020; 1-5.
5. Emberson J, Lees K. R., Lyden P, Blackwell L, Albers G, Bluhmki E, et al. Effect of treatment delay, age, and stroke severity on the effects of intravenous thrombolysis with alteplase for acute ischaemic stroke: a meta-analysis of individual patient data from randomised trials. Lancet 2014; 384: 1929-35.
6. Malaysia Ministry of Health, Guidelines COVID-19 Management, updated 24 March 2020. [cited May 2020] Accessed from: https://http://www.moh.gov.my/moh/resources/Penerbitan/Garis Panduan/COVID19/.
7. Campbell BCV, Mitchell PJ, Kleinig TJ, Dewey HM, Churilov L, Yassi N, et al. Tenecteplase versus Alteplase before Thrombectomy for Ischemic Stroke. N Engl J Med 2018; 378: 1573-82.
8. Temporary Emergency Guidance to US Stroke Centers During the COVID-19 Pandemic. Stroke 2020. [cited May 2020] Accessed from: https://www.ahajournals.org/doi/10.1161/STROKEAHA.120.030023.
9. Abootalebi S, Aertker BM, Andalibi MS, Negar A, Ozlem A, Reza AM, et al. A call to action: SARS-CoV-2 and cerebrovascular disorders (CASCADE). J Stroke Cerebrovasc Dis 2020: 104938.