Stroke Emergency during COVID-19 Pandemic in Nepal

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The effectiveness of stroke care depends the rapid management within shortest possible time. The rapid and effective stroke care remains equally important even during the COVID pandemic as well. Hence the effectiveness of stroke care must be balanced between the rapid diagnosis and timely intervention. Stroke is a second major cause of death and morbidity in Nepal as measured by disability-adjusted life years (DALY) [1]. Only a handful of neurologists (fewer than 30 in a nation with population of 28 millions), mostly centered in capital city Kathmandu and difficult and dangerous mountainous roads are major hurdles in providing proper stroke care [2] while stroke is a time-sensitive and high-stakes clinical scenario [3]. It has been only recently that the tPA usage has been started as a thrombolytic agent in acute stroke [2]. Usage of tPA in acute stroke has itself been quite challenging concerning the high price of the thrombolytic agent, self-pay (no health insurance or co-pay cover), late presentation of the patient to the hospital. Nepal is a low-income country with a per capita income of only US dollars 1034 (according to the world bank. 2013). The pandemic spread and the lockdown have added fuel to the fire. The poor health system, confusing national and international guideline for COVID management, insufficient protective equipment and the rising COVID pandemic wave are big challenges for us in managing stroke emergency.

The rapid spread of COVID-19, the travel restrictions, stigma and fear attached with this pandemic has not only brought down the number of the patients visiting the hospitals, but it has also barred the genuine patients from getting emergency care. The fear of contracting the COVID disease by visiting hospitals or other health care centers have led to the reduction in patients showing up for care even in emergencies like acute stroke. This decline in acute stroke presentation at emergency department (ER) has been witnessed also in developed nations with good health care facilities like the United States. Hypothetically, stroke and other vascular accidents are supposed to rise during COVID times since there is a lack of physical activities due to lockdown, due to vasculitis (type 3 hypersensitivity) [4] or deranged coagulopathy [5] that can be triggered by the COVID viral infection and host immune response.

Here we present the cases of acute and hyperacute strokes presenting to the emergency department (ER) and how they were managed in time amidst COVID chaos.

From patients visiting hospital during lockdown and partial curfew period (March till July 2020), 85 patients were diagnosed with ischemic stroke. From the cases admitted in hospital, about 10 cases of hyperacute stroke presented within the window period of thrombolysis. As the patients arrived, they were evaluated by an attending doctor at the emergency (equipped with protective gear). The history and physical examination were conducted together. National Institute of Health Stroke Scale (NIHSS) was used to measure the stroke severity (ranged from 1 - 7 among these patients).Patient underwent imaging immediately and blood investigation for prothrombin time (PT) international normalized ratio (INR) and platelet (PLT) was sent simultaneously as soon as they presented at ER. The investigation was limited, i.e. either only CT or CT added with only diffusion weighted imaging (DWI) was implemented for imaging, while only few lab investigations like PT, INR, PLT were sent. This method was used to keep the cost down and minimize the time spent before tPA administration [2]. The door to CT time was on average, 25 minutes and the door to needle time was within impressive 30 minutes. After adminis-

tration of tPA, the patient was transferred to the high care ward and kept for 24 - 48 hours of observation and other further management done if necessary or were sent home.

Patients were discharged from the hospital for further rehabilitative program (3 patients) or to home (7 patients).

Our experience shows that despite being COVID infections risk, the stroke patients should not hesitate seeking medical care. The 'time is brain' should be the point of care to the patient and their care takers as well as the health care providers. Despite of insufficient medical supplies, increasing COVID spread, we health care workers should strive for the optimal care for the patient.

Financial Disclosure

No disclosures relevant to the manuscript.

Authors' Contribution

Avinash Chandra - Study concept, analysis, and design.

Ayush Chandra - Acquisition and interpretation of data.

Basant Pant - Critical revision of the manuscript for important intellectual content.

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Volume 12 Issue 10 October 2020