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COVID-19 and Diagnosing Brain Death: An Ambiguity

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We read with great interest an article by Yakar et al. (1), where authors have described brain death determination and organ donation process in a 61 year old lady pre diagnosed with cerebrovascular disease during coronavirus disease (COVID-19) pandemic. COVID-19 has created a medical crisis worldwide. Its symptomology has been varied, ranging from common respiratory symptoms to uncommon neurological features which include headache, light headedness, hallucination, seizure, and meningitis. Mao et al. (2) in their study observed that 5.7% of patients with severe coronavirus infection developed cerebrovascular disease later in the course of illness (2). They also observed that 36.7% of patients with severe infection who were old and with co-morbidities had neurological manifestation. In another study by Li et al. (3), the incidence of stroke in COVID-19 patients was about 5% with a median age of 71.6 years.

The authors in this case report have mentioned doing real time polymerase chain reaction (RT-PCR) test to exclude COVID-19 only after 12th postoperative hour when the patient was accepted as potential brain dead. Before that she was transferred to computed tomography scan room and also underwent external ventricular drainage surgery. During this pandemic, the diagnostic test for COVID-19 should have been done before these procedures, since though the patient's test report was negative later on, she could have infected many healthcare personals had she been infected. Looking at the higher percentage of stroke in these patients, COVID-19 can't be ruled out simply. Again the authors did not describe the steps of apnea test performed in this patient. Whether they performed modified apnea test or usual apnea test? One should have RT-laboratory report before performing apnea test during this pandemic. The authors did not mention the time at which they got the result of first RT-PCR test. If the patient is COVID-19 negative, the usual apnea test can be performed to confirm brain death. Concern arises if the patient is COVID-19 positive. Since disconnecting ventilator from patient during apnea test make the health care provider (HCP) a very high risk candidate for acquiring viral infection, it would be prudent not to perform the apnea test in these patients. In that case ancillary tests like Transcranial Doppler Test (TCD) or electroencephalography (EEG), where risk of virus transmission is very less compared to apnea test can be considered. On TCD, an oscillatory pattern is suggestive of cerebral circulatory arrest and on EEG, absence of electrical activity is considered as a sign of brain death (4, 5). In institutes where TCD or EEG are not available, one can perform modified apnea test by using high frequency particulate air (HEPA) filter attached to patient's endotracheal tube before disconnecting the ventilator.

Literature is still lacking to provide any information whether patients with COVID-19 infection can be taken up for organ donation if prerequisites are met for performing brain death test? Probably not!

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