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Letter to the Editor

Extracorporeal cardiopulmonary resuscitation should not be performed on confirmed or suspected COVID-19 patients



The Extracorporeal Life Support Organization (ELSO) has issued interim guidelines for extracorporeal membrane oxygenation (ECMO) of COVID-19 patients.¹ However, the guidelines make no mention of whether extracorporeal cardiopulmonary resuscitation (E-CPR) should be implemented for individuals with suspected infection and awaiting diagnostic PCR test results. Herein, we share our recent experience of resuscitating a suspected COVID-19 patient after out-of-hospital cardiac arrest particularly, our consideration of E-CPR, and the various challenges created by this decision.

A 24-year-old male presented with a history of close contact with confirmed COVID-19 patients. Several days before admission, he started to develop fever and respiratory symptoms. Nasal swab for PCR test were taken in his home. The same day, he complained of respiratory distress and called an ambulance. He went into cardiac arrest and was transported to our hospital. During transferring, paramedics notified us about his suspected infection status. In response, we prepared an isolation zone, personal protective equipment (PPE) and E-CPR equipment. We performed resuscitation, anticipating the potential need for ECMO. Fortunately, his heartbeat resumed; thus, he was admitted to ICU without E-CPR. Cardiac arrest lasted for 54 min. Chest X-ray and CT scan revealed no infiltration shadow. PCR in nasal swabs and bronchoalveolar lavage tested negative for SARS-CoV-2. Four days after hospitalization, he regained consciousness and was extubated. The final diagnosis was acute pulmonary thromboembolism. He was currently undergoing rehabilitation.

The patient, who had suspected COVID-19 status, confronted the resuscitation team with several obstacles in implementing CPR and ECMO, including the wearing PPE and the specialized environment of the negative-pressure isolation room. E-CPR for patient suspected infection should be performed in a limited number of staff. Staff was unaccustomed to perform CPR or intravenous cannulation while wearing the PPE. The N95 masks made communication within the isolation room difficult, and the physical isolation prevented communication with the outside of the room. Even once all critical-care procedures were completed, fears of infection among staff remained, in addition to immeasurable physical and emotional fatigue. Our experience illustrates that even routine medical procedures,

which would be uncomplicated under normal circumstances, can become inordinately complicated by COVID-19 suspicion.

Our experience suggests us to not perform E-CPR for patients suspected SARS-CoV-2 infection. E-CPR might be indicated for some of them who are non-COVID-19 with other cardiac arrest causes, but the drawbacks of doing so in the current pandemic outweigh the benefits. This puts resuscitation teams under enormous physical and emotional strain, all while trying to guarantee their safety. Conserving PPE, ECMO equipment, and other limited resources during the pandemic is another important consideration. Providing healthcare at the same quality as that under normal conditions will continue to be challenging amidst the increasing COVID-19 patients. We believe that E-CPR is unrealistic in suspected cases, given the need to maintain the emergency care for other, uninfected patients simultaneously. Our highest priority during COVID-19 should be the continued provision of healthcare services. To facilitate clinical decision-making in emergency departments, we believe authorities need to discourage E-CPR for both confirmed and suspected COVID-19 patients.

Authors' contributions

Dr. Kenji Kandori: major decision-maker during the treatment, writing the paper

Dr. Hiromichi Narumiya: major decision-maker during the treatment

Dr. Ryoji Iizuka: major decision-maker during the treatment
All authors have read and approved the final manuscript.

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Informed consent

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Competing interest

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