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OUTCOME OF EXTUBATION ATTEMPTS AND DAYS WITH ENDOTRACHEAL VENTILATION IN COVID-19

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PURPOSE: As of May 2020, Queens County, New York reported the most confirmed cases of the novel coronavirus disease (COVID-19) in the United States. This study was conducted during the peak of COVID-19 in Queens. Many COVID-19 patients with acute respiratory distress syndrome (ARDS) required mechanical ventilation via endotracheal intubation for extended periods of time. This study examines the length of ventilation via endotracheal tube (ETT) and the outcome of extubation attempts (EXA).

METHODS: At a single acute tertiary care hospital located in Queens, New York, all patients with COVID-19 admitted between March 15 to April 15, 2020, who were intubated with ETT were included. All data were collected from the electronic health record until April 25, 2020. Hospital course, extubation events, reintubation events, and number of tracheostomies were gathered. Number of ventilated days via ETT and mortality were studied as outcomes. Patients were divided into those who expired with ETT, were successfully extubated at first EXA, failed EXA, and underwent tracheostomy. Cardiac arrest and anoxic brain injury were studied as adverse events.

RESULTS: 205 patients were included. Their mortality was 63.4% with 130 in-hospital deaths, of which 110 patients (54.7%) expired while on ventilator via ETT. 13 out of 205 patients (5.4%) were successfully extubated on first attempt, of which 2 were unplanned self-extubation events. The average ventilated days via ETT for this group was 9.36 days (SD 4.7 days). 7 out of 205 patients (3.4%) failed EXA. The average time to EXA in this group was 9.29 days (SD 5.8 days). There were 0 reported cardiac arrests or anoxic brain injuries following EXA. The average time from EXA to reintubation was 1.14 days (SD 1.9 days). 2 of the 7 patients who failed EXA expired on ventilator support via ETT. 36 out of 205 patients underwent tracheostomy. The mortality rate for this group was 19.4% (SD). The average ventilated days via ETT was 16.2 days (SD 5.3 days).

CONCLUSIONS: COVID-19 patients that were intubated for severe ARDS had a notable mortality rate, and those who survived required a prolonged course of ventilation. Both groups of successful extubation and failed extubation had similar time on endotracheal ventilation prior to the attempt, making it an unlikely factor determining successful extubation. Patients who were able to undergo tracheostomy had lower mortality, but it is unclear if there was a direct correlation, as patients were generally less ill to be able to undergo such a procedure.

CLINICAL IMPLICATIONS: Patients with severe ARDS in COVID-19 required a prolonged course of mechanical ventilation and exhibited a high likelihood of failure to extubate. In order to avoid the complications of prolonged ventilation via ETT, early tracheostomy should be considered. In the future, a larger cohort of patients should be examined to provide statistical reinforcement of our findings.

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