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【 LETTERS TO THE EDITOR 】

Duration of Intensive Respiratory Support and Risk of Long-term Respiratory Failure in Patients with COVID-19

Key words: severe acute respiratory syndrome coronavirus 2, acute respiratory distress syndrome, high-flow nasal cannula, mechanical ventilation

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To the Editor As Kobe et al. reported (1), treatment strategies for acute coronavirus disease 2019 (COVID-19) are rapidly evolving. However, the long-term consequences of COVID-19 remain largely unknown, although the development of pulmonary fibrosis secondary to acute respiratory distress syndrome (ARDS) is inevitable in many severe cases of COVID-19 (2). We herein report the associations observed between the duration of intensive respiratory support and the risk of long-lasting respiratory failure in patients with COVID-19.

At National Hospital Organization Fukuoka National Hospital, from January 2020 to December 2021, 18 patients with diagnoses of COVID-19 required high-flow nasal cannula (HFNC) and/or mechanical ventilation. All subjects were naïve to vaccination against severe acute respiratory syndrome coronavirus 2 and survived by virtue of standard medications, including high-dose systemic steroids. The durations of the above-mentioned respiratory management were within 28 days in 13 cases (early recovered group) and more than 28 days in 5 cases (refractory group). Within 6 months after the onset of COVID-19, oxygen therapy was withdrawn in 12 cases (92.3%) among the early recovery group and in none (0%) among the refractory group. Among the subjects who discontinued oxygen supply successfully, a strong correlation (coefficient of determination of 0.97) was observed between the durations of intensive respiratory support and supplemental oxygen therapy (Figure).

Besides those with COVID-19, only a few survivors of ARDS received supplemental oxygen for more than six months (3). With regard to COVID-19, however, more than half of severe cases developed diffuse fibrotic changes in the lungs as a serious sequela (4), leading to an increase in the prescription of long-term oxygen therapy (5). Although this survey was a single-center analysis with a small sample size, cases of COVID-19 with the use of HFNC and/or mechanical ventilation for more than four weeks were determined to be at high risk for developing long-term respiratory failure.

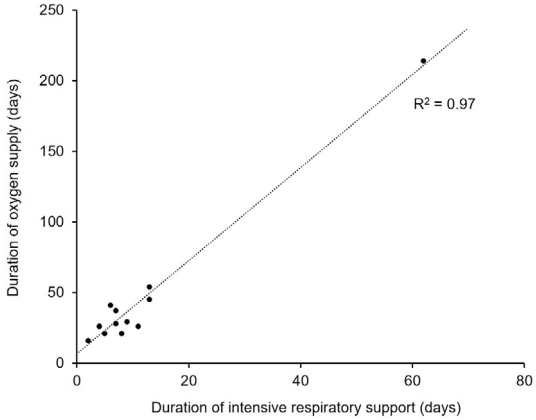

Figure. **Correlations between the duration of intensive respiratory support and the period of oxygen supply. R^2: coefficient of determination**

Since chronic respiratory failure after COVID-19 recovery is an emerging threat to global health, advances in post-COVID-19 management as well as preventive measures and initial treatment against COVID-19 are highly warranted.

The study was approved by the National Hospital Organization Fukuoka National Hospital Institutional Review Board for Clinical Research on May 10, 2022 (#F4-5). Informed consent was waived due to the retrospective nature of the study.

The authors state that they have no Conflict of Interest (COI).

Hiroaki Ogata[1], Yujiro Jingushi[1,2], Katsuyuki Katahira[1], Akiko Ishimatsu[1], Yasuaki Kotetsu[1], Kachi Sha[1], Aimi Enokizu-Ogawa[1], Kazuhito Taguchi[1], Atsushi Moriwaki[1] and Makoto Yoshida[1]

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[1]Department of Respiratory Medicine, National Hospital Organization Fukuoka National Hospital, Japan and [2]Department of Respiratory Medicine, Hamanomachi Hospital, Japan
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Correspondence to Dr. Hiroaki Ogata, md105020@gmail.com

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