ICU
MANAGEMENT & PRACTICE

Conservative Oxygen Therapy During Mechanical Ventilation

Patients in the ICU who undergo mechanical ventilation often receive a high fraction of inspired oxygen (FIO_2) and have a high arterial oxygen tension. It is believed that conservative oxygen therapy could reduce oxygen exposure and diminish lung and systemic oxidative injury, thus increasing the number of ventilator-free days.

A study was conducted with 1000 patients who were expected to receive mechanical ventilation beyond the day after recruitment in the ICU. Study patients were randomly assigned to receive conservative or usual oxygen therapy. The lower limit for oxygen saturation, measured by pulse oximetry (SpO_2) was 90% in the two groups. The upper limit of SpO_2 was 97% in the conservative-oxygen group, and the FIO_2 was decreased to 0.21 if the SpO_2 was above the lower limit. No specific measures limiting the FIO_2 or SpO_2 were specified for the usual-oxygen group. The primary outcome of the study was the number of ventilator-free days from randomisation to day 28.

Findings from the study showed that the number of ventilator-free days did not differ significantly between the conservative-oxygen group and the usual-oxygen group (21.3 days versus 22.1 days, respectively). The absolute difference between the two was only -0.3 days. Patients in the conservative-oxygen group spent more time in the ICU with an FIO_2 of 0.21 and less time with an SpO_2 exceeding 96% compared to the usual-oxygen group. Mortality at 180 days was 35.7% in the conservative-oxygen group compared to 34.5% in the usual-oxygen group.

The results show that in patients undergoing mechanical ventilation in the ICU, the use of conservative-oxygen therapy did not have a significant impact on the number of ventilator-free days compared to usual-oxygen therapy.

Source: NEJM
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