ICU
MANAGEMENT & PRACTICE

VENT-AVOID Trial: ECCO2R to Avoid IMV During Exacerbation of COPD

In patients experiencing exacerbation of chronic obstructive pulmonary disease (ECOPD), invasive mechanical ventilation (IMV) is linked with increased morbidity and mortality. Extracorporeal CO_2 removal ($ECCO_2R$) has been used to prevent intubation in those at risk of NIV failure and to aid early extubation from IMV. However, current evidence supporting the efficacy of $ECCO_2R$ devices in reducing or avoiding IMV in COPD exacerbations is primarily limited to case series and small observational cohorts.

The VENT-AVOID trial aimed to determine whether $ECCO_2R$ could increase the number of ventilator-free days within the initial five days post-randomisation in ECOPD patients at risk of NIV failure or struggling with IMV weaning. VENT-AVOID is the largest randomised clinical trial of an extracorporeal device conducted in the US and the largest involving COPD exacerbation patients.

The trial, conducted across 41 U.S. institutions from 2018 to 2022, involved subjects randomised into two groups: one receiving standard care along with venovenous $ECCO_2R$ (26 in the NIV stratum and 32 in the IMV stratum) and the other receiving standard care alone (22 in the NIV stratum and 33 in the IMV stratum).

The trial was halted prematurely due to slow enrollment, with 113 subjects enrolled out of the planned 180. There was no notable disparity between the groups in the median number of ventilator-free days within the first five days (VFD-5). Both arms exhibited a median VFD-5 of 5.00 days in the NIV stratum. In the IMV stratum, the standard care arm showed a median VFD-5 of 0.25 days, compared to 2.00 days in the $ECCO_2R$ arm. Notably, in the NIV stratum, all-cause in-hospital mortality was significantly higher in the ECCO $_2$R arm (22% vs 0%), while no significant difference was observed in the IMV stratum (17% vs. 15%).

In patients experiencing exacerbation of COPD, the utilisation of $ECCO_2R$ did not lead to an improvement in ventilator-free days by Day 5 compared to standard care.

Source: AJRCCM
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