Abstract:

Background: Recirculation during veno-venous extracorporeal membrane oxygenation (VV-ECMO) is a known drawback that limits sufficient oxygenation. This study aimed to compare the short-term oxygenation and long-term mortality based on cannula configuration in patients with acute respiratory distress syndrome (ARDS) who receive VV-ECMO, especially in the absence of newly developed dual-lumen, single cannula.

Methods: Data of patients with severe ARDS who received VV-ECMO from 2012 to 2015 at six hospitals were retrospectively analyzed. Primary outcomes were the partial pressure of oxygen (PaO2) at 1, 4, and 12 h after ECMO initiation and 180-day mortality.

Results: Patients (n = 335) were divided into two groups based on the return cannula site: femoral vein (n = 178) or internal jugular vein (n = 157). The propensity score matching analysis generated 90 pairs, and baseline characteristics at admission, including PaO2, were similar between the groups. PaO2 at 1, 4 and 12 h after ECMO initiation were not different according to cannula configuration. Moreover, the increment in oxygenation from the baseline values was not different between the femoral and jugular group. PaCO2 level at 1, 4 and 12 h were significantly lower in the jugular group. The two groups did not differ in terms of mortality at 180 days after ECMO, however more cannula-related complications occurred in the jugular group.

Conclusion: Regardless of the cannula configuration, patients with ARDS managed with VV-ECMO showed comparable clinical outcomes in terms of short-term oxygenation and long-term mortality. Nevertheless, further well-designed randomized control trials are warranted.

Reference: