

Use of extracorporeal CO₂ removal in a patient with acute exacerbation of end-stage COPD

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Introduction

Chronic obstructive pulmonary disease (COPD) is one of the leading causes of death worldwide. Advances in technology to deliver extracorporeal carbon dioxide removal (ECCO₂R) have simplified this technique, making it available in a growing number of centers.

Case report

A 49-year-old man was admitted to the ED of University Hospital San Luigi Gonzaga, Turin, with severe hypercapnic respiratory failure. He was a heavy smoker, metalworker, with a history of anxious depressive syndrome. He was diagnosed with severe COPD in 2016 with diffuse emphysema. He was in home high flow nasal cannula (HFNC) and classified as GOLD 4.

On ED admission and in ICU, NIV trials failed due to worsening acidosis, dyspnea and agitation. We evaluated ECCO₂R as an option to avoid intubation but the condition of severe agitation would have increased the complexity and risks of cannulation.

On day 1 the patient was then intubated, tracheostomized and ECCO₂R started in the attempt to allow a fast weaning from invasive ventilation. From day 3, complete weaning was rapidly achieved up to CPAP with tube compensation. On day 6, after a successful gas-off trial, the ECCO₂R was interrupted without any substantial change in blood gas and respiratory mechanics.

The patient was transferred to Pneumology unit on day 23 with HFNC and discharged home on day 38.

We consider this case of relevance since it describes the management of an acute exacerbation of an end-stage COPD with the adoption of ECCO₂R therapy. End-stage COPD was considered an exclusion criterion to ECCO₂R. We decided to adopt this technique in the attempt to facilitate ventilatory support and restore baseline clinical status during what we considered an acute exacerbation. The technological advances and relative ease of implementation of ECCO₂R, induce to reconsider what is commonly labeled as an end-stage status of the COPD trajectory.

