Author’s response to reviews

Title: Extra Corporeal Membrane Oxygenation (ECMO) in Three HIV-positive Patients with Acute Respiratory Distress Syndrome

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Author’s response to reviews: see over
Dear Editor,

Thank You for the possibility to revise our paper entitled “Extra Corporeal Membrane Oxygenation (ECMO) in Three HIV-positive Patients with Acute Respiratory Distress Syndrome”.

Please find hereafter detailed our answers to the reviewer’s comments:

REVIEWER Dr Menichetti.

1. More details on PJP diagnosis and how were rule out others opportunistic infections. In patient 1 and patient 3, diagnosis of PJP was performed by immunofluorescence (IF) on broncho alveolar lavage (BAL). Other viral, bacterial and fungal infections were excluded with appropriate microscopic, cultural or molecular methods on BAL. Galactomannan test was performed on BAL and blood samples too.

REVIEWER Dr Thornton.

1. Demographic information on each of the three patients. Thanks for this comment; we add more demographic details such as age, BMI, PBW and in the new version, we say:

Patient #1 “The first patient (female, 21 yrs, BMI 15.6 Kg/m\(^2\), PBW 52.4 kg) had a congenital HIV infection”

Patient #2 “The second patient was a 38 years old female (BMI 20.3 Kg/m\(^2\), PBW 52 Kg) that had a HIV-HCV infection….”
Patient #3 “The third patient was a 24 years old male (BMI 23.5 Kg/m$^2$, PBW 61 Kg) that was admitted to a peripheral hospital with fever…..”

2. More details about mechanical ventilation before and during ECMO. Thank you for this comment. We better defined the terms protective and ultra-protective mechanical ventilation. In the new version, now we say: “This setting allowed an ultra-protective MV that consisted in low tidal volume of 5 ml/kg and a respiratory rate of 5 breaths/min. This strategy offered the advantage to keep the lung rest minimizing the risk of ventilator-induced lung injury”.

In addition, following the reviewer’s suggestion, we made a new Table in which all ventilator settings before and during ECMO are shown.

3. Criteria to wean patients from ECMO. Predefined criteria to wean patients from ECMO are still lacking. In our center, satisfactory blood gases, obtained with sweep gas 0.5 L/min and blood flow of 1.5 L/min (gas flow oxygen concentration 0.21) for 6-8 hours, is the main criteria. Moreover, the improvement of respiratory system compliance (Crs >30) is an additional criteria that we consider. In particular, we did not report the value of compliance of the first patient because she was breathing spontaneously when ECMO was stopped. According to the reviewer suggestions, we made a new table (Table 3) with ventilator and respiratory variables obtained before stopping ECMO. In the new version of the manuscript we say:

Patient #1 “After 20 days, ECMO was stopped when arterial blood gases were satisfactory for at least eight hours with a blood flow of 1.5 L/min and a sweep gas of 0.5 L/min (Table 3).”
Patient #2 “the patient was disconnected from the by-pass when arterial blood gases were satisfactory for at least eight hours with a blood flow of 1.5 L/min and a sweep gas of 0.5 L/min, and the compliance of the respiratory system exceeded 30 ml/cmH$_2$O (actual value of 33 ml/cmH$_2$O) (Table 3)”

Patient #3 “Full ECMO support remained unchanged for three weeks and it was discontinued after 24 days when arterial blood gases were satisfactory for at least eight hours with a blood flow of 1.5 L/min and a sweep gas of 0.5 L/min (Table 3). However, compliance of the respiratory system continued to be severely impaired as a consequence of severe lung damage and development of lung fibrosis associated with late phase of ARDS”

4. **More coherent presentation of the details and timeline of each case.** Thanks for this comment; we apologise for the misleading information about ECMO removal in patient #2. In fact, ECMO was discontinued on day 13th. In the new version of the manuscript, we say: “Accordingly, the patient was shifted to assisted breathing and seven days later the patient was disconnected from the by-pass when the compliance…..”

5. **Minor grammatical mistakes.** We have carefully revised the manuscript. Thank you.

Best regards

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