Presentation Abstracts

CONTENTS

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Retrospective evaluation of hemodynamic parameters and cerebral near-infrared spectroscopy levels in patients treated with veno-arterial extracorporeal membrane oxygenation

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Introduction: Extracorporeal membrane oxygenation (ECMO) provides advanced bridge therapy for refractory cardiopulmonary failure and perioperative support, including refractory cardiopulmonary resuscitation,[1] being associated with improved survival and neurological outcomes in these patients.[2] Neurological complications such as seizures, intracranial hemorrhage, ischemic stroke, cerebral microembolism, among others, are frequently encountered and are important causes of sequelae and functional impairment in these patients.[3] These complications are more common in V-A ECMO compared to V-V ECMO.[4] Neurological complications are also more frequent in extracorporeal cardiopulmonary resuscitation (ECPR) compared to ECMO indication in the context of cardiac or respiratory failure.[5] Considering these complications and the need for constant evaluation of the level of sedation or the emergence of Harlequin syndrome, adequate neurological monitoring in this context is mandatory.[6-11] **Methods:** This was a single-center, retrospective cohort study of patients who received support with V-A ECMO and neurological monitoring with cerebral NIRS treated at the Critical Care Department of *Hospital Israelita Albert Einstein* (HIAE) in São Paulo, SP, during the period from January 2015 until July 2023. Data was extracted from the electronic medical record, EPIMED database of HIAE and ECMO-related database of the Critical Care Department of HIAE. This study was approved by the Research Ethics Committee of *Hospital Israelita Albert Einstein*. Informed consent was waived due to retrospective design. **Results:** Twenty-three out of 55 V-A ECMO patients (aged 47 [18-70] years) were included. The mean SAPS-3 score on admission was 46.35±12.77. Fifteen individuals (65.2%) were male, and 8 individuals (34.8%) were female. Fifteen patients (65.2%) survived, and 8 patients (34.8%) died. 6 patients (26.1%) were hypertensive. Seven patients (30.4%) had diabetes. 9 patients (39.1%) were cannulated due to cardiogenic shock, 6 (26.1%) due to ECPR, and 8 (34.8%) due to heart or lung transplantation. The mean duration of V-A ECMO treatment was 7.04 days±7.125, with a minimum of 1 day and a maximum of 26 days. The most frequent treatment duration was 4 days (21.7%). The mean ECMO flow was 3.15±0.76. The mean membrane oxygen fraction (FmO2) was 57.29%±18.35. The mean mean arterial pressure (MAP) was 71.59±11.28. The mean left cerebral rSO2 was 52.53±10.41, and right cerebral rSO2 was 52.925±10.45. Multivariate regression analysis showed that mean arterial pressure (MAP) was significantly associated with NIRS levels in both the right ($p<0.038$) and left ($p<0.004$) cerebral hemispheres. **Conclusions:** In conclusion, in our retrospective analysis the observed correlation between mean arterial pressure (MAP) and NIRS levels underscores the importance of effective hemodynamic management in maintaining cerebral perfusion during V-A ECMO.

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