LESSONS LEARNED FROM THE USE OF ECMO IN THREE ADULT BURN PATIENTS WITH SMOKE INHALATION (223)

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Introduction: Extracorporeal membrane oxygenation (ECMO) has been utilized successfully in the treatment of respiratory failure related to smoke inhalation injury in the pediatric population. It has also been shown to be beneficial to pediatric patients after scald injuries. Currently there are no large series in adult patients, so consequently there are no guidelines for the use of ECMO in the adult population.

Methods: Our hospital has an experienced cardiovascular team which uses ECMO with lung transplantation patients, pulmonary patients and cardiac patients. In conjunction with them we have used ECMO in three adult, flamed-burn patients with inhalation injury in a fifteen month period. The patients included a 31 year-old male with a 77% TBSA burn, a 17 year-old female with 65% TBSA burn and a 42 year-old male with a 35% TBSA burn. The ECMO in all three cases was started as a “final effort” after other modalities were utilized and failed including inhaled nitric oxide and VDR ventilation. Veno-venous ECMO was able to be successfully initiated.

Results: All three patients eventually succumbed to their pulmonary insult after three, four and twelve days. The burns in two of the patients were almost completely healed. All patients had very good flows and well-oxygenated returning blood, but distal blood oxygenation levels did not change significantly and we were unable to decrease ventilator pressures and inhaled oxygenation percentages significantly.

Conclusions: There are many unknowns about whom, when and how to use ECMO in the adult burn patient. After reviewing the ECMO in all three cases, our center has been able to formulate some guidelines for the initiation and use of ECMO in the future. Most patients need to be close to healed to decrease the risk of line infection. Patients may need interventions to decrease cardiac output to a number closer to the volume of blood being oxygenated. The use of veno-arterial ECMO may be beneficial. We hope to be able to not only identify patients who will benefit from this mode of therapy, but also be able to deliver ECMO more efficiently.