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A Retrospective Cohort Study Evaluating Clinical Outcomes of Inter-hospital Retrieval ECMO patients

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Introduction

A retrospective cohort study of patients who received Extra-corporeal membrane oxygenation (ECMO) in ICU of a regional hospital.

Objectives

To compare the clinical outcomes between in-house ECMO patients and inter-hospital retrieval ECMO patients.

Methodology

Primary outcome was the ICU mortality rate between in-house and inter-hospital retrieved ECMO patients. Mann-Whitney U tests and Fisher's exact tests were used for comparisons of continuous and categorical variables respectively. 2-tailed p-values <0.05 represented statistical significance.

Result

Between 2009 to 2015, 112 patients received ECMO. Among them, 101 patients (77 VV-ECMO, 24 VA-ECMO) with complete data for further analysis. Overall mortality rate was 40/101 (39.6%). Mean Acute Physiology and Chronic Health Evaluation (APACHE) II scores were 30.03 for in-house ECMO vs. 30.80 for inter-hospital retrieval ECMO (p=0.774). For those patients who received ECMO for respiratory support (VV-ECMO, n=77), their mean Respiratory Extracorporeal Membrane Oxygenation Survival Prediction (RESP) score (3.64 vs. 3.03, p=0.060) and ICU mortality (34.8% vs. 19.4%, p=0.199) were not significantly different between in-house and retrieved cases. Predicted hospital survival for RESP score risk class II (score 3 to 5) was 76%. For those patients who received ECMO for circulatory support (VA-ECMO, n=24), their mean Survival After Veno-arterial-ECMO (SAVE) score (-7.2 vs. -2.75, p=0.304) and ICU mortality (86.7% vs. 55.6%, p=0.150) were not significantly different between in-house and retrieved cases. Predicted hospital survival for SAVE score risk class IV (score -9 to -5) and class III (score -4 to 0) were

30% and 18% respectively. For in-house ECMO patients, higher proportions of non-infective aetiologies for VV-ECMO (RESP score) and post-MI cardiogenic shock for VA-ECMO were observed. These conditions have poorer prognosis and lower reversibility, which may account for the poorer RESP/SAVE scores (though statistically insignificant) and higher predicted and observed mortality. These findings may be limited by small sample size, which may fail to reach statistical significance despite an observed absolute difference in outcomes between in-house and retrieval ECMO groups. ECMO patients in our unit have comparable survival rates to other ECMO centres worldwide as reflected by the RESP score and SAVE score predicted survival rates.