

Red Cell Distribution Width as a Prognostic Indicator of Mortality in Extracorporeal Life Support

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Background

Red cell distribution width (RDW) is a component of routine inpatient blood work that has been indicated as a potential prognostic mortality indicator for various conditions. Extracorporeal membrane oxygenation (ECMO) patients have a high mortality rate, and ECMO does not have easily obtainable prognostic measurements. RDW values may be a potential prognostic factor for ECMO patients and improve clinical decision making.

Methods

142 patient charts (70 survivors, 72 non-survivors) placed on ECMO care at Lutheran Hospital met inclusion criteria. RDW values were collected at six specific times during care along with peak RDW value and survivorship outcome. Patients were stratified into high (>14.5%) and low (\leq 14.5%) RDW groups for each time. Relative risk (RR) and odds ratio (OR) were used to analyze survivorship outcome between the groups.

Results

Only several RR and OR calculations yielded results that indicated differences in mortality risk and odds and were statistically significant. RDW at 24Hr after ECMO initiation showed a RR of 1.72, 95% CI 1.06-2.76, $p < .05$ and OR of 2.68, 95% CI 1.24-5.80, $p < .05$. RDW at ECMO termination and discharge had an OR of 3.88, 95% CI 1.20-12.55, $p < .05$.

Discussion

Results showed an association between high RDW value and increased risk and odds of mortality at 24Hr after ECMO initiation. Results also indicated increased odds of mortality at ECMO termination and discharge. These preliminary results are promising for further analysis and encourage the feasibility of potentially using RDW as a prognostic mortality indicator during ECMO treatment.

Conclusions

Further analysis must be conducted on the samples collected during the study, but these preliminary results demonstrated feasibility of RDW as a prognostic biomarker for clinical decision making with ECMO survivorship outcomes.