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Clinical Outcomes for VA-ECMO Patients Associated with Hyperlipidemia: An Analysis of the National Inpatient Sample

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Background

- Veno-arterial extracorporeal membrane oxygenation (VA-ECMO) is considered the most advanced temporary life support which provides complete hemodynamic support in addition to gas exchange.[1]
- There is limited data available on the impact of hyperlipidemia (HLD) on VA-ECMO patients.

Aims

- We sought to examine the National Inpatient Sample (NIS) database to describe in-hospital outcomes among these patients.

Methods

- Data was extracted from the NIS Database for the years 2019 and 2020.
- The NIS was searched for hospitalizations of adult VA-ECMO patients with and without a concomitant diagnosis of HLD using international classification of diseases 10th revision codes.
- Multivariate logistic was used to adjust for confounders. The primary outcome was inpatient mortality.
- SPSS software was used for statistical analysis.

Results

- This study included 3,885 VA-ECMO patients, of which 1,082 (27.8%) patients had HLD.
- VA-ECMO patients with hyperlipidemia had higher prevalence of hypertension (57.3% vs. 71.4%, p <0.001), and chronic kidney disease (26.3% vs. 17.0%, p <0.001) compared to VA-ECMO patients without HLD.
- In-hospital mortality was higher among those with HLD (61.5% vs. 45.5% p <0.001).
- Multivariate regression showed that VA-ECMO patients with HLD had higher inpatient mortality (OR 1.371, 95% CI 1.332-1.410, p <0.001).
- On secondary analysis it has shown that those patients had higher odds of having ventricular arrhythmia, acute kidney failure, intracranial hemorrhage, deep vein thrombosis (DVT), and sepsis compared to VA-ECMO patients without HLD (Table 1).

Outcome	Odds Ratio	95% Confidence Interval	P-Value
Ventricular Arrhythmia	1.472	(1.416 - 1.531)	< 0.001
Acute Kidney Failure	1.394	(1.359 - 1.429)	< 0.001
Intracranial Hemorrhage	1.157	(1.099 - 1.219)	< 0.001
DVT	1.252	(1.200 - 1.306)	< 0.001
Sepsis	1.226	(1.195 - 1.257)	< 0.001

Table 1. Odds ratio, 95% confidence interval, and p-values for various outcomes in VA-ECMO patients with HLD compared to VA-ECMO patients without HLD

Conclusions

- In this nationally representative population-based retrospective cohort study, HLD was associated with higher mortality and worse outcomes among VA-ECMO patients.

References

1. Tsangaris A, Alexy T, Kalra R, et al. Overview of Veno-Arterial Extracorporeal Membrane Oxygenation (VA-ECMO) Support for the Management of Cardiogenic Shock. Front Cardiovasc Med. 2021;8:686558. Published 2021 Jul 7. doi:10.3389/fcvm.2021.686558