

Children's Mercy Kansas City

SHARE @ Children's Mercy

Posters

12-2014

B-Type Natriuretic Peptide (BNP) Levels During Extracorporeal Membrane Oxygenation (Ecmo) Weaning May Predict Survival To Hospital Discharge

John Graham

Jennifer Flint

Erica Molitor-Kirsch

Follow this and additional works at: <https://scholarlyexchange.childrensmercy.org/posters>



Part of the [Critical Care Commons](#), and the [Pediatrics Commons](#)

John Graham, MD Jennifer Flint, MD Erica Molitor-Kirsch MD

Background

Despite apparent clinical and echocardiographic evidence of adequate myocardial function and successful weaning towards decannulation, up to 33% of children who separate from cardiac ECMO do not survive to hospital discharge.

Brain natriuretic peptide (BNP) is used as a marker of myocardial dysfunction in multiple clinical settings. We have anecdotally observed that during ECMO weaning, BNP levels remain stable or decreased in patients who survive after decannulation, but are elevated or rise in other children who die following decannulation.

Hypothesis

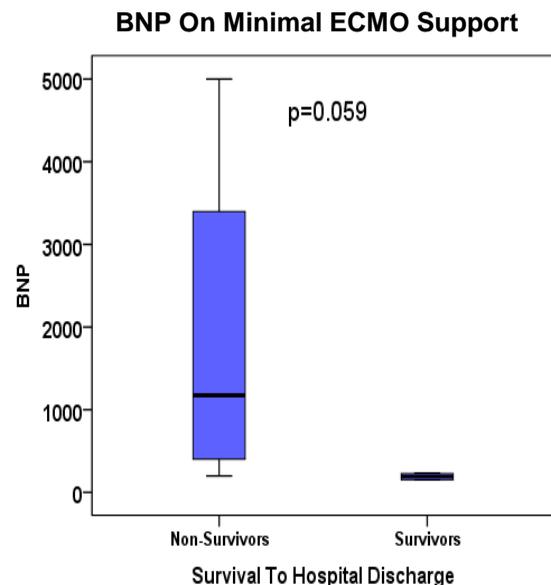
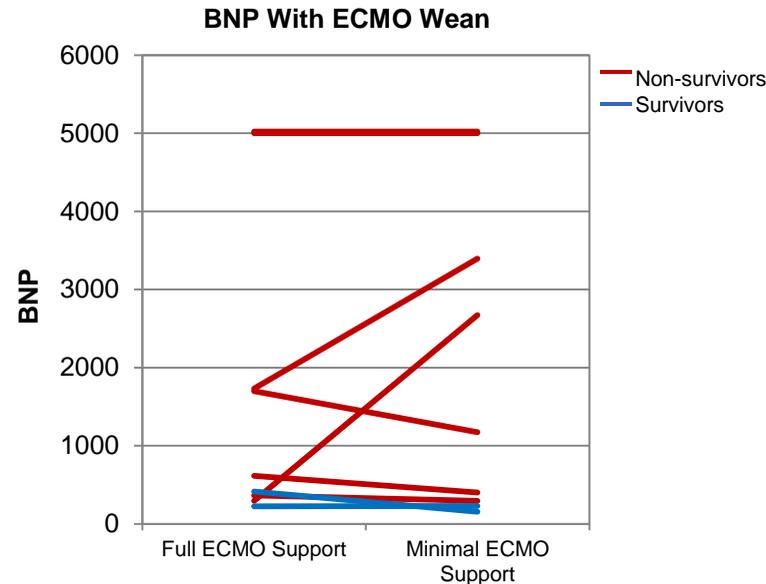
We hypothesized that trends in BNP levels during weaning from V-A ECMO may be useful to predict survival after decannulation from ECMO.

Methods

Design: Retrospective cohort study

Participants: Patients requiring V-A ECMO for cardiac failure admitted to Children's Mercy Hospital PICU from May 2011-Feb 2014 who had BNP levels while on ECMO were included

Measurements: The BNP level on full ECMO support and the BNP level on the lowest level of ECMO support prior to decannulation were recorded. Mann-Whitney U was used to compare BNP levels between those who died within 48 hours of decannulation, those who survived >48 hours off ECMO, and those who survived to hospital discharge.



Results

Twelve patients met inclusion criteria. Eleven had congenital heart disease, 7 had single ventricle physiology. Median age was 57.5 days (range 10-2237). Median weight was 3.85kg (range 2.7-28). Four patients survived >48hrs after decannulation (33.3%) and 2 patients survived to hospital discharge (16.7%). Among non survivors, median time to death after decannulation was 2.13 hours (range 0.13-1601).

Survivors had a decrease or no change in their BNP level with weaning of ECMO support. Of non survivors, 57% had an increase BNP level or a BNP level that remained >5,000 pg/mL with ECMO weaning.

At the time of minimal ECMO support, there was a trend towards lower median BNP levels in those who survived greater than 48 hours (314, 153-655) vs. those who died within 48 hours of decannulation (2671, 199-5001), p=0.088. There was a stronger trend towards lower BNP levels at the time of minimal ECMO support in those who survived to hospital discharge (190, 153-227) compared to all those who died (1174, 199-5001), p=0.059.

STUDY LIMITATIONS: Our study was limited by the retrospective study design, small sample size, and the inability to quantify BNP levels >5,000 pg/mL.

Conclusion

BNP may be a useful biomarker to assess myocardial function while weaning ECMO support and warrants further study.