Keck School of Medicine of USC

BACKGROUND

- Acute decompensated heart failure (ADHF) in children commonly results in hospitalization and intravenous vasoactive (IVV) drug support.
- Outcomes from ADHF are initially difficult to predict, and include a range from spontaneous recovery to death or heart transplant.
- Biomarker profiles associated with successful weaning from IVV support are not well described.

STUDY AIMS

We sought to determine if BNP or initial echocardiogram can be used to identify patients more or less likely to wean from IVV support.

METHODS

- Single center, retrospective study
- 19 years old
- Hospitalized, 2-ventricle physiology, systemic LV
- symptomatic ADHF from 2005-2021.
- ✤Data analyzed:
- Admission Clinical, laboratory and echocardiographic measures
- ✤BNP serial levels during 1st 30 days after admission
- ✤Major adverse cardiac event (MACE): mechanical circulatory support, heart transplant, or death.
- Serial changes in BNP levels were evaluated using linear mixed effect modelling. Logistic regression was used to investigate risk factors for MACE.

RESULTS

- ✤ 158 hospitalizations, 131 patients
- \bigstar median age of 4.5 years (IQR 0.8-12.4),
- ✤ IVV support was used in 70% (N=110).
- ✤ MACE occurred in 63 (40%) 41 (26%) MCS, 12 (7.6%) HTx, 10 (6.3%) deaths as the first event.

Measured Log2BNI

Declining Serial B-type Natriuretic Peptide Level Is Associated With Successful Weaning Of Vasoactive Therapy In Pediatric Acute Decompensated Heart Failure

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d	Admissions	Measurements	Wean Failure	Wean Success	
Ρ	81	1163	-0.02 (-0.06 - 0.01)	-0.16 (-0.220.12)	<0.001

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	Total	IVV support	No IVV support	p-value
nissions (n, %)	158 (100)	110 (69.6)	48 (30.4)	
SF, %	12.9 (9.8-17)	12 (9.8-15.7)	15 (10.6-18.1)	0.038
EF, %	27.3 (21-36)	25.7 (20-33)	31.1 (24.6-42.4)	0.002
internal DD, Z-score	5.7 (2.7-9.4)	6.8 (3.3-9.9)	4.7 (2.5-7.7)	0.031
internal SD, Z-score	9.1 (5.9-13.7)	9.6 (6.2 - 14.4)	7.9 (5 - 12.6)	0.051
dysfunction (n, %)	53 (33.5)	47 (42.7)	6 (12.5)	<0.001
vious use of oral HF dication (n, %)	78 (49.4)	48 (43.6)	30 (62.5)	0.038

In 110 admissions with laboratory data available:

	Total	IVV support	No IVV support	p-value
, pg/mL	1003 (465-1920)	1070 (542-1920)	638 (238-1450)	0.027
atinine, mg/dL	0.46 (0.33-0.70)	0.51 (0.35-0.78)	0.39 (0.25-0.50)	0.003
l, mg/dL	15 (10-20)	16 (11-21)	11 (9-17)	0.034

In 158 admissions analyzing factors associated with MACE:

	<u>Univariate Analysis</u>	p-value	<u>Multivariable</u> <u>Analysis</u>	p-value
CHD	OR: 0.36 (CI: 0.12-1.05)	0.062	-	
vge (< 1yo)	OR: 1.18 (CI: 0.57-2.42)	0.645		
dysfunction	OR: 2.52 (CI: 1.28-4.97)	0.007	OR: 3.60 (1.51-8.57)	0.004
LVSF	OR: 0.95 (0.89-1.01)	0.107	-	
LVEF	OR: 0.96 (0.92-0.99)	0.046	-	

CONCLUSIONS

*Pediatric pts hospitalized with ADHF are at high risk for MACE. ◆BNP rate of decline can be used to identify those more likely to successfully wean from IVV support.

BNP decline of >0.1 2log pg/dl/day was associated with success RV systolic dysfunction was associated with MACE in this cohort.

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