RIGHT VENTRICULAR FUNCTION AND OUTCOMES IN LOW BIRTHWEIGHT NEONATES WITH HYPOPLASTIC LEFT HEART SYNDROME

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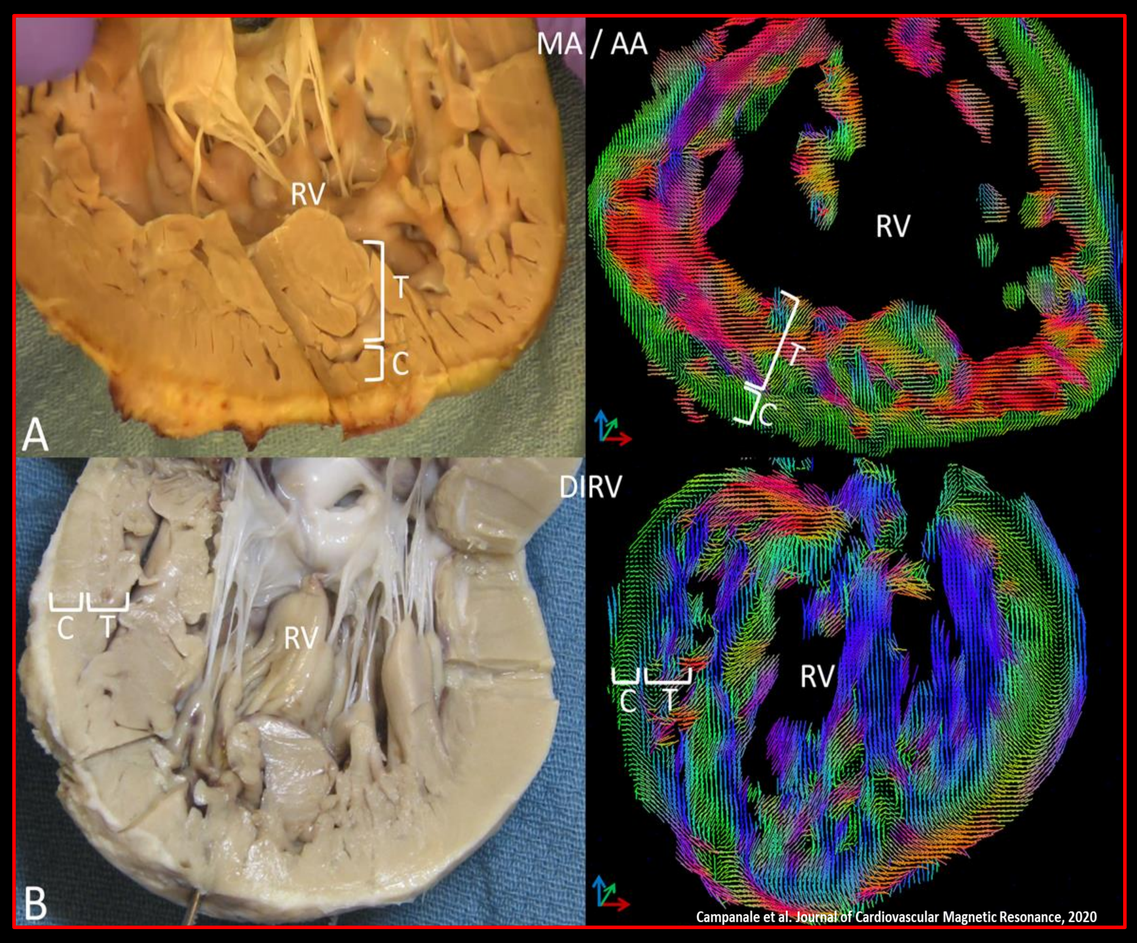
BACKGRAOUND

Contractile dysfunction and arrhythmias could be explained by profound myofiber disorganization in Systemic Right Ventricle (SRV, Fig). Preterm birth increases the risk of cardiovascular morbidity, altered systolic and diastolic functions. Although the outcome of cardiac surgery in neonates with Low BirthWeight (LBW) has improved, this remains a risk factor for palliation in neonates with Hypoplastic Left Heart Syndrome (HLHS).

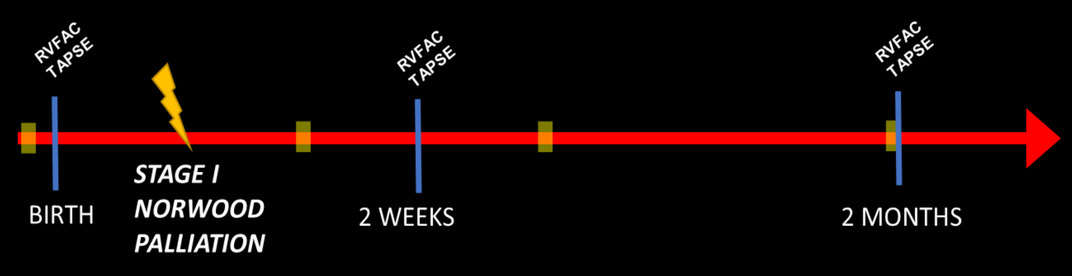


AIMS

- Does the LBW affects the clinical outcomes in neonates undergoing stage I Norwood palliation for HLHS?
- Does the LBW affects the SRV function at birth and after palliation?

METHODS

- January 2018 - April 2022
- LBW < 2.5 kg vs Normal BW (NBW)
- 24 pts I-stage Norwood Palliation: 50% BT-shunt and 50% Sano-conduit
- Endpoints: in-hospital morbidity (NEC, ECMO, brain damage, arrhythmias, and others) and mortality



RESULTS

Characteristics of the population

CLINICAL FEATURES	TOTAL (n=24)	LBW (n=7)	NBW (n=17)	p value
Prematurity	2 (8.3%)	1 (14.3%)	1 (5.9%)	0.44
Gestational age (weeks)	37±2 (31-39)	35±3 (31-39)	38±1 (37-39)	na
Apgar score 1'	9 (8-9)	9 (9-9)	9 (8-9)	0.40
Apgar score 5'	9 (9-10)	10 (9-10)	9 (9-10)	0.90
Birth weight (g)	2783 (±560)	2109 (±314)	3098 (±314)	<0.01
SatO2 at hospitalization (%)	93 (91-96)	94 (90-96)	93 (91-96)	0.94
Stage I Norwood palliation	24 (100%)	7 (100%)	17 (100%)	1.00
Age at stage I Norwood (days)	4 (±0.5)	3 (±0.3)	4 (±0.3)	0.07

MORBDITY	TOTAL (n=24)	LBW (n=7)	NBW (n=17)	p-value
NEC	3 (12.5%)	1 (14.3%)	2 (11.8%)	1.00
ECMO	4 (16.7%)	3 (42.9%)	1 (5.9%)	**0.03**
Arrhythmias	6 (25%)	3 (42.9%)	2 (11.7%)	0.09
Brain Damage	4 (16.7%)	2 (28.6%)	2 (11.7%)	0.25
Others (ascites, ARF, other surgical procedures or cath)	10 (41.7%)	2 (28.6%)	8 (47.0%)	0.40
TOTAL	**12 (50%)**	**7 (100%)**	**6 (35.3%)**	**<0.01**

SRV function

SRV function at birth	LBW	NBW	p value
RVFAC (%)	42.3 ± 5.0	45.2 ± 8.2	0.44
TAPSE (mm)	8.5 ± 0.3	8.5 ± 0.3	0.67

The entire population showed a decrease in SVR function 2 weeks after stage I Norwood palliation compared to birth and a complete recovery at 2 months

SRV function	Birth	2-w after stage I	2-m after stage I	p values
RVFAC (%)	44.5 ± 7.6	41.4 ± 5.5	45.0 ± 5.3	0.12, 0.82
TAPSE (mm)	8.5 ± 0.3	6.3 ± 1.8	8 ± 0.6	0.05, 0.07

Outcomes

MORTALITY	TOTAL (n=24)	LBW (n=7)	NBW (n=17)	p value
Within 30 days	2 (8.3%)	2 (28.6%)	0 (0%)	**0.054**
Before discharge	5 (20.8%)	3 (42.9%)	2 (11.8%)	0.079
Within 1 year	6 (25%)	3 (42.9%)	3 (17.6%)	0.139

CONCLUSIONS

LBW affects in-hospital mortality and complications but did not show any effect on SRV both at birth and at 2 months after stage I Norwood palliation. Therefore, our preliminary results confirm that LBW neonates are at high-risk for Norwood palliation and this might be independent from the SRV function at birth.