Category :**Cardiovascular: Other A**

A85 - ***Right ventricular outflow tract analysis in the critically ill with sepsis***

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Introduction:

Right ventricular (RV)-pulmonary circuit interaction is important to consider in sepsis given the propensity for right ventricular dysfunction (RVD) and pulmonary hypertension (PH). RVD is associated with increased mortality.

In PH a pulmonary valve acceleration time (PAT) of <90ms and PAT/ pulmonary artery systolic pressure (PASP) ratio of < 2 show strong correlation with pulmonary vascular resistance (PVR) of >3 wood units(WU). Mid-systolic notching predicts worse outcomes in this group. The therapeutic and prognostic significance of altered RVOT flow profiles in sepsis is unknown.

Targeted individualised treatment strategies aimed at minimising insult to the pulmonary vasculature and pressure sensitive RV may be of benefit. Analysis of the RVOT flow profile may alert the intensivist to early RVD in sepsis.

Methods:

Single centre, retrospective analysis of a 110 patients with sepsis who had a transthroacic echo (TTE) with RVOT pulsed wave Doppler (PWD) over a 3-year period. Flow profiles were categorised as no notch (NN) versus notched (N). PAT, RVOT velocity time integral and ejection time were measured.

Results:

PAT was lower in non- survivors (91.6 vs 79.2ms, p 0.02). A lower PAT/PASP ratio was found amongst non-survivors. Reciever operating curve for PAT/ PASP ratio showed an AUC 0.78 for a cut off value of 1.6.

Conclusion:

RVOT doppler flow analysis may be useful in identifying pulmonary vascular dysfunction in sepsis. Further prosepective studies are needed to assess its diagnostic and theraputic benefit.

References:

Price LC, Wort SJ et al.Pulmonary vascular and right ventricular dysfunction in adult critical care: Current and emerging options for management: A systematic literature review. Critical Care. 2010;14(5)

Takahama H, McCully RB et al. Unraveling the RV Ejection Doppler Envelope: Insight Into Pulmonary Artery Hemodynamics and Disease Severity. JACC: Cardiovascular Imaging. 2017;10(10):1268–77.

Image :

Parameter	Survived	Died	P value
Age	65.4 ±13	65.1 ±15	0.10
Female	43/100	4/10	1.0
Survival	100	10	-
APACHE 3 score	**71.5**	**101.2**	**0.005**
PAT (msec)	**91.6 ±21**	**79.2 ±14**	**0.02**

Echo Data	PAT <90msec	49/100	8/10	0.09
	RVOT VTI	14 ±4	12.9 ±2	0.19
	Ejection time	**277 ±50**	**225 ±61**	**0.03**
	Notching present	14/100	1/10	1.0
	RV dilation present (n)	32/100	4/10	0.7
	RV dysfunction (n)	24/100	3/10	0.7
	SPAP (mmHg)	40.8 ±12	48.0 ±11	0.2
	E:e' >15 (n)	26/100	1/10	0.43
	PAT / SPAP	**2.5 ±1**	**1.6 ±1**	**0.02**

Linear regression correlation with mortality

Parameter	Comparator	R^2	P value
PAT	Mortality	0.1	0.05
PAT <90 msec	Mortality	0.1	0.05
PAT	SPAP	0.1	0.03
PAT / SPAP	Mortality	0.14	0.02
PAT/SPAP & RV dysfunction	Mortality	0.17	0.04

Demographic and echocardiographic parameters in survivors and non survivors in sepsis