

## Prognostic value of Abdominal Aorta doppler spectrum in pediatric intensive care unit after Pediatric Cardiac Surgery



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**Background.** Abdominal aorta pulsed wave (PW) spectrum is a fast tool, still poorly studied in pediatric intensive care unit for monitoring outcome after cardiac surgery. A quick and easy assessment of abdominal aorta flow, through PW can be obtained from subcostal view and should be performed routinely to check hemodynamical state of patient in order to predict outcome and prevent complications.

**Aim:** to evaluate abnormalities in abdominal aorta doppler spectrum after pediatric cardiac surgery by pulsed wave doppler analysis.

**Methods:** We prospectively enrolled 156 children undergoing cardiac surgery for CHD. Echocardiography was performed within the first 36 post-operatively hours (Time-1). Abdominal Aorta Doppler Spectrum Pattern was obtained in the subcostal views and checked with pulsed wave doppler to visualize the doppler spectrum.



0.40

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0,60

0,80

1,00

**Results.** We collected data from 156 children, 86 older than 6 months (mean  $4.8 \pm 4.55$  years, IQR 0.9 - 6.2) and 70 youngers than 6 months ( $63.58\pm58.9$  days, IQR 9.36-118.34) within the first 36 post-operatively hours. Older patients had significantly higher values of Abdominal Aorta peak velocity, deceleration time, systolic duration and VTI compared to younger patients (p 0.005, p.0019, p 0.0003 and p 0.0002). Both in older and younger patients, abdominal Aorta systolic VTI showed a negative relation with ICU LOS (beta - 0.62 p 0.03 and beta -0.44 p 0.02, respectively). Moreover, in younger, a systolic VTI<5.79 cm can predict a major complication and/or an extubation time > 7 days (Sensibility 90%, Specificity 88,3%; AUC 0,89). In addition, abdominal aorta VTI was directly related with global longitudinal left ventricular strain in younger patients (beta 0.34 p 0.02).

0.00-

0,00

0,20

**Conclusions:** Assessment of abdominal aortic VTI can be a useful mean to evaluate hemodynamical state of the patient, especially in those who are younger than 6 months. Due to its simplicity and reliability, PW on Abdominal aorta should be performed routinely on patients to predict and eventually prevent adverse outcome or prolonged time to extubation.