

Changes in Myocardial Velocities in First week of life in Pre Term Infants.

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Introduction

Significant haemodynamic changes occur during fetal -neonatal transition: the patent ductus arteriosus closes, pulmonary blood flow increases, preload and afterload of the Left ventricle increases, right ventricle afterload decreases, and the contractility and structure of myocardium change, all of which may impact on diastolic function. To date no validated technique allows accurate assessment of diastolic function in this population. Tissue Doppler imaging (TDI) may be a novel technique to measure diastolic function over the first week of life in the preterm infant.

Aims

To use tissue Doppler imaging as a modality to assess diastolic function in preterm infants during the first week of life.

Methods

Preterm infants less than 32 weeks gestation or < 1500g born in the National Maternity Hospital were recruited and ethical approval and written consent were obtained. Echocardiography was carried out by a single observer using the GE Vivid I machine, on Day 1, 3-4 and Day 7. Myocardial velocities were obtained using a pulsed wave doppler sample from the lateral mitral and tricuspid annuli from an apical four chamber view. Peak systolic (S'), early diastolic (E') and late diastolic (D') velocities were recorded.

Result

Twelve infants with structurally normal hearts were recruited to date. Gestational age range was 24+4– 31+5 weeks and heart rate varied from 149-168 bpm in the first week.

There was an increase in myocardial velocities across all measurements in the first week of life and in all infants all infants peak velocities were higher in the right ventricle than the left.

Table 1: Variations in myocardial velocities in the first week of life in preterm infants.

Preterm Infants	Right Ventricle			Intra ventricular Septum			Left Ventricle		
	S'	E'	A'	S'	E'	A'	S'	E'	A'
D1	3.96	3.69	7.35	2.75	3.74	4.85	3.5	3.99	5.18
D3-4	4.04	4.3	7.6	2.88	3.37	4.1	3.28	4.16	5.58
D7	4.9	5.5	9.1	2.1	3.04	5.25	3.41	4.41	5.4

Conclusions.

In this small cohort TDI is a feasible measure of diastolic function in the preterm infant.