

THE ANATOMICAL POSITION OF THE LEFT AND RIGHT VENTRICULAR OUTFLOW IN NEWBORNS AND INFANTS

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Background: Previous research has shown differences in Doppler derived left ventricular output (LVO) and right ventricular output (RVO), even in infants where there was no shunt. Differences in methodology of diameter measurements and angle of insonation could explain these findings. The aim of this study was to determine the anatomical position of the left and right ventricular outflow (Ascending Aorta, AA and pulmonary trunk, PT) and determine the angle of insonation for Doppler derived cardiac output.

Methods: Magnetic resonance images of infants up till 2 years of age were explored. For each outflow the anatomical position was determined to an anatomical reference point. To obtain the angle of insonation, the angle between the outflow and the assumed position of the Doppler echo probe was calculated.

Results: Forty-five patients were included with a median (range) age of 71 (2-679) days. The AA is directed vertically upwards to the head (sagittal) with a 40° angle to the right (coronal). The PT is directed upwards with a 53° angle (sagittal) and a 3° angle to the left (axial). Using vector analysis, the median angle for measuring LVO is 36° with the Doppler echo probe positioned on the thorax and 30° when positioned subcostal. The median angle for measuring RVO is 23°.

Conclusion: The median angle of insonation for measuring LVO was larger than for RVO. The larger angle of insonation can only partly explain the differences found between LVO and RVO.