
DUCTUS VENOSUS AND INFERIOR VENA CAVA BLOOD FLOWS DURING NORMAL PREGNANCY

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Objective: To compare dynamic of S/D ratio in ductus venosus (DV) with one in inferior vena cava (IVC) during normal pregnancy.

Methods: Blood flow waveforms in the DV and IVC were recorded in 162 fetuses from normal pregnancies between 9 and 40 weeks of gestation (Aloka 2000). Peak systolic (S) diastolic (D) velocities of blood flow waveforms and S/D ratio were measured.

Results: DV S/D ratio decreased as a function of increasing gestational age [$SD = 1,721 - 0,231 \times \ln(\text{week's gestation}) + 0,07 \times (\text{week's gestation})$, $p < 0,0001$]. This was attributed to an increase in the velocity of D wave. IVC S/D ratio increased with advancing gestational age [$SD = 1,628 + 0,0018 \times (\text{week's gestation})^2$; $p < 0,002$] because of the increasing in the velocity of S wave.

Conclusions: Experimental studies have shown that inferior vena caval blood passes through the right atrium mainly to the right ventricle. Ductus venosus blood, which contains well-oxygenated umbilical blood, passes through the foramen ovale to the left atrium and left ventricle. Thus S and D wave of DV waveforms could reflect the hemodynamic status of the left ventricle whereas S and D wave IVC waveforms could reflect the hemodynamic status of the right ventricle. Our findings have suggested that compliance of the right ventricle could be different from left one.

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