P-132

The evaluation of the long-term effect of intrauterine malnutrition on the cardiac functions

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Intrauterine growth retardation is predisposed cardiac dysfunction. The aim of this study was investigate the impact of intrauterine malnutrition on the ventricular functions in the small for gestational age (SGA) babies with the long-term postnatal age.

The cardiac functions of twenty term asymmetric SGA infants and 20 term appropriate for gestational age infants were prospectively evaluated by conventional and tissue Doppler echocardiography (TDI) in their postnatal fifth day, at the end of first month and the third month.

There were no differences between the groups in gender, blood pressure and heart rate ($p>0.05$). Although, Left ventricle end-diastolic diameter, posterior wall thickness, interventricular septum thickness and left ventricle mass significantly increased with increasing age in the both groups, all these parameters were significantly lower in SGA infants ($p<0.05$). No differences were determined systolic and diastolic functions by the conventional echocardiography ($p>0.05$). Peak systolic velocity at fifth day and early diastolic velocity in all evaluations determined by TDI for left ventricle (MSa, MEa) were significantly lower in SGA group ($p<0.05$). E/MEa ratio was significantly higher in SGA infants at all evaluations ($p<0.001$). Peak systolic velocity, early diastolic velocity, and Ea/Aa ratio for the interventricular septum (IVSSa, IVSEa, IVSEa/IVSAa) were found to be lower in SGA group at all evaluations ($p<0.05$). Early diastolic velocity, and Ea/Aa ratio for the right ventricle (TEa, TEa/TAa) were found to be lower in SGA babies at all evaluations ($p<0.05$). E/TEa ratio was found to be higher in SGA at all evaluations ($p<0.001$). Sa, Ea, Ea/Aa ratio for the right ventricle, left ventricle and interventricular septum were increased with increasing age ($p<0.001$). A positive correlation was detected between the ponderal index and Ea for the right ventricle, left ventricle and interventricular septum ($p<0.05$).

Intrauterine growth retardation is associated with the increased risk of cardiovascular disease in adult life; it is unclear whether the relationship is present at infant's period. These data suggest that indexes of diastolic function, including tissue Doppler measures, were significantly impaired in SGA babies at the third month after birth.