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ASSESSMENT OF CARDIAC FUNCTIONALITY IN TERM NEWBORNS BORN TO DIABETIC MOTHERS

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A better perinatal management of maternal diabetes mellitus has reduced the incidence of pathologies at birth. Infants of diabetic mothers (IDMs) may experience impairments of cardiac function, also in absence of other complications.
Aim of the study: To evaluate the neonatal cardiac anatomy and function in IDMs in relation to different maternal glycemic and metabolic profiles.
Materials and methods: In this prospective study cardiac anatomy and function were assessed by ColorDoppler echocardiography and electrocardiography during the first 48 hours of life in full-term newborns, born to gestational diabetic mothers (GDM), pre-gestational diabetic mothers (pre-GDM), and normoglycemic mothers as a control group. Results: There is a trend in increase of diastolic interventricular septal thickness (IVSd) in IDMs compared with controls (0,42 vs 0,39 cm; p=0,27). Furthermore, reduced tricuspid E/A ratio (0,77 vs 0,86; p<0,05), mitral E/A ratio (1,07 vs 1,14; p=0,08), right cardiac index (CI; 4,1 vs 5,6 l/min/m ^{2}; p=0,08) and QTc (436 vs 451 ms; p<0,05) persist at 48 hours of life. Even more pronounced values were observed in pre-GDMs compared with GDM: increased IVSd (0,5 vs 0,4 cm; p<0,05), left ventricular posterior wall thickness (0,28 vs 0,24 cm; p=0,07), and pulmonary systolic pressure (PAPs) at 24 hours (21,9 vs 8,3 mmHg; p<0,05); and increased CI dx (5,6 vs 4,2 l/min/m^2 ; p<0,05) and CI sx (4,2 vs 3,2 l/min/m^2 ; p=0,08) at 48 hours; and reduced velocity of ductus venosus (37,7 vs 48 cm/s; p<0,05). The higher the HbA1c during II and III trimester the deeper are S waves in V1 on ECG (p=0,06 and 0,001), the higher Sokolov index (p=0,09 and 0,03), the later closure of ductus arteriosus (p<0,05), and the higher CI sx (p<0,05). IVSd and tricuspid E/A ratio are correlated to the HbA1c of III trimester (p=0,01 and 0,06). Newborn IDMs in treatment with insulin have a high PAPs at 24 hours (p<0,05) and a reduced heart contractility (FS p=0,05 and EF p=0,13) at 48 hours. Conclusions: In the first 24 hours sonographic results do not show any statistical difference because transitional phase plays an identical role in all groups. We have found a diastolic ventricular dysfunction (dx>sx) in our IDM sample, but in comparison to controls there is only a weak correlation. We suppose that it is due to the samples heterogeneity. Nevertheless we can confirm, even in the presence of a regular neonatal adaptation, a worse echocardiographic outcome characterized by structural as well as functional abnormalities proportional to glycemic and metabolic values.

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EFFECTS OF FRESH BREAST MILK IN NEONATAL INTENSIVE CARE UNIT

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Introduction: Maternal milk is ideal feeding for preterm infants especially in the early weeks of life. Holder pasteurization ensures the microbiological safety but variably reduces growth factors, antioxidants and immunoprotective factors.
Aim of study : Evaluation of the effects of nutrition with fresh breast milk on: incidence of infections, food tolerance, growth, necrotizing enterocolitis, bronchopulmonary dysplasia, retinopathy of prematurity and length of hospital stay.
Methods: We include infants with gestational age < 30 weeks admitted to Neonatal Intensive Care Unit between 1/01/2012 and 28/02/2013, excluding those with congenital malformations and chromosomal syndromes.
Results: During the study period 62 infants were enrolled ; 35 (56.5%) were fed with fresh maternal milk (EG 28.4 ± 1.7 weeks; BW 1111 ± 274 g) and 27 (43.5%) with pasteurized donor breast milk or formula for premature infants (GA 28.2 ± 1.8 week, PN 1158 ± 370 g). There were no statistically significant differences between the two groups for gestational age, birth weight, maternal age or maternal education, Crib Score, hours of oxygen, food tolerance, days of parenteral nutrition, necrotizing enterocolitis , bronchopulmonary dysplasia and growth during the hospital stay. Infants fed fresh breast milk were required lower times of mechanical ventilation (p 0.004), have had lower incidence of sepsis (p 0.04), urinary infections (p 0.04) and had lower length of hospital stay (p 0.03). Moreover, stratifying infants fed with fresh breast milk for intake > or < 50 ml / kg / day, lower incidence of sepsis (p 0.0007) and lower length of hospital stay (p 0.017) have been shown for infants fed with greater amounts suggesting for these outcomes a dose response effects.
Conclusions: In our population fresh breast milk feeding does not seem to adversely affects on growth , appears to confer protection against infections and bronchopulmonary dysplasia reducing lenght of hospitalization.