CURRENT BRONCHOPULMONARY DYSPLASIA IN PRETERM CHILDREN WITH THE PATENT DUCTUS ARTERIOSUS AT AGE OF 3 YEARS

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Although over the past few decades improvement in perinatal care has increased the survival of very low-birth weight infants, these newborns continue to suffer from significant morbidities such as bronchopulmonary dysplasia (BPD). Despite the fact that the hemodynamically significant patent ductus arteriosus (PDA) contributes to formation of BPD (Kaempf et al., 2013), the role of hemodynamically insignificant (HI) PDA in the course of BPD is insufficiently clear. This study is aiming at identifying the features of the course of BPD of 1-year-old and 3-year-old children born prematurely, depending on a condition of PDA. The retrospective analysis of 146 preterm infants (gestation age, 24-32 weeks) with BPD and follow-up during their first three years of life were performed. Children were divided in three groups depending on a condition of PDA: (i) 58 preterm infants, in whom PDA was closed independently in the early neonatal period; (ii) 60 preterm infants with hemodynamically insignificant PDA that required surgical closure of PDA; (iii) 28 preterm infants with hemodynamically significant PDA that was treated with a surgery at the age of 21.5±1.6 days. Echocardiographic indexes used in assessment of hemodynamically significant PDA were PDA diameter index to body weight $\geq$ 1.5mm/kg, ratio of left atrial diameter to aortic root measured using M-mode echocardiography $\geq$1.5, diastolic flow pattern (antegrade, absent, retrograde diastolic flow) in systemic arteries (descending aorta, celiac, superior mesenteric and/or renalis, middle cerebral), resistance index in a. cerebri anterior $\geq$ 0.8 (Tacy, 2009; Sehgal and McNaMara, 2009; Hajjar, 2005). During the treatment stage in perinatal center, the second group included more children with severe BPD in comparison to the first group (23.3%, 5.6%, $p < 0.01$). In the comparison groups of 1-year-old children, the significant differences in the clinical aspects of BPD were not observed. Specifically, 20 to 35% of children were healthy, about 50% had mild BPD, 15 – 20% had mediate and 5 – 10% had severe BPD. At the age of 3 years, the first group included predominantly recovered children (59.5%) in comparison to the second (43.5%, $p < 0.05$) and the third groups (25.0%, $p < 0.01$). Further, the second group comprised more children with severe BPD (11.5%) in comparison to the first group (0%, $p < 0.05$). Overall, the presence of hemodynamically insignificant PDA contributed to the more severe course of BPD at the treatment stage in the perinatal center and of 3-years-old children, in whom ductus arteriosus was closed independently in the early neonatal period or was treated with a surgery.

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