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CHORIOAMNIONITIS, MECHANICAL VENTILATION AND SEPSIS AS MODULATORS OF BRONCHOPULMONARY DYSPLASIA

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Table 1. Obstetric and neonatal characteristics of the study population according to the presence of histologic chorioamnionitis

Variables	With chorioamnionitis (n 23)	Without chorioamnionitis (n 28)	P
Maternal age	27,5 ±8,1	25,6 ±6,9	0,48
Pregnancies	3,0 ±1,8	1,8 ±1,5	0,04
Prenatal corticosteroids	14 (60,9%)	14 (50%)	0,43
Cesarean	6 (26,1%)	19 (67,9%)	0,003
Resuscitation	13 (56,5%)	18 (64,3%)	0,57
Gestational age	27,9 ±2	29,2 ±1,9	0,02
Birth weight (g)	1059,1 ±361,4	1168,6 ±329,7	0,27
Height	36,4 ±3,9	39,7 ±5,5	0,10
Head circumference	25,5 ±2,4	27,0 ±2,4	0,03
PIG	3 (13%)	3 (10,7%)	0,79
Male	10 (43,5%)	13 (46,4%)	0,6
Days in NICU	67,14 ±37,7	63,1 ±42,0	0,84
FiO2 (%)	61,3 ±24,3	54,0 ±25,4	0,30
Days with O2	32,13 ±37,4	22,9 ±29,0	0,33

Table 2. Clinical outcome in the neonatal period

Variable	With chorioamnionitis (n 23)	Without chorioamnionitis (n28)	Relative risk (IC* 95%)	P
Surfactant	20 (87%)	20 (71,4%)	2,5 (0,61 - 11,5)	0,18
RDS ⁑	20 (87%)	23 (82,1%)	1,44 (0,3 - 6,8)	0,6
MV (days)£	11,5 ±16,1	10,1 ±17,5	-	0,76
CPAP (days)ŁŁ	7,57 ±14,6	4,4 ±4,4	-	0,29
O2 in 28 days	8 (34,8%)	8 (29,6%)	1,26 (0,38 - 4,16)	0,69
O2 in 36 weeks	6 (27,3%)	4 (15,4%)	2,0 (0,49 - 8,5)	0,3
Early sepsis	21 (91,3%)	13 (50%)	10,5 (2 - 54,2)	0,002
PDA⁞	9 (42,9%)	4 (16%)	3,9 (0,99 - 15,5)	0,04
Death	6 (26,1%)	4 (14,3%)	2,1 (0,51 - 8,7)	0,24

PDA - Persistent Ductus Arteriosus. VM – Mechanical ventilation. RDS - Respiratory distress syndrome

Prematurity is the main cause of mortality and morbidity in neonatology and the intrauterine infection a major risk factor in anticipation of parturition. The chorioamnionitis can be set by the presence of polymorphonuclear leukocytes in placental membrane, for positive cultures or by higher cytokine levels in amniotic fluid detected by biochemical studies. The chorioamnionitis leads to a fetal inflammatory response. It demonstrates that the fetus is capable of initiating a complex cascade of immune response towards bacterial invasion. Watterber et al. noted in a study in 1996 that histological chorioamnionitis is associated with reduced risk of respiratory distress syndrome, but it increases the risk of bronchopulmonary dysplasia. This is suggests that intrauterine infection accelerates lung maturation but increases the vulnerability of premature lung to the postnatal injuries.This chronic inflammatory process has started in fetal life by chorioamnionitis leads to a variable pattern of alveolar simplification and could be a trigger for the occurrence of new bronchopulmonary dysplasia. This investigate goal is correlate the presence of bronchopulmonary dysplasia in premature newborns of mothers with histological chorioamnionitis and postnatal outcomes such as sepsis, need for mechanical ventilation and persistent ductus arteriosus as contributors in chronic lung injury.

Method

An observational retrospective cohort of neonates with 26-32 weeks, born in Hospital Materno Infantil de Brasilia, Brazil, from April to October 2011. Statistical analysis was performed using SPSS version 16.0 software, and used the chi-square tests of association, t-Sudent, the hazard ratio with confidence interval. The significance level was 0.05.

Results and Discussion

Seventy eigth mothers conceived 86 infants with gestational age between 26 and 32 weeks from April to October 2011. Only 51 patients had the histopathological results in your medical records and 23 mothers had the histological chorioamnionitis. We studied 51 preterm infants, and 23 underwent antenatal infection. Mothers with chorioamnionitis had a higher number of previous pregnancies were less submitted to cesarean section. Receiving corticosteroids as were mothers without infection. Newborns who underwent maternal infection, were born with gestational age and lower weight but a smaller number needed resuscitation at birth. Had 10 times more early-onset sepsis, a higher incidence of patent ductus arteriosus and a 2 times greater tendency to develop bronchopulmonary dysplasia.The association bettwen chorioamnionitis end Persistent Ductus Arteriosus has been observed in other studies and can be explained by the increase in prostaglandin levels and tumor necrosis factor in the fetal circulation. It is also known that there is an association between persistent ductus arteriosus and bronchopulmonary dysplasia. The left-right shunt at the ductus arteriosus increases blood flow in the lung, with subsequent reduction in lung compliance and increased resistance, thereby raising the need for mechanical ventilation and supplemental oxygen, further aggravating lung injury.

Conclusion

The premature newborns have several risk factors for the development of lung injury. The chorioamnionitis is clearly a contributing factor, despite the difficulty of finding an isolated risk factor in the pathogenesis of bronchopulmonary dysplasia. The evaluation studies to help clarify the pathogenesis of these diseases is essential to improve neonatal interventions. It has a major impact on the increased survival of premature infants, the quality children's life and consequently bring positive impact on adult health. Despite the small sample limit our findings, it opens the way for further research, in order to have health practices increasingly based on scientific evidence.

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