PERINATAL RISK FACTORS ASSOCIATED WITH CEREBRAL PALSY IN CHILDREN BORN IN ODESA OBLAST REGION (UKRAINE)

Posokhova S.P., Kucherenko O.U. Odesa National Medical University

The etiology of cerebral palsy (CP) is very diverse and multifactorial including prenatal, natal, and postnatal factors Studies have reported that the prevalence of cerebral palsy may vary between 1.5 and 3.0 per 1000 live births. Several hypotheses have been proposed to explain the origins of CP in very preterm babies.

It may be the result of an ischemic insult in utero leading to both preterm birth anddamage to the white matter. The immature babies are particularly vulnerable to cerebral hemorrhage and ischemia. Neonatal factors such as: seizures, prolonged ventilation, intraventricular hemorrhage, periventricular leukomalacia, bronchopulmonary dysplasia, sepsis.

Methods. The aim of this study was to identify antenatal, intrapartum and neonatal risk factors for cerebral palsy. Antenatal, intrapartum, and neonatal events were compared between 100 children with CP and 100 controls in a retrospective case-control method. Antenatal, intrapartum and neonatal factors were expressed as odds ratios and 95% confidence intervals.

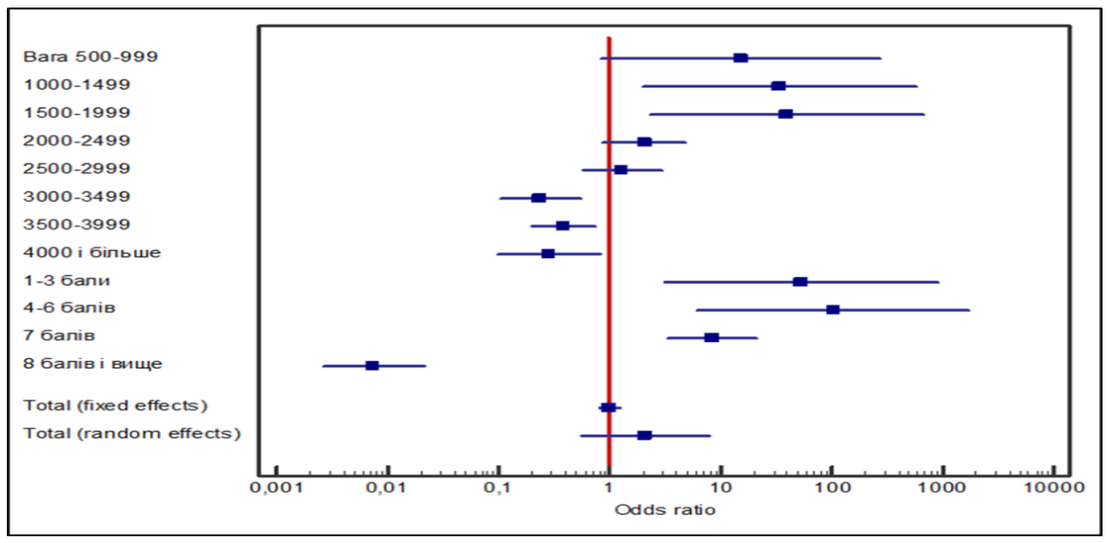
Results. Major risk factors found in this study were history of spontaneous abortions in 28 (28%), anemia during pregnancy in 35 (35%), hypertension in 12(12%), obesity of 2-3 degrees in 18% and history of infection in 8% mothers. In total, 44 (44%) children were born preterm and 10 (10%) were born in multiple births. Infants born preterm had a highly increased risk for CP, and constituted 44% of all cases; OR 21.8 (95% CI 29–39) in weeks 26–28, OR 29 (95% CI 32–
42) in weeks 29–30, OR 42 (95% CI 24–70) in weeks 31–32, and OR 44.7 (95% CI 34-77) in weeks 33–34. Other factors associated with CP were being small or large for gestational age at birth, intrauterine growth restriction (IUGR) OR 7.4 (95% CI 2.4-18.5), abruptio placentae (OR 8.6, 95% CI 5.6–13.3), preeclampsia (OR 42, 95% CI 2.4–7.7), being a twin (OR 25.5, 95% CI 1.5–45.5), smoking (OR 4.1, 95% CI 1.1–15). In term infants, low Apgar scores were associated with a high risk for CP; OR 53.2 (95% CI 31–89) at score 6 at 5 minutes, OR 104 (95% CI 6.2–172) at score 3. Other factors associated with CP in term infants were breech presentation at vaginal birth (OR 3.8, 95% CI 2.4–10.4), instrumental delivery (OR 2.9, 95% CI 1.6–5.3), and emergency cesarean delivery (OR 2.5, 95% CI 1.6–6.2).

The most frequent risk factors in the postnatal period were high fever in 12%, convulsion in 34%, intraventricular hemorrhage in 21%, hypoxic-ischemic encephalopathy in 28% and jaundice in 16% of newborns. Respiratory distress syndrome, prolonged ventilation were in 25% of newborns. Severe cranial ultrasound abnormality in 45% newborns were associated with an increased risk of CP in the neonatal period.

Table 1. Risk factors for CP

Factor	CP N=100 (%)	Control N=100 (%)	P	OR (95% CI)
Smoking	25	6	<0.01	4,128 (1,129 to 15,094)
Spontaneous abortions	28	8	<0.05	1,37 (0,578 to 3,243)
Anemia	35	12	<0.01	1,369 (0,738 to 2,542)
Hypertension	12	2	<0.001	5,104 (1,090 to 23,906)
Preeclampsia	10	2	<0.01	42,017 (2,496 to707,426)
Obesity	18	5	<0.05	13 (0,723 to233,855)
Infection during pregnancy	8	2	<0.05	2,858 (0,115 to 70,978)
Multiple gestation	10	2	<0.05	26,587 (1,552 to455,367)
Abruptio placentae	8	1	<0.001	10,892 (0,594 to199,580)
Intrauterine growth restriction	26	4	<0.01	7,398 (2,947 to 18,575)
Preterm delivery	44	3	<0.001	29,021 (1,701 to495,105)
Breech presentation at vaginal birth	8	1	<0.01	3,871 (1,492 to 10,044)
Forceps	9	0	<0.001	357,623 (21,603 to 5920,233)

Weight and Apgar score



Conclusions: Our findings confirm that several antenatal factors as smoking, preeclampsia, obesity, anemia, IUGR; intrapartum factors as abruption placenta, preterm birth, breech presentation, low Apgar scores and neonatal risk factors as convulsion, intraventricular hemorrhage, hypoxic-ischemic encephalopathy, jaundice, respiratory distress syndrome, prolonged ventilation in babies are responsible for the etiology of cerebral palsy.

Key words: cerebral palsy; perinatal and postnatal risk factors.