

# Mother and Child Health

# Risk factors of deliveries in Slovak republic

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**Aim:** To identify risk factors associated with preterm birth (PTB) in Bratislava.

**Methods:** The clinical data of 7256 singleton deliveries by vaginal delivery or caesarean section were retrospectively studied by the RECOOP HST Consortium Mother and Child Health (MOCHEA) Research Network. From all deliveries 353 (4,9%) were preterm births (24-36 gestational weeks) and 6903 (95,1%) full-term births (37-41 gestational weeks). Pregnant women were admitted at the University Hospital in Bratislava from January 2007 to December 2010. Information on medical history, developing problems and special procedures performed during pregnancy was obtained from the medical records.

**Results:** The mean age of the pregnant women was 29,67±4,98 years, gestational age 39,47±1,87 weeks, pre-pregnancy weight 63,77±12,19 kg, height 167,21±6,41cm and BMI 22,79±4,16. From all pregnant women were 55,6% primipara, 68,5% married and 43,6% had secondary education with graduation and 7,9% smoked during pregnancy. Several significant risk factors for PTB were identified by logistic regression analysis: vaginal bleeding (OR=2,26; 95% CI=1,24-4,13), preeclampsia (OR=5,08; 95% CI=2,76-9,37), cerclage (OR=7,86; 95% CI=2,49-24,86), medication for hypertension (OR=9,51; 95% CI=2,99-30,20), kidney diseases (OR=3,65; 95% CI=1,16-11,53), chorionic villi sampling (OR=20,19; 95% CI=2,15-189,20) amniocentesis (OR=1,77; 95% CI=1,09-2,89). Significant association was found in interaction of vaginal bleeding and use of iron (OR=273,30; 95% CI=144,06-518,51). As protective factor of preterm birth were observed: first trimester genetic screening (OR=0,48; 95% CI=0,24-0,93), first trimester biomarkers (OR=0,17; 95% CI=0,09-0,31), medication for diabetes mellitus (OR=0,20; 95% CI=0,04-0,99) and use of iron (OR=0,21; 95% CI=0,12-0,35).

**Conclusions:** Interaction of vaginal bleeding in early pregnancy and use of iron is most associated with an increased risk of PTB.

**Keywords:** full-term birth, PTB, risk factors.

# Morbidity characteristics of late-preterm infants

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**Aim:** The leading cause of infant mortality and morbidity is prematurity. In the first place neonatal intensive care has paid attention to improve the quality of life of extremely low birth weight neonates. However, we cannot forget the other subgroup of preterm newborns, the late-preterm infants (defined as birth between completed 34-36 weeks gestation). They give about 75% of preterm infants and the studies of the last few years show that they are at higher risk of morbidity and mortality than term infants.

**Methods:** We examined the data of neonates who were born between January 1, 2009 and December 31, 2010 at the Department of Obstetrics and Gynecology, Medical School, University of Pécs, Hungary. We compared the morbidity data of late-preterm infants (n=414) to term infants who were born in the 40<sup>th</sup> gestational week (n=1235) using t-test, Mann-Whitney-test, Kolmogorov-test, relative risk calculation with 95% confidence interval. We analyzed the birth weight, length of hospitalisation, rate of respiratory difficulties, oxygen therapy, infection, apnea, hypoglycemia and hyperbilirubinemia.

**Results:** The mean birth weight of late-preterm infants was 2430g (SD: 520), which is 68.8% of the weight of term newborns. The mean length of hospitalisation of late-preterm neonates was 2.8 times longer than that of term infants. Respiratory symptoms developed 12.9 (RR: 12.93, CI: 8.41-19.87) times more often in late-preterm infants. Oxygen therapy was applied in 24.2% of late-preterm infants and 45.7% had an infection after birth. The incidence of apnea, hypoglycemia and hyperbilirubinemia was 13.4 (RR: 13.42, CI: 6.83-26.39), 6.7 (RR: 6.66, CI: 5.17-8.58) and 3.5 (RR: 3.47, CI: 2.41-5.00) times higher in late-preterm infants than in term infants, respectively.

**Conclusions:** All analyzed clinical outcomes differed between late-preterm and term infants significantly. Our results support the view that more attention should be paid to this subgroup of preterm neonates.

**Key words:** late-preterm infants, neonatal adaptation

# SNP's in leptin (*LEP*) and leptin receptor (*LEPR*) genes are associated with recurrent spontaneous abortion (RSA)

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**Aim:** Single nucleotide polymorphisms (SNP) in leptin (*LEP*) and leptin receptor (*LEPR*) genes were compared between a group of female patients with more than three recurrent spontaneous abortion (RSA) and women with two or more successful pregnancies (SP).

**Methods:** In a cohort study 145 women with SP and 178 women with RSA were tested. Genotype of four SNP's in *LEP* (rs7799039, rs2122627, rs11761556, rs10244329) and four SNP's in *LEPR* (rs1137101, rs7516341, rs1186403, rs12062820) were determined using KASP SNP Genotyping system and ABI Prism 7000 SDS instrument. Statistical comparison was done using Chi-square statistic. The haplotype frequencies and haplotype-disease associations were estimated using haplo.stats package.

**Results:** The genotype frequencies did not deviate from HWE, except in the case of one *LEP* and two *LEPR* SNPs. In the case of rs7799039 p value for RSA and all examinees was 0.03. The recessive model (AG + GG/AA) revealed significant association between 2548A genotype and RSA (OR= 1.58). Also, two SNPs from intron region of *LEPR* (rs7516341 and rs1186403) deviated from normal distribution. In dominant model (CC+TC/TT) of the first SNP allele C decreases risk of RSA (p=0.034, OR=0.61). The second SNP was significantly different for SP group (p=0.0078) where T allele is of limited protective effect in the recessive model of inheritance (Chi-square p=0.082, OR=0.51).

**Conclusions:** It is known that mother's BMI during pregnancy influence maternal and newborn health. *LEP* and *LEPR* are candidate genes for RSA and therefore their influence on mother's BMI during pregnancy and final outcome of pregnancy deserves further investigation.

**Keywords:** recurrent spontaneous abortion, *LEP*, *LEPR*, SNP