

9<sup>th</sup> International Conference on

# Neonatology and Pediatric Neurology

November 28-30, 2016 Valencia, Spain

## Levels of biomarkers in the cerebrospinal fluid during pregnancy

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During pregnancy, birth and lactation various interactions occur between structural alterations of the maternal brain and placental metabolism. Functional and structural synaptic plasticity and dendritic remodeling occur in different regions of the maternal brain to maintain physiologic conditions and proper fetal and neonatal development during pregnancy. Cerebrospinal fluid concentrations of tau, phospho-tau-181 and amyloid  $\beta$ 42 proteins, as well as brain-derived neurotrophic factors, glial cell-line-derived neurotrophic factors and vascular endothelial growth factors were investigated. We evaluated whether biomarkers vary during normal pregnancy and in women with preeclampsia and HELLP syndrome. Biomarkers in the cerebrospinal fluid of 90 pregnant women electively assigned for regional anesthesia during pregnancy or for cesarean section were measured using enzyme-linked immunosorbent assays. Blood pressure, liver function, clotting activity and kidney function were significantly different in 11 women with preeclampsia and HELLP syndrome. The weight of the newly born, the weight of the placenta and concentrations for phospho-tau-181 correlated significantly with the disease. Phospho-tau-181 protein concentrations correlated with placental function supporting the hypothesis that altered expression of neuronal factors during pregnancy may affect development of the placenta. Levels of amyloid  $\beta$ 42 were significantly increased in 62 healthy pregnant women at term compared to 7 healthy women in the second trimester. Although not significant, the cerebrospinal fluid levels of growth factors, tau and phospho-tau-181 increased during pregnancy. This may indicate a physiological adaptive response of the brain function to the growing metabolism of the fetus.

### Biography

Cristina Alomar Dominguez has completed her Medical studies from Universitat Autònoma de Barcelona. Currently, she is working at the Department of Anesthesiology and Intensive Care at Innsbruck Medical University. In both, clinical and research fields, she managed to cooperate with the departments of Neonatology, Gynecology, Psychiatry and Anesthesiology for this pluridisciplinary project.

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