

Role of antenatal steroids in brain development of VLBW infants

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Objective. Antenatal corticosteroids are widely used in pregnancies at risk of preterm birth, but their role in brain development is debated. The aim of this study was to define the effect of a complete antenatal steroid course (cASC) on prematurity-related brain lesions, brain growth and neurodevelopment at 3 years of age in VLBW infants.

Materials and Methods. All VLBW patients admitted to our NICU in a 5-year period with brain MRI at term-equivalent age were included and their clinical data were registered. MRI scans were reviewed to identify white matter lesions (WML), intraventricular hemorrhage (IVH), and cerebellar hemorrhage (CBH). Biparietal width (BPW) and trans-cerebellar diameter (TCD) were measured and total maturation score (TMS) was calculated. Frequency of brain lesions, brain metrics and values of Griffiths Scale at

3 years of age were compared between patients with and without cASC.

Results. Out of 389 infants, 295 (76%) received cASC. In univariate analysis, cASC was associated with lower frequency of IVH (23% vs 37%, $p = 0.008$), bigger TCD (51.4 mm vs 49.4 mm, $p = 0.027$) and lower frequency of pathologic developmental score at 3 years (15.2% vs 26.8%, $p = 0.04$). In multivariate analysis cASC remained significantly associated with lower rates of IVH ($p = 0.0327$) and bigger TCD ($p = 0.034$), while the association with outcome at 3 years was not significant. No correlations were observed between ASC and TMS.

Conclusions. Complete antenatal steroid course can be beneficial for brain development as it is associated with lower rates of IVH and bigger cerebellum. A trend for the positive effect on neurodevelopment requires further studies.