TITLE: BETA₂-MICROGLOBULIN (B₂M) CONCENTRATIONS IN CEREBROSPINAL FLUID (CSF) CORRELATE WITH NEURODEVELOPMENTAL OUTCOME IN NEWBORNS WITH SYMPTOMATIC CONGENITAL CYTOMEGALOVIRUS INFECTION (SCCI)

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Background and aim: We found that CSF-β₂m correlates with neuroimaging in SCCI.

Objective: To assess the prognostic value of CSF-β₂m studying its correlation with neurodevelopment.

Design: Prospective observational study.

Setting: Tertiary University Hospital.

Population: SCCI patients born during 1992-2009 who underwent determination of CSF-β₂m by immunonephelometry. The presence of cerebral palsy (CP) was determined by structured examination and scored by GMFCS. Age-appropriate cognitive evaluation (BSID-III, WPPSI-III or WISC-IV) and behavioural assessment by ASEBA were performed. Moderate disability was defined as GMFCS II-III, BSID-III cognitive or motor scale 70-84, IQ 55-70, hearing loss (HL) corrected by aids, visual impairment (VI) with useful vision or behavioural problems other than pervasive developmental. Severe disability was defined as GMFCS IV-V, BSID-III cognitive or motor scale < 70, IQ < 55, HL not corrected by aids, total VI or pervasive developmental problems.

Results: Twenty patients were identified, two died. Mean age at follow up was 6.7y (range 19m-15.1y). CP occurred in 7/18(38.8%), moderate-severe cognitive impairment in 5/16(31.2%), HL in 6/18(33.3%), VI in 1/18(5.5%) and behavioral abnormalities in 1/18(5.5%). CSF-β₂m correlated with the grade of disability (r=0.461, P=0.04). CSF-β₂m levels were higher in patients that died or showed moderate-severe sequelae (11.31±5.77mg/L) compared to those with mild-no sequelae (5.57±2.43mg/L, P=0.017). ROC analysis showed an area under the curve of 0.80. All patients with moderate-severe sequelae had CSF-β₂m over 2.2mg/L. The cut-off value of 9.0mg/L showed 100% specificity for moderate-severe disability.

Conclusions: CSF-β₂m is an indicator of the severity of brain injury and correlates with neurodevelopmental outcome in newborns with SCCI.