P37 Exploring brain volumetrics as predictors of hearing loss in congenital CMV-infected newborns: preliminary findings and future directions

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Background and aims:
Congenital cytomegalovirus (CMV) infection is a significant cause of neurological sequelae in newborns, including hearing loss. This preliminary study analyzes the relationship between brain volumetrics and the development of hearing loss in newborns infected with CMV.

Methods:
This observational, analytical, and retrospective study was conducted on 54 newborns (NB) at the Hospital 12 de Octubre (Madrid), diagnosed with congenital CMV who underwent magnetic resonance imaging (MRI) within the first 100 days of life. The images were processed using the Infant FreeSurfer software to obtain volumetric measurements of 30 different brain regions, which were grouped into four distinct areas: deep gray nuclei, ventricles, cerebral hemispheres, and posterior fossa. The medians of the different volumetric measurements were compared based on the development of hearing loss in the newborns using the Mann-Whitney U test; additionally, a predictive model for this sequela was created using logistic regression model.

Results
14/54 NB developed hearing loss. Statistically significant differences are observed only in the medians of the ventral diencephalon corresponding to the right hemisphere, which is greater in cases that develop hearing loss [1086.0 mm^3 (949.8 - 1162.8) vs. 965.5 mm^3 (851.0 - 1044.8); p=0.038]. The predictive model identified two possible factors involved in the development of hearing loss. For every increase of 1,000 mm^3 in the ventricles, the risk of developing hearing loss increases by 1.312 (1.045-1.738) (p=0.033); whereas for every increase of the same amount in the posterior fossa, the risk decreases by 1.107 (1.013-1.258; p=0.061).

Conclusions
This is a preliminary study that should be expanded with a larger sample size, as well as the examination of other possible sequelae such as motor impairments or epilepsy. Nevertheless, the results presented appear to be promising in terms of detecting possible areas involved in the development of hearing loss in this population.