

Prenatal intracranial hemorrhage: new classification and neurodevelopmental outcome

Katorza E, Gutman Y, Bar-Yosef O
Sheba Medical Center, Ramat Gan, Israel

Objective

Fetal intracranial hemorrhage is an uncommon diagnosis on prenatal imaging. The paucity of data regarding neurodevelopmental outcome hardens prenatal decision-making. The purpose of this study was to assess prenatal characteristics and neurodevelopmental outcome of fetal intracranial hemorrhage in an MRI-based study.

Methods

This was a historical cohort study of fetal intracranial hemorrhage, detected prenatally on fetal MRI in 22 fetuses, as part of the assessment of abnormal prenatal sonographic findings. Severity was graded according to the grading system commonly used in neonates, with modifications. Prenatal data was collected. Live children neurodevelopmental outcome was assessed clinically, and by Vineland-II Adaptive Behavior Scales.

Results

Eight fetuses had intraventricular hemorrhage grade I-II, 12 had intraventricular hemorrhage grade III-IV, and 2 had infratentorial hemorrhage. The most prevalent risk factors were maternal chronic diseases and chronic use of medications. There was male predominance. Pregnancy was terminated in 11 cases. The group of living children who participated the Vineland questionnaires did not include any fetus with grade IV hemorrhage. Vineland scores were normal in 9/11 children, and moderately low in 2/11. The mean composite score of the cohort was not different from the mean score expected for age. Clinically, one child had hypotonia.

Conclusion

Children with prenatal diagnosis of grade I to III intracranial hemorrhage had an overall good neurodevelopmental outcome, with the possible bias of pregnancy termination in the severe cases. Review of the literature (1996 – 2017) demonstrated that parenchymal involvement may be a major factor affecting neurodevelopmental outcome.