Multiplanar neurosonography in fetuses with abnormalities of the posterior fossa

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Introduction
An accurate categorization of fetal upward rotation of the cerebellar vermis still remains a challenge in prenatal medicine. Recently, a new parameter of the posterior fossa (PF), the Vermian-Crest Angle (VCA) (Fig.1), has been tested in normal pregnancies. Our aim was to assess the VCA in fetuses with a pathological PF at prenatal three-dimensioanal ultrasound (3D-US).

Methods
We measured by multiplanar 3D-US the VCA in fetuses with any PF anomaly. Groups were compared using Student’s t-test and the one-way analysis of variance (ANOVA) with the Bonferroni adjustment.

Results
Results 24 fetuses at 19–28 weeks with Blake’s pouch cyst (BPC) (n=4), Dandy–Walker Malformation (DWM) (n=5), Mega Cisterna Magna (MCM) (n= 8) and Vermian Hypoplasia (VH) (n=7) were identified. The VCA was significantly changed in the DWM (132.20 ± 7.34; p ≤ .05) and BPC (104.85 ± 8.94; ps..05) subgroups of anomalies (Fig.2); the angle increased progressively with the severity of the condition according to a continuum (Fig.3): a measurement of >88° was found in the cases of a BPC, while a VCA >112° was suggestive of a DWM. On the contrary, the VCA did not change in cases of VH (71.21 ± 8.58; p = ns) nor in cases of MCM (67.00 ± 6.01; p = ns).

Conclusion
The VCA does provide valuable additional information for the assessment of vermian position within the PF. In combination with the other existing parameters, it may be helpful for addressing the categorization of upward rotation of the fetal cerebellar vermis.