weeks. Intracranial hemorrhage was diagnosed based on MRI, and a V-P shunt was placed.

US and MRI are the chief instruments for evaluating fetal intracranial lesions. The incidence of hemorrhage from CBTs is high, and if the tumour begins hemorrhaging, distinguishing it from a hematoma may become difficult. Many cases of CBT develop cystic lesions, which are sometimes difficult to distinguish from a deformed ventricle by ultrasonography. The different appearance of a cystic tumour and cerebrospinal fluid on MRI can facilitate diagnosis in such cases. Serial ultrasonographic evaluation and appropriate use of MRI may facilitate confirming diagnosis and determining the timing of delivery.

EP02.08
Abstract withdrawn

EP02.09
Occipital cephalocele: diagnosis, obstetric and postnatal management

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A 35 year old woman with an uneventful 24 weeks pregnancy was referred for anomaly scan. During the US scan we noticed an occipital bone defect of 8,1 mm by which herniates a cystic, anechoic structure of 11/11 mm without any cerebral content. The cerebral fossa was normal except for a slight cerebellar hypoplasia. There were no other cerebral or extra-CNS anomalies. Informed about the diagnosis and the possible associations and outcome the patient has chosen to continue the pregnancy with adequate follow-up.

For the relatively high risk of chromosomal anomalies (7-18%) and for the possible associations of other CNS malformations (80%) we performed amniocentesis and MRI. The karyotype was of an euploid female fetus and the MRI confirmed the occipital cephalocele and cerebellar hypoplasia without any other CNS anomalies.

The fetus was growing well, without increase of the bone defect or the cephalocele, with a normal fetal well-being scan at 32 weeks.

After counselling with the neonatologist and neurosurgeon we decided the delivery should be at term by Caesarean section due to the breech presentation and to avoid trauma and infection.

We delivered a 3150 g girl with a particular facies and a 14 mm occipital meningocele fully covered by intact skin. The neonate behaved normal, with no apnea, stridor and with a good sucking reflex. The postpartum MRI confirmed all the antepartum observations. At this moment the cephalocele should not be corrected surgically. She is regularly evaluated for cephalocele dimensions, the possible occurrence of hydrocephalus and the neurobehavioral development.

Supporting information can be found in the online version of this abstract

EP02.10
Abstract withdrawn

EP02.11
Posterior encephalocele with cerebellar displacement and hypolasia

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A 27 year old G1P0 was referred for fetal anomalies. The couple reported third-degree consanguinity. The first-trimester scan was considered within normal, with a NT=1.92 mm at 12 weeks. Morphology scan at 22 weeks showed an important posterior encephalocele of 26*20mm. The defect consisted of an important part of the cranium at the level of the occiput of about 19 mm but was still covered by the skin. The cerebellar transverse diameter was decreased, corresponding to 17 weeks. The cerebellum by itself was displaced into the defect. This was associated with an increased lateral ventricle, reaching 9.8 mm. No other structural defects were noted, namely facial or cardiac. The parents were thoroughly informed of the abnormalities and they chose to return to their treating physician for termination of pregnancy.

Supporting information can be found in the online version of this abstract

EP02.12
Hypoplasia of the cerebellar vermis in fetuses from 45 to 84 mm Crown–rump length

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Objectives: To describe hypoplasia/aplasia of the vermis cerebelli in fetuses with a CRL of 45 to 84 mm.

Methods: This was a prospective, observational study including 66 fetuses, whose mothers attended our centres for first trimester scan and showed either a major structural abnormality on ultrasound and/or had a pathological fetal karyotype. In these fetuses we examined transvaginally acquired three-dimensional volume blocks for abnormalities of the fetal fossa posterior. The measurements of the cerebellar vermis in these fetuses was compared with reference values obtained from 216 fetuses with normal fetal outcome.

Results: In five of the 66 fetuses (7.5%) the vermis cerebelli was below the 5th centile of the gestational age specific reference values. In four pregnancies termination of pregnancy was performed due to Trisomy 13/18 and holoprosencephaly. In another pregnancy the anomaly scan at 20 gestational weeks showed a Dandy Walker malformation.

Conclusions: Hypoplasia of the vermis cerebelli can be detected in transvaginally acquired three-dimensional volume blocks of the fetal brain as early as 12 gestational weeks.

EP02.13
Neurosonography and Doppler analysis of the brain and cerebellum in fetal rats with spina bifida: a novel marker for Arnold-Chiari type II malformation

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Objectives: Open neural tube defects (NTDs) are devastating congenital malformations that involve progressive encephalic abnormalities. The aim of our study is to use prenatal high frequency ultrasound (HFUS) to assess fetal Cerebellar and Cerebral Doppler velocimetry through the superior cerebellar artery (SCA) and the middle cerebral artery (MCA), respectively, at three different embryonic stages in a spina bifida (SB) rat model.

Methods: We conducted an experimental, controlled and blind study. Pregnant rats were gavaged at E10, with olive oil (sham) to three rats (Control group), and with retinoic acid (RA) to other eleven rats to induce SB aperta, occulta or no-NTD (Three experimental groups). HFUS and Doppler's were performed at E15 (40 fetuses), E17 (43 fetuses) and E20 (70 fetuses). Histology was used to confirm ultrasound findings.

Results: The average MCA PI and SCA PI in the SBA group at E20 were significantly higher than all other groups (SBO, RA No NTD, and Control). At all other embryonic stages, the difference in the MCA PI among the groups was not significant. The average SCA PI in the SBA group was also significantly higher than all other groups at E17; and at E15, a slight but not statistically significant increase in the SBA group was found.

Conclusions: HFUS is an effective tool to study the anatomic and functional encephalic impact of SB. This study confirms our hypothesis that herniation of the cerebellum due to open NTD produces a mechanical resistance to the blood flow in the posterior fossa, creating unfavourable conditions for the cerebellar oxygenation which manifests on ultrasound as a higher resistance (PI) in the SCA. Further studies in human fetuses, and now in progress, are needed.

Supporting information can be found in the online version of this abstract

EP02.14

Correlation between ultrasound and MRI measurements of the fetal cerebellum performed on the same day

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Objectives: To demonstrate the reproducibility and interchangeability of US and MR-based measurements of the fetal cerebellum in order to establish the appropriateness of referring to US nomograms when interpreting fetal MRI measurements.

Methods: Same-day US and MRI examinations of 382 fetuses referred for evaluation of ventriculomegaly were prospectively reviewed by multiple readers and transverse cerebellar diameter was recorded. Modality-specific measurement reproducibility was assessed via correlation of estimated cerebellar diameters between individual radiologists for those subjects that had 3 US readers and 4 MRI readers. Measurements across modalities were compared using the non-parametric Wilcoxon rank sum test and Spearman's rank correlation coefficient, given the non-normal distributions of all data.

Results: The 3 US-based sets of cerebellar diameter measurements were statistically similar ($p>0.9$ for all pairwise comparisons) and highly correlated (average rho = 0.85, $p<0.0001$). The 4 MRI-based sets of measurements were statistically similar ($p>0.5$ for all pairwise comparisons) and highly correlated (average rho = 0.86, $p<0.0001$). Finally, reader-averaged US- and MRI-based cerebellar diameters were statistically similar ($p=0.4$, confidence interval (CI): [-0.92, 2.25]) and highly correlated (rho=0.98, $p<0.0001$).

Conclusions: US- and MRI-based fetal cerebellar measurements are highly reproducible, with comparable inter-observer variability. Cerebellar diameters estimated by US and MRI were found to be highly correlated. These results suggest that US- and MRI-based cerebellar measurements may be used interchangeably, and previously published large cohort-based normative US biometric values may be used to interpret measurements generated from MRI images.

EP02.15

First trimester imaging in Dandy-Walker syndrome with vermian agenesis

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A 24 year old G1P0, with no consanguinity had a spontaneous pregnancy. First-trimester ultrasound showed a normal NT at 1.29, normal nasal bone and adequate biometry. IT seemed larger than usual and measured 3mm. Second trimester biochemical screening was normal. Morphology scan at 21 weeks showed an abnormal posterior fossa with an enlarged cistern magna and a decreased vermian structure. Upper displacement of the cerebellar lobes was also noted. No other CNS or morphological abnormalities were seen. The case was thoroughly discussed with the couple and they chose further investigation by amniocentesis. The latter revealed a normal karyotype and the absence of the most frequent microdeletions by microarrays. MRI was also performed and confirmed the diagnosis of vermian agenesis; the pediatrician highlighted the severity of the long-term outcome and the couple elected then termination of pregnancy. Post-mortem evaluation did not reveal additional abnormalities features. Upon reviewing the first trimester images there was a possible link between the sagittal images and the latter diagnosis. What would become the increased cistern magna would probably be the atypical intracerebral translucency noted then. Even though it is difficult to identify the cerebellum at 12 weeks, discrete anomalies of the posterior fossa in the first trimester could be a sign for vermian agenesis.

Supporting information can be found in the online version of this abstract

EP02.16

Case of hypoplasia cerebellar vermis with dynamic ventriculomegaly change

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Fetal CNS(central nerve system) was changing, in other words developing, during gestation. It might be difficult to diagnose correctly before birth. It was the case report of hypoplasia cerebellar vermis with dynamic change of ventriculomegaly. The patient was Japanese 35 y/o 0G,0P. She was come to hospital for hydrocephalus at 14w. The size of BPD was +2.5sd. Ventriculomegaly was obvious, choroid plexus was thin not like butterfly shape. At 17w, there was enlarged posterior cranial fossa, elevation cerebellar vermis and corpus callosum loss. Supine was intact. We measured BV(Brainstem–vermis and brainstem–tentorium) angle to make