Objective
To describe a technique based on 3D US (three dimensional ultrasound) for evaluating the fetal vermian biometry, to provide new nomograms of four vermian parameters (maximum supero-inferior diameter, maximum antero-posterior diameter, perimeter and surface area for consecutive gestational weeks in fetuses with normal posterior fossa) with 3D US, 2D US (bidimensional ultrasound) and MRI (magnetic Resonance Imaging) and finally to compare the 3D US measurements with the 2D US and MRI measurements.

Methods
A prospective study was conducted between June 2006 and June 2013 in 205 fetuses (18-35 gestational weeks) evaluated by 3D US, 199 (18-36 gestational weeks) by 2D US and 201 (24-41 gestational weeks) by MRI. 3D scan of the fetal head in the axial plane at the level of the transverse cerebellar diameter (TCD) was acquired. Measurements of the four vermian parameters were performed using the static Volume Contrast Imaging (VCI) in the C plane (VCI-C). The same measurements were performed by 2D US and MRI.

Results
Using 3D US VCI-C modality, the vermis was observed and measured in all cases. All the measurements using the three methods were strongly and linearly correlated with gestational age and showed a linear increase during pregnancy. Percentile ranges of vermian parameters evaluated by the three methods were calculated and tabulated for consecutive gestational age.

Conclusion
VCI-C is a valuable tool, allowing assessment of fetal vermian biometry may be helpful in the diagnosis of vermian pathology with the advantage of early diagnosis. The nomograms developed in this study are important as reference values in an accurate evaluation of the cerebellar vermis.