Objective
To evaluate the association between ventriculomegaly and brain structural anomalies (BSA) at 11**-13** weeks of gestation.

Methods
In this single Centre prospective study, the ultrasound measurement of the fetal ventricles was obtained on the axial view of the fetal head at 11**-13** weeks’ gestation using three different methods. We selected a non-consecutive series of fetuses with a BSA detected in the first trimester, excluding neural tube defects, and a group of normal fetuses as controls. On this view, the ratio between the choroid plexus (CP) and ventricle lengths (CPVLr), areas (CPVAr) and the ratio between CP areas and head area (CPHAr) were measured for both groups. Measurements obtained from the two groups were compared, and the association of each parameter with brain anomalies has been also investigated.

Results
Out of 367 fetuses, 9 with BSA were included (6 cystic posterior fossa, 2 interruption of the midline and 1 intracranial cyst). In normal fetuses the CPVLr, CPVAr and CPHAr were correlated with crown-rump length (p<0.01). Only CPVLr was significantly reduced in the BSA group (p<0.01) with a mean value of 0.51 (SD 0.16) compared to 0.71 (SD 0.22) of normal cases. The CPVLr best cut-off value to detect BSA was 0.58, with an area under the ROC curve of 0.83 (sensitivity 93.8%, specificity 66.6%, PPV 99.2%).

Conclusion
Ventriculomegaly seems associated to BSA already in the first trimester. CPVLr shows higher association with BSA, and the evidence of a reduced CPVLr at 11-13 weeks should prompt detailed evaluation of the fetal brain.