Objectives:
Ventriculomegaly is the term meaning the enlargement of ventricles. Various kinds of etiology and genetic factors exist as the background of ventriculomegaly. Moreover, there are various shapes in ventriculomegaly such as posterior prominent, anterior prominent and enlargement of whole ventricles. So far, measurement of atrial width (AW) has been the ‘golden standard’ for evaluating ventriculomegaly. However, AW is usually measured on 2D transabdominal axial section and just the distance of atrial part. The first aim of this study is to create reference range of ventricle-occupying ratio (VOR). The second aim is to evaluate VOR in cases with ventriculomegaly and refer postpartum histology or perinatal outcome and neurological prognosis.

Patients and Methods:
For the first study, 455 appropriately grown live fetuses with no suspected structural and chromosomal defects between 18th and 30th week’s were enrolled. 35 cases were enrolled at each gestational week. Whole brain volume dataset by transvaginal three-dimensional ultrasound was used. Volumetry of intracranial cavity volume, left and right lateral ventricle volume were calculated by Virtual Organ Computer-aided Analysis (VOCAL) with manual 15-degree rotation.

Results:
The normal references were obtained with increasing ventricular volume, increasing intracranial cavity volume and decreasing VOR with advanced gestational weeks (Figure 3). Intraexaminer and interexaminer tests showed both intra-class correlation (95% confidence interval) more than 0.9. In the 13 ventriculomegaly cases, intracranial cavity volume increased along with reference range but lateral ventricular volume were all above 90 percentile. Six cases with decreasing VOR delivered at term and favorable prognosis at 5 months to 7 years (Figure 4). Figure 5 shows one of ventriculomegaly case at 19 weeks with favorable outcome. In this case, unchanged AW (15-16mm) was seen during pregnancy however remarkable decrease of VOR between 19 and 22 weeks.

Conclusions:
3D-VOR is a new method for longitudinal evaluation of ventriculomegaly and may be more reasonable and reliable method for evaluating ventriculomegaly than AW. From our data, rapid decreasing of VOR between 18-23 weeks may be one of signs for favorable outcome/prognosis. As a conclusion, genetic investigation, detailed morphological assessment and volumetric evaluation may be one of the ‘determinants’ for postnatal prognosis.