

## FP113

**MRI morphometric measurements of the third ventricle in children with hydrocephalus due to aqueductal stenosis treated with ETV**Vassilios Tsitouras<sup>1,2</sup>, Spyros Sgouros<sup>1,2</sup><sup>1</sup> "Mitera" Children's Hospital, Athens, Greece<sup>2</sup> University of Athens, Athens, Greece

**Introduction:** Aqueduct stenosis causing hydrocephalus represents the clearest model of an obstructed third ventricle, without any other confounding anatomical factors, notwithstanding the age issue. The purpose of this study was to examine possibly significant differences of specific MRI measurements of the third ventricle in patients with hydrocephalus due to aqueduct stenosis.

**Methods:** We examined the immediate preoperative MRI scans of 8 patients that underwent an ETV procedure for aqueductal obstruction. A DICOM image analysis software was utilized and five measurements were chosen. The distance from the floor of the third ventricle to the anterior commissure (dI) and the upper most point of the forniceal curvature (dII), the total area of the 3<sup>rd</sup> ventricle on a midline sagittal view (mm<sup>2</sup>), the volume of the ventricle as examined in the same view (cm<sup>3</sup>) and the width of the 3<sup>rd</sup> ventricle on an axial cut.

**Results:** Five patients had aqueductal stenosis, two had midbrain tumors and one had a thrombosed vein of Galen malformation (VGM). The ETV was successful in six children and failed in two. The median age of the children that failed was 2,5 months and for the successfully treated was 57,5 months. The mean values of four measurements (dI, dII, volume and area) were higher in the cases of successful ETV with the area difference reaching statistical significance (p: 0,018). Interestingly, the mean width of the third ventricle was higher in the patients with failed ETV (p: 0,264).

**Conclusion:** The morphology of the third ventricle in children with hydrocephalus due to obstruction of the aqueduct and successful ETV treatment, seems to be different from those in whom ETV failed. The larger the area of the third ventricle in a mid-sagittal MR image the higher the chance of success.