



## Preoperative volumetry analysis is associated with higher efficacy of stereotactic evacuation of cystic brain lesions or abscess: retrospective comparison in a single center

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**Introduction:** Preoperative volumetry is used to assess the volume of fluid in different brain cystic lesions in patients undergoing stereotactic cyst evacuation. We hypothesize that preoperative volumetry might aid in optimizing the extent of cyst volume reduction by providing a benchmark.

**Aim:** We aimed to compare cyst evacuation efficacy with regards to (non) performance of preoperative volumetric analysis.

**Materials & Methods:** Clinical Hospital Center Zagreb digital archive was screened for patients who underwent stereotactic brain cyst aspiration between January 2013 and December 2019. Data were collected on patient age, sex, and pre- and postoperative cysts volumes. Patient data were compared between volumetry and non-volumetry group, also pre- vs. postoperative cyst volumes were compared intragroup.

**Results:** We identified eleven patients, eight were operated for a brain abscess and three for a tumor cyst. Median age was 31 years (range 6-64), three were women and eight men. Median preoperative cyst volume was 21.0 cm<sup>3</sup> (range 1.0-38.2 cm<sup>3</sup>), median postoperative volume 5.4 cm<sup>3</sup> (0.8-16.1 cm<sup>3</sup>), median change in volume 9.7 cm<sup>3</sup> (range 0.8-27.4 cm<sup>3</sup>). Five patients had a preprocedural volumetry (volumetry group) and six patients did not (non-volumetry group); there were no significant differences in age, sex, preoperative volume, postoperative volume, and volume change across groups. There was a lower median residual cystic volume in the volumetry group. The pre- vs. postoperative difference in cyst volume was significant in the volumetry group (10.8 cm<sup>3</sup> to 2.7 cm<sup>3</sup>,  $P = 0.012$ ) and not significant in the non-volumetry group.

**Conclusion:** Our results suggest an association between volumetric assessment and extent of brain cyst evacuation. Notwithstanding limitations due to sample size, we hold that the data are indicative and warrant further research. Volumetric analysis should be considered a standard diagnostic adjunct in all patients undergoing a brain cyst evacuation procedure.

**Key words:** brain abscess, stereotaxy, volumetry