

Peritumoral brain edema and surgical morbidity in the skull base meningiomas

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Background: Despite the novel technologies in operative technique, the refreshment of WHO grading system and the expansion of the molecular biology, there are still several questions regarding skull base meningiomas. It is not clear, whether peritumoral brain edema (PTBE) can influence the outcome of the treatment. Exactly mechanism of PTBE formation has not been clearly elucidated. Aim of this retrospective cohort study is to evaluate if PTBE predicts higher postoperative morbidity in meningiomas of the skull base.

Methods: We retrospectively reviewed patients operated between 2012 and 2021. The following data was statistically analysed - location of the meningioma according to Yasargil classification, presence of the PTBE, its grade and postoperative complications. The grade of PTBE was classified in this fashion - grade I (size < 1 cm), grade II (1 - 3 cm) and grade III (> 3 cm) on T2-weighted MRI images. The observed complications were hematoma, CSF leak, hydrocephalus, neurological deficits (newly occurred or worsen previous) and cardiopulmonary.

Results: Overall 96 patients were included in our study. PTBE has occurred in 58 patients (60,4%), 38 patients (39,6%) was PTBE-free. Regarding the grade of PTBE - grade I (29,3%), grade II (31%) and grade III (39,7%). Postoperative complications have occurred in 39 patients (40,7%) of which 32 patients with PTBE (82%). 57 patients (59,3%) possessed the postoperative course without any complications - 26 patients (45,6%) from them had associated PTBE. In the group of patients with the postoperative hematoma there was captured the positive correlation. With an increasing in the grade of PTBE increase as well the number of patients with hematoma.

Conclusion: In retrospective evaluation of a single center cohort we have confirmed potential association between the occurrence of PTBE and its influence on complicated postoperative course.