OP36

Long-term seizure control outcomes after resection of mesiotemporal glioneuronal tumors: a study of 52 pediatric patients

P. Kowalczyk, P. Daszkiewicz, M. Roszkowski
Department of Pediatric Neurosurgery, Children's Memorial Health Institute, Warsaw, Poland

Background: Rare glioneuronal tumors are the most common cause of focal epilepsy, particularly in children and young adults, accounting for approximately 40% of all temporomediobasal (TMB) neoplasms presented in large series.

Objective: To assess the impact of clinical characteristics, type of approach and extent of tumor resection on seizure control.

Methods: Seventy patients with TMB neoplasms were identified from the tumor database. Thereof, 52 patients with epileptogenic glioneuronal tumors underwent surgery and were included in this retrospective study. Preoperative symptoms, magnetic resonance imaging scans, surgical approaches, technical problems, and complications are described. Postoperative seizure control over a mean follow-up of 2.94 years (range: 1-7 y) was assessed, and possible prognostic factors analyzed.

Results: Glioneuronal tumors accounted for 74% of all TBM neoplasms in our material, the most common being ganglioglioma (n=48) while dysembryoplastic neuroepithelial tumor was rare (n=4). 17 tumors co-existed with cortical dysplasia (type IIIB). Mean age of the patients was 10.26 years (range: 1.5-18.0 y). Epilepsy was the leading manifestation in all cases and 84% thereof where considered drug-resistant. The most frequent tumor location was mesial Type A - 69%, followed by mesial+temporolateral Type C - 23%. Based on MRI-defined tumor extent, three surgical approaches were used: transsylvian (46%), temporal pole resection (39%) and transcortical (15%). Gross total tumor resection was achieved in 51 patients and partial resection in 1 (type D tumor, stable on follow-up). Within the above-specified follow-up, tumor progression was seen in 3 patients undergoing gross total resection. Overall, 87% of the patients are seizure-free (ILAE class I or II). The following factors: drug-resistant epilepsy prior to surgery, type C tumor location and co-existing cortical dysplasia proved to be significantly correlated with sub-optimal postoperative seizure control (ILAE class IV and V; 13%). Contrariwise, type of approach, extent of tumor resection and recurrence were not relevant to the specified outcome. Permanent neurological complications occurred in 28% of the patients, including significant new hemianopia in 6 patients.

Conclusion: In TMB glioneuronal tumors presenting often with drug-resistant epilepsy, surgery is recommended to alleviate disabling seizures and avoid side effects of long-term antiepileptic medication. However, risk of new postoperative deficits, particularly in gangliogliomas, may outweigh potential benefits of radical surgery in tumors located within medio-basal temporal and adjacent structures.