Hemispherectomy for Rasmussen's encephalitis

Compared with functional hemispherectomy and hemisphere disconnection, anatomical hemispherectomy elicited better seizure outcomes with an acceptable level of complications. Early-stage operations might lead to better cognitive status, but they are associated with a high risk of IQ decline [1].

Obtaining complete disconnection is critical for favorable seizure outcomes from hemispherectomy, and neurosurgeons should have a low threshold to reoperate in patients with Rasmussen's encephalitis with recurrent seizures. Rapid progression of motor deficits and bilateral MRI abnormalities may indicate a subpopulation of patients with RE with an increased risk of needing reoperation. Overall, they believe that hemispherectomy is a curative surgery for the majority of patients with RE, with excellent long-term seizure outcomes [2].

The majority of pediatric patients undergoing resection or hemispherectomy for RE achieve good seizure outcome. Although small retrospective cohort studies are inherently prone to bias, the best available evidence utilizing individual participant data suggests hemispheric surgery and younger age at the surgery are associated with good seizure outcomes following epilepsy surgery. Large, multicenter observational studies with long-term follow-up are required to evaluate the risk factors identified in a review [3].

Hemispherotomy remains the gold standard treatment but causes permanent functional impairment. No standardized medical treatment protocol currently exists for patients prior to indication of hemispherotomy, although some immunotherapies have shown partial efficacy with functional preservation but poor antiseizure effect. Some studies suggest a role for tumor necrosis factor alpha (TNF-α) in RE pathophysiology.

1)
Guan Y, Chen S, Liu C, Du X, Zhang Y, Chen S, Wang J, Li T, Luan G. Timing and type of hemispherectomy for Rasmussen's encephalitis: Analysis of 45 patients. Epilepsy Res. 2017 May;132:109-115. doi: 10.1016/j.eplepsyres.2017.03.003. Epub 2017 Mar 22. PMID: 28399506.
2)
Sundar SJ, Lu E, Schmidt ES, Kondylis ED, Vegh D, Poturalski MJ, Bulacio JC, Jehi L, Gupta A, Wyllie E, Bingaman WE. Seizure Outcomes and Reoperation in Surgical Rasmussen Encephalitis Patients. Neurosurgery. 2022 May 13. doi: 10.1227/neu.0000000000001958. Epub ahead of print. PMID: 35544031.
3)
Harris WB, Phillips HW, Chen JS, Weil AG, Ibrahim GM, Fallah A. Seizure outcomes in children with Rasmussen's encephalitis undergoing resective or hemispheric epilepsy surgery: an individual participant data meta-analysis. J Neurosurg Pediatr. 2019 Dec 6:1-10. doi: 10.3171/2019.9.PEDS19380. [Epub ahead of print] Review. PubMed PMID: 31812145.