FP49

Low-grade tumors associated with cortical dysplasia and focal epilepsy: a surgical pediatric case series

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Introduction: Among the neoplasms causing intractable epilepsy, a minority of glioneuronal tumors (WHO grade I) can be found in association with malformation of cortical development or within cortical dysplasia. The true incidence of this association is underestimated because not all the epileptogenic lesions underwent epilepsy surgery or the sample collection is sometimes not correct.

Methods: Six pediatric patients (3M-3F; age range 2-15 years) who underwent surgery for low-grade tumors associated with cortical dysplasia were analyzed. All patients underwent a preoperative study including brain MRI, video EEG and neuropsychological assessment. Follow up ranged from 3 to 24 months.

Results: Epilepsy onset ranged from 7 months to 13 years (mean 80.5 mo). Seizure frequency varied from several per day to few per month. In 5 out of 6 patients the epileptogenic area including the tumor was localized in the temporal lobe. According to the preoperative study, extension of the resection over tumor edges was planned by the epilepsy surgery team. Histological examination documented ganglioglioma in 3 patients and low-grade astrocytoma in 3 patients. Cortical dysplastic areas adjacent to the tumor and dysplasia were reported in the whole series. All patients were seizures free after surgery (Engel Class I).

Conclusion: Our experience suggests that resection of epileptogenic areas surrounding brain tumors allows sometimes to define dysplastic areas and to determine a seizure-free outcome with improved quality of life.