Surgical treatment and outcome of multi-foci epilepsy

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Background and Objective: Among the patients with surgically remediable epilepsy, those with simple and localized epileptogenic zone, such as temporal lobe and frontal lobe epilepsies have a better outcome. On the other hand, many patients with multiple epileptogenic zones are intractable to medication and/or surgery.[1,2] From 2002 year to Oct 2004 year, we have surgically treated 77 patients with multiple epileptogenic foci and had systematic followed-up for average of 37 months. This is a report of the outcome of these patients.

Methods: The inclusion criteria for this analysis are patients with more than 3 epileptogenic zones in different lobes of the brain. The decision for surgery was based on comprehensive evaluations. The data was retrospectively evaluated. Other than MRI, Video-EEG, PET and SPECT, neuropsychological tests were undertaken in 31 patients where surgery was done on the dominant hemisphere. 21 patients had unilateral large craniotomy, with fronto-temporal or parieto-occipital lobectomy or hemispherectomy. 29 patients had unilateral craniotomy with anterior or posterior corpus callosotomy. 27 patients were operated in both hemispheres by stages, and 1patient had vagus nerve stimulation (VNS). Two operative methods were used in 10 patients and three methods in 44 patients. 10 patients had simple bipolar electro-coagulation on functional cortexes (BEFC), which has a similar mechanism and indication for epilepsy from multiple subpial transaction (MST).[3] The different methods may be carried out by stages. Micro-surgical technique was used in all operations under electrocorticogram (ECoG) monitoring to sketch out the epileptogenic areas, and sometimes to stimulate the adjacent cortex to identify the eloquent cortexes. BEFC could be done repeatedly based on the results of ECoG

Results: The surgical outcome was graded according to Engel's criterions. During 7-76 months follow-up, 32 patients had good outcome corresponding to Engel class I, 19 patients had Engel class II, 16 cases Engel class III and 10 cases Engel class IV. A total of 53/77 patients (66.3%) had good outcome (Class I or II), which is inferior to the outcome for temporal lobe epilepsy. The neuropsychological functions improved in 27 patients (35.1%). Among the 18 patients with complications, 15 patients eventually recovered and only 3 patients (4.7%) had unsatisfactory recovery during follow-up.

Discussion and Conclusion: Most of our patients had 10 years of severe, frequent, and multiple form of seizures. They were resistant to multiple antiepileptic drugs. Many had past history of diffuse brain damage, such as encephalitis and severe cerebral traumatic injuries. We have shown that surgical treatment on these multi-foci and refractory epilepsies can achieve satisfactory outcome. However, careful presurgical evaluations are required, and a combination of 2 or 3 operation methods may be necessary, such as multiple lobectomy, corpus callosotomy and BEFC. AEDs continue to be required after the operation. Longer follow-up and larger series of patients may provide a more complete picture of the outcome.

References

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