Editorial

Medial temporal epilepsy

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In their article, Hu et al. have provided interesting data on the results of the 2 most commonly used approaches for treating medial temporal lobe epilepsy. They performed a meta-analysis comparing the seizure-free and memory (IQ) outcomes after anterior temporal lobectomy (ATL) versus selective amygdalohippocampectomy (SelAH). They found that ATL was more likely to result in seizure freedom than SelAH, although the percentages were similar (71% vs 66%). Fewer studies were available to compare memory outcomes, and there was no difference between the types of surgery in that important outcome measure. Hu and colleagues correctly describe the limitations of this evaluation, including the paucity of data from prospective studies, especially with respect to memory outcomes. Nevertheless, this analysis confirms in a meta-analysis what many epilepsy surgeons have understood: the most commonly performed selective resections of the medial temporal lobes are slightly less likely to result in seizure freedom and do not spare memory function.

It should not be surprising that anterior lobectomy should result in somewhat improved seizure-free outcomes compared with the more selective resections. When electrocorticography is used to define the amount of tissue to be resected (so-called tailored approach), it is common to see combined medial and neocortical epileptiform activity. Anterior temporal neocortical resection may include some or all of these areas. What is not obvious is why selective resections do not confer an advantage with respect to verbal memory function. It is possible that the track taken through the brain to the medial temporal structures results in as much disruption of memory networks as tissue removal. Recent attempts to avoid damage to the neocortex have focused on the subtemporal approach. While early reports with small numbers of patients have been encouraging, subsequent evaluations have shown results similar to what is shown in this meta-analysis: that memory deficits may not be spared when direct comparisons are made with other techniques. Similarly, preliminary evidence from radiosurgical treatment of the medial temporal lobe indicates that there is a relative sparing of verbal memory. A larger series that randomizes patients to standard lobectomy and radiosurgery is underway.

Given these results, it is difficult to understand why so many epilepsy surgeons seem to prefer the SelAH procedure. Perhaps it is the seeming elegance of the selective approach, using available technology (frameless stereotactic guidance and microsurgical technique) that is attractive. As the most important determinant of quality of life after epilepsy surgery is seizure freedom,5 the decision on the type of surgery to perform should be based on the best available evidence. As Hu et al. stated in their conclusions, further studies are needed to properly compare these techniques. However, until better data are available, appropriately directed, larger resections seem to have an advantage in the most important aspect of epilepsy surgery, seizure control.

Disclosure

Dr. Barbaro reports receiving research support from NIH/NINDS and Elekta AB.

References

Response

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We greatly appreciate Dr. Barbaro’s thoughtful and insightful comments on our paper. Besides seizure outcome, neuropsychological outcomes including memory function are important issues to which most neurosurgeons pay close attention. During the ATL procedure, the network of memory might be disrupted by neocortical resection. Given this anatomical evidence, SelAH should show advantages in memory outcomes. As Dr. Schramm addressed in his review article,3 some studies have compared memory outcomes between the 2 types of surgery for patients with temporal lobe epilepsy. Most of those studies suggested that SelAH had advantages in memory functions, and the advantages varied from author to author. However, from the aspect of neuropsychological impairment by consistent seizures, ATL has a better seizure outcome that may lead to less memory impairment after surgery. Based on aforementioned factors, we postulate that patients who undergo ATL may perform worse in memory functions during short-term follow-up, but this difference may become negligible or even reversed in the long run due to the difference in seizure outcomes. Since IQ scores may not specifically reflect memory functions, it is meaningful to perform meta-analyses with respect to memory outcomes. While due to the variability of tests or absence of detailed data, it is impossible to pool those memory data. Interestingly, a recently published meta-analysis comparing the two procedures also mentioned this problem.2

Although previous studies have demonstrated differing conclusions about the comparison of ATL and SelAH with respect to seizure outcome, the majority of neurosurgeons held the opinion that the two procedures had similar seizure outcomes. Among the 11 studies included in our article, 9 suggested the difference in seizure-free rates did not reach statistical significance. Given these results, it is not surprising that many epilepsy surgeons seem to prefer the SelAH procedure. Our study and the previously mentioned meta-analysis2 may change this condition to some extent.

References


Please include this information when citing this paper: published online September 13, 2013; DOI: 10.3171/2013.5.JNS13704.