CHAPTER 8

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General discussion

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The aim of the presurgical work-up in patients with temporal lobe epilepsy is to assess whether epilepsy surgery is indeed a treatment option, with freedom from seizures as ultimate treatment goal.[26] We found that during the presurgical diagnostic work-up of these patients, results from MRI and video EEG monitoring appeared to contribute strongly to the decision whether or not to perform epilepsy surgery.[137] If MRI and EEG monitoring results are inconclusive, FDG-PET should be performed as the next step.[130] In the Netherlands, patients considered eligible for surgery undergo a Wada procedure. We found that this can be restricted to a unilateral procedure in most patients.[138] The use of the Wada procedure in the presurgical work-up has been debated in recent years,[139] and functional MRI may provide a non-invasive replacement for this procedure to assess language lateralization. However, the possibilities of functional MRI to assess memory function are still unclear.[140]

Diagnostic test results that independently contribute to the decision concerning temporal lobe epilepsy surgery in patients referred for the presurgical work-up are not necessarily also predictors of postoperative freedom from seizures.[130;137;141] Interictal and ictal EEG results both contribute to the diagnostic decision for or against surgery, but have no value in predicting postsurgical freedom from seizures. In contrast, age, absence of tonic clonic seizures, absence of status epilepticus in the patient history, and absence of ictal limb dystonia during the seizure are all predictors of postoperative seizure freedom but have no added value in the presurgical work-up regarding the decision whether or not to perform surgery.[137;141] Absence of ictal limb dystonia as a predictor of postoperative seizure freedom is remarkable, because the occurrence of ictal limb dystonia is generally considered a reliable localizing and lateralizing sign in the presurgical work-up.[59-61] MRI results and unilateral temporal abnormalities on FDG-PET both appear to contribute to surgical decision-making and to postoperative freedom from seizures, although MRI findings are interpreted somewhat differently for both

purposes.[130;137;141]

As postoperative outcome, we used postoperative seizure freedom, defined as Engel class 1, one year after surgery.[141] Since the goal of epilepsy surgery is to improve functioning and well-being, quality of life also is a meaningful outcome.[142] Postoperative seizure freedom is strongly related to an improved quality of life,[143-145] and in seizure-free patients the absence of auras is independently associated with quality of life.[143] While patients consider the distinction between Engel class 1A (absence of both auras and seizures) and Engel class 1 (absence of disabling seizures) to be highly relevant, clinicians appear to be satisfied when Engel class 1 is attained. This is why most studies, including ours, use Engel class 1 as outcome.[129;141] Although we did not systematically determine quality of life in our study population, we found similar results when we used Engel class 1A as outcome in the prediction of postoperative seizure freedom as when we used Engel class 1 as outcome.[141] It might be interesting and clinically relevant to assess specifically whether postoperative quality of life (e.g., at one year) can be predicted using diagnostic test results and surgical variables.

Considering the utilization of epilepsy surgery in general, we found that more patients who have been treated unsuccessfully in secondary and tertiary care centers should be referred for presurgical work-up for epilepsy surgery, namely, 1.3 to 2.4 times more patients treated in secondary care and 1.1 to 1.4 times more patients treated in tertiary care.[146]

International comparison

The Dutch presurgical evaluation program for epilepsy patients is national and includes all patients referred in the Netherlands. The Dutch program is as effective as programs in other countries, as reflected by similar percentages of surgery and postoperative seizure freedom.[16] With respect to the use of MRI and video EEG monitoring, the presurgical work-up itself also seems similar to that used in

programs in other countries.[16] However, the use of other ancillary tests may differ considerably between countries, for example, the Wada test, which is standard in some countries but not in others.[139] Furthermore, the use of intracranial EEG monitoring differs considerably between countries. In the Netherlands, only 19 of 469 consecutive patients (4%) referred for the presurgical work-up of temporal lobe epilepsy surgery in the last decade underwent intracranial EEG monitoring, while in other countries this percentage is much higher, namely, 25% in the USA and 50% in France.[147;148] Furthermore, the techniques used differ (subdural or intracerebral monitoring). The Dutch program is focused on reaching an accurate decision about whether to perform surgery on the basis of the least invasive diagnostic tests.

Future research

The existing differences in the use and performance of ancillary tests limit the possibility of a valid comparison of different presurgical work-up programs and to obtain an international consensus on the test results required to make a decision about whether to perform temporal lobe epilepsy surgery. More studies aimed at assessing the contribution of diagnostic tests in other presurgical work-up programs are needed. Comparison of the results of such studies with our results may be a first step toward reaching international consensus on the presurgical work-up for temporal lobe epilepsy surgery. Nevertheless, based on the results of this thesis, a protocol for reaching the decision for or against temporal lobe epilepsy surgery can be suggested (figure 8.1).

A randomized study is needed to validate the clinical value (in terms of patient outcome) of the protocol described in figure 8.1. Patients referred to the presurgical work-up should be randomized to either the current work-up or to the suggested protocol. Then both operated patients and patients rejected for surgery should be followed up, with seizure freedom being used as primary outcome variable and quality of life as secondary outcome variable.

Figure 8.1. Flow chart of suggested protocol for the presurgical work-up