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WHY DO WE NEED EPILEPSY SURGERY PROGRAM

1. WHEN IS EPILEPSY PHARMACORESISTANT?

It is vital to establish the diagnosis of epilepsy and its medical intractability before epilepsy surgery is considered. Prognosis of seizure control depends on the etiology of epilepsy. Minimum criteria to determine medical intractability are failure of at least 2–3 AEDs of first choice in monotherapy to control seizures. The prevalence of epilepsy has been assessed at 0.4–0.9% in Croatia. Studies showed that about 70–80% will enter 5-year remission, but approximately 20–30% develop chronic intractable epilepsy. Good prognosis may be related to the timing with which seizures are brought under control. Poor prognostic factors include large number of seizures, long duration of epilepsy, partial seizures, psychosocial handicap, and psychiatric and neurological deficit.

The objective of surgical treatment of epilepsy is seizure control and improvement of quality-of-life of patients with medically intractable epilepsy. A careful diagnostic evaluation is mandatory to localize the epileptogenic zone. It has been clearly demonstrated that surgical treatment for intractable epilepsy is an effective and safe treatment. It leads to seizure freedom in > 70% of patients who suffer from TLE and in 40 to 70% of those who suffer from extratemporal neocortical epilepsy. Although epilepsy surgery is safe and effective, it is not free of complications. Removal or disconnection of functionally normal brain areas is often an essential part of the surgical strategy, which leads to potential neurobehavioral complications. Complications either from invasive diagnostic or surgical procedures should be known due to ethical considerations, and the physicians should inform patients and their family members.

2. HOW LONG TO WAIT BEFORE REFERRAL FOR EPILEPSY SURGERY?

The rationale of early epilepsy surgery is based on the notion that a therapeutic intervention early in the course of epilepsy will minimize potential psychosocial

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and cognitive effects of chronic epilepsy and, thus, improve the long-term quality-of-life outcome. If acceptable seizure control is not achieved, a patient should be referred to an epilepsy surgery center for further evaluation.

In a population of children and adults with temporal lobe epilepsy it was demonstrated that the postoperative outcome with respect to seizure freedom is related to the duration of epilepsy. Approximately ninety percent of patients who had had epilepsy less than 10 years became seizure free postoperatively, whereas only about one-third of those who had had epilepsy more than 30 years became seizure free.

3. HOW TO SELECT SURGICAL CANDIDATES?

The results of epilepsy surgery depend on how well the epileptogenic zone can be identified and how completely it can be removed without resecting functional essential cortex. Presurgical evaluation should (1) select those patients who could benefit from surgery and (2) exclude those whom surgery would not help and may even harm. For this purpose a highly specialized multidisciplinary approach is required. The diagnostic evaluation of majority of the patients considered for epilepsy surgery can be based on noninvasive evaluations.

The selection criteria for epilepsy surgery include:

- Confirmed diagnosis of epilepsy
- Medical intractability
- Disabling seizures
- Resectable focus (except for corpus callosotomy candidates, vagus nerve stimulation, and deep brain stimulation)
- Motivated patient
- No progressive underlying cause (except Rasmussen's encephalitis)
- High probability that better seizure control will improve quality of life

The purpose of the noninvasive evaluation is to establish the diagnosis and to localize the epileptogenic zone.

The diagnostic evaluation includes the following:

- Seizure description and patient history, including description of aura
- EEG
- Video/EEG monitoring
- MRI with epilepsy protocol
- PET/SPECT imaging
- Neuropsychological evaluation

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