Lesionectomy for Temporal Lobe Lesion can Result in Reduced Need of Antiepileptic Drugs


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BACKGROUND: Seizure outcomes after lesionectomy have been proven to be equivalent to excision, which ablates the epileptogenic cortex with the lesion. Different forms of resection surgery, as well as temporal lobectomy, are being investigated as therapeutic options for people with focal epilepsy who have not responded to medication. Although seizure control is the primary goal of epilepsy surgery, lowering or quitting antiepileptic drugs (AEDs) following epilepsy surgery is also an essential goal for patients and epileptologists.

CASE PRESENTATION: We described a thirteen-year-old female who had suffered from headaches and multiple bouts of complex partial seizures for three years before undergoing surgery for a well-circumscribed lesion occupying the medial portion of the left temporal lobe next to the pole, with modest compression of the ipsilateral crus of the midbrain. Following surgery, the patient was kept on levetiracetam and phenytoin, which was later converted to a single antiepileptic drug with complete seizure control.

CONCLUSION: Patients on multiple antiepileptic drugs for control of temporal lobe lesional seizures can be kept on a single antiepileptic drug after resection of the lesion and slowly the dose can be reduced.

KEYWORDS: Antiepileptic drugs, Epilepsy, Lesionectomy, Temporal lobe.
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The institution has approved the study and patient’s guardian was consented for publication. It was decided to perform lesionectomy to reduce the need for drugs and the cost load. From the condylar line posteriorly along the superior temporal line up to the anterior end, a question mark incision was created beneath the root of the zygoma. Subtemporal temporal lobe retraction was possible thanks to hypotensive anesthesia and gravitational retraction. A piece of the tumor was visible on the inferior temporal gyrus, which was pierced, and intratumoral debulking was performed by bipolar cautery and suction. The tumor was gray, squishy, suckable and vascular. Leaving the height component in situ allowed for nearly complete removal. Dura was coiled in layers and was closed watertight.

A contrast-enhanced postoperative computerized tomography (CT) of the brain revealed a residual tumor with minimal pneumocephalus and no tumor bed hematoma. No complications were noted after surgery. The patient was given injectable levetiracetam 500mg twice daily and phenytoin 100mg twice daily until day 7, when she switched to oral version at the same dose and frequency. The patient was discharged from the hospital with the same medications. We checked in with the patient after the first, third, fifth, and sixth months, and reduced AEDs from dual to monotherapy after the fifth month. No seizure was observed even after sixth months. Her electroencephalography (EEG) was done after that and it showed normal findings. We followed the patient for one year and found that she was completely seizure free with a single antiepileptic drug (levetiracetam).

DISCUSSION

The primary objective of epilepsy surgery is to give the patient a life free of seizures. Another objective is to progressively lessen and finally stop using the AEDs. However, research on AEDs cessation is limited. Andermann et al. advocated making no modifications for “an arbitrary period of one year” and considering AEDs discontinuation after two or three years. Following epilepsy surgery, the doctor usually switches from polytherapy to monotherapy, which reduces the drug-related side effects. However, another study suggests that the total drug load may be more important than the number of AEDs as regards toxicity.

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regimens following epilepsy surgery, there appears to be a trend to shift from polytherapy to monotherapy over time. Wieser studied 52 patients who had at least 6 months follow-up after amygdalo-hippocampectomy and discovered that 52% of the patients were still on polytherapy, 27% were on monotherapy, and 21% were not taking any antiepileptic medications. In another study, McLachlan and Maher conducted a retrospective examination of 93 temporal lobectomy patients who were followed at 6, 12, and 24 months after surgery. The patients with polytherapy were reduced from 78% before surgery to 14% after two years, while patients with monotherapy increased were increased from 20% to 42%, and medications were discontinued in 44% of the patients. They observed that moving from polytherapy to monotherapy within six months of surgery had no effect on seizures. They mentioned that if monotherapy was not achieved at the time of discharge, a gradual decrease in medication might begin six months later. If monotherapy was used before surgery, either no changes was made or, in rare cases, a slight dosage decrease might begin five or six days after surgery and prior to hospital discharge. Patients on monotherapy, who have been seizure-free for one or, preferably, two years can be offered the choice to quit medication using recognized guidelines for drug withdrawal following medical treatment.

CONCLUSION

Patients on multiple antiepileptic drugs for control of temporal lobe lesional seizures can be kept on a single antiepileptic drug after resection of the lesion. Furthermore, the dose of the single antiepileptic drug can be slowly reduced gradually over time. Thus, surgery can eventually reduce the load of antiepileptic drugs.

List of Abbreviations:

AEDs: Antiepileptic drugs.
CT: Computerized tomography.
EEG: Electroencephalography.
FLAIR: Fluid attenuated inversion recovery.
MRI: Magnetic resonance imaging.

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REFERENCES