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Reoperation of a recurrent temporal lobe epilepsy: a technical case report

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Abstract

Background: The indications for the reoperation of a recurrent temporal lobe epilepsy, the risks, and outcome have not been well documented. The invasive video electroencephalogram (EEG) monitoring and magnetic resonance imaging (MRI) techniques can reveal the residual tissues and their epileptogenic activity so that a reoperation decision can be made.

Case Description: A 30-year-old patient who had recurrent temporal lobe epilepsy and had undergone 2 operations at the same temporal region is presented. After both of these operations, approximately 6 months later, seizures relapsed. Postoperative neuroimaging studies showed residual mesiotemporal tissues at the operative site. The invasive video EEG monitoring revealed epileptogenic activity originating from these residual tissues. After all of these investigations, it was thought that a third operation was indicated, and the patient was operated. Postoperative course was uneventful. No postoperative deficit was observed. Pathological examination was reported as hippocampal sclerosis. He is seizure-free at his third postoperative year.

Conclusions: Complete resection of epileptogenic mesiotemporal structures at the first operation can prevent the necessity for reoperation in defined cases. The MRI and invasive video EEG monitoring techniques can reveal the residual tissues and their epileptogenic activity in a recurrent epilepsy case.

Keywords: Epilepsy; Temporal lobe; Reoperation

1. Introduction

Temporal lobe epilepsy is the most common form of epilepsy, and despite optimal pharmacotherapy, approximately 30% of patients fail to become seizure-free. The most common pathology associated with such intractable temporal lobe epilepsy is hippocampal sclerosis [6].

Seizures recur after surgery for temporal lobe epilepsy in 20% to 60% of patients. Reoperation for a recurrent temporal epilepsy was first reported in 1954 by Penfield. Thereafter, several other series of reoperation for recurrent temporal lobe epilepsies were reported [1,3,7]. In most of these series, the follow-up time was not specified. In the study of Germano et al [3], 40 patients who had undergone reoperation for recurrent temporal lobe epilepsy were reviewed. As a result of this study, they commented that reoperation for recurrent temporal lobe epilepsy provides good seizure control in selected patients and that the preoperative workup for reoperation must include magnetic resonance images to identify residual mesiotemporal structures or lesions. MRI provides the most precise definition of the extent of the previous resections, determines the status of the resection area borders (gliosis, encephalomalacia, and others), and reveals residual mesiotemporal limbic structures, such as amygdala, hippocampus, and others, and other residual or recurrent lesions. They also stated that multifocal EEG abnormalities after the first operation seem to be associated with a poor seizure outcome. More complete resection of the mesiobasal temporal structures during the first operation, even in the absence of intraoperative electrocorticographic abnormalities, can prevent the need

Abbreviations: EEG, electroencephalogram; MRI, magnetic resonance imaging.

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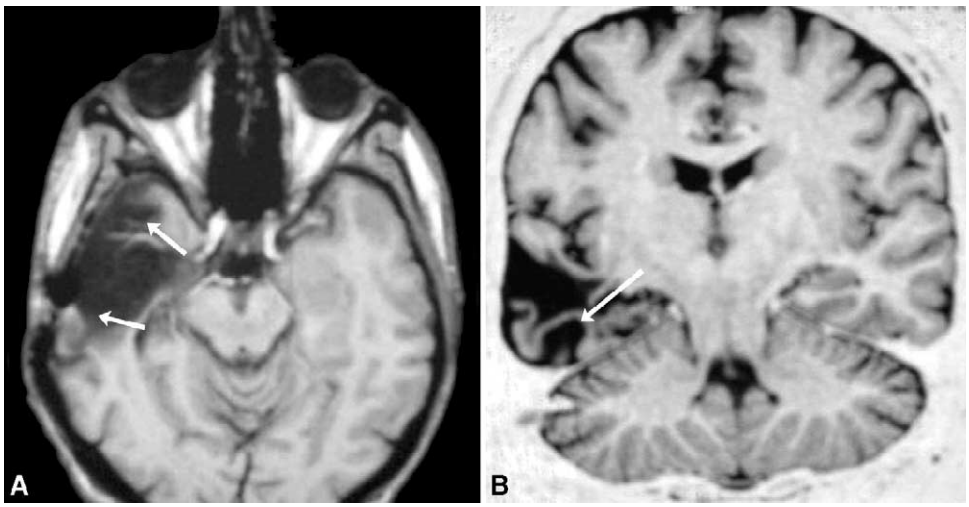

Fig. 1. Remnant tissues shown with arrows in axial (A) and in coronal (B) sections of MRI.

for reoperation in defined cases [3]. There is no consensus among neurosurgeons about how much hippocampus should be excised optimally for the surgical treatment of temporal lobe epilepsy. However, most of the epilepsy surgeons believe that the most common cause of failed temporal lobectomy is the inadequate hippocampal resection [5]. Wyler et al [9] reported that, for recurrent temporal lobe epilepsy, inadequate resection of the hippocampus in particular could be the reason of recurrence. Spencer et al [8] emphasized that as many as 20% of hippocampal foci reside in the posterior hippocampus, which would not be resected with a standard temporal lobectomy.

2. Material and methods

2.1. Patient and preoperative workup

Our patient was a 30-year-old, left-handed man. He had graduated from a university and was working as a translator. He had been having epileptic seizures for 14 years. Although a sufficient amount of medical treatment (carbamazepine, valproic acid) had been given, epileptic seizures continued to occur 3 to 4 times per week.

It was learned from his history that he was operated first in 1993 and for a second time in 1998 for temporal lobe epilepsy in 2 different centers and that approximately 6 months after each operation, seizures restarted at the same frequency.

After the neuropsychological investigations and Wada test, the right hemisphere of the patient was determined as dominant and the memory tests of the patient revealed no deficit.

In the axial sections of the MRI, the remnant tissues belonging to the hippocampus and surrounding gliotic tissues were seen. In the coronary sections, the remnants of the hippocampus and superior temporal gyrus, and some postoperative gliotic tissues were also seen (Fig. 1A and B).

Initially, noninvasive video EEG monitoring was performed, but sufficient information about the lateralization of

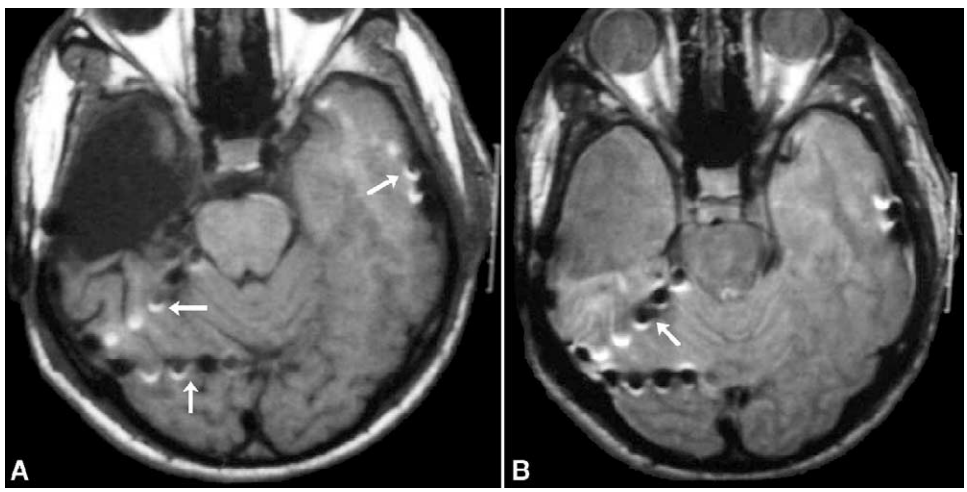

Fig. 2. A: Subdural strip electrodes seen in axial section of MRI (arrows). B: Hippocampus centralized by subdural strip electrodes seen in axial section of MRI (arrow).