

# Is additional mesial temporal resection necessary for intractable epilepsy with cavernous malformations in the temporal neocortex?

Yumi Kashida; Naotaka Usui; Kazumi Matsuda; Kiyohito Terada; Koichi Baba; Akihiko Kondo Kondo; Daisuke Hirozawa; Takayasu Tottori; Tadahiro Mihara; Ryosuke Hanaya; Kazunori Arita; Yushi Inoue

### Introduction

Cavernous malformation (CM) in the temporal neocortex can lead to intractable epilepsy. Whether to resect additional mesial temporal structures when surgically removing the CMs is a still controversial issue.

### Methods

We included data from 18 patients with intractable epilepsy caused by CMs. The lesion was in the language-dominant hemisphere in 10 patients and in the non-dominant hemisphere in 8. Eleven patients were treated with extended resection, i.e. lesionectomy and the resection of additional mesial temporal structures. Seven patients underwent lesionectomy, i.e. removal of the CM and of hemosiderin-stained surrounding brain tissue. Chronic intracranial EEG recordings were obtained in 6 patients.

## Results

In 17 patients (94.4%), the seizure outcome was recorded as Engel class I (Ia = 12 [66.7%], Ib = 2[11.1%], Ic = 1 [5.6%], Id = 2 [11.1%]). In the remaining one patient, the outcome was Engel class IIb. Mean postoperative follow-up was 9.9 years (range, 2.0–26.6 years). Pathological study of resected hippocampal specimens revealed limited neuronal loss in CA4. Ictal onsets in the ipsilateral lateral cortex were detected in all 6 patients who underwent intracranial EEG. In 4 patients each, we also detected ictal onsets from ipsilateral mesial temporal structures and from the contralateral temporal lobe. Postoperatively, the full-scale intelligence quotient (IQ) and the performance IQ increased significantly in patients whose CM was located in the language-dominant hemisphere. The verbal memory deteriorated in two of 5 patients with CMs in the languagedominant hemisphere.

## Conclusions

Excellent seizure outcomes were obtained even in patients who underwent lesionectomy alone, and we found no evidence recommending additional resection of mesial temporal structures. We suggest that the basic surgical strategy for intractable epilepsy due to CM in the temporal neocortex should be lesionectomy alone, especially in patients whose lesion is located in the language-dominant hemisphere.

## Learning Objectives

By the conclusion of this session, participants should be able to: 1) Describe the intracranial EEG pattern of patients with epilepsy caused by CMs (Cavernous malformations) in temporal neocortex, 2) Identify an optimal treatment for the patients with epilepsy caused by CMs.

### References

Usui, N., Mihara, T., Baba, K., Matsuda, K., Tottori, T., Umeoka, S., et al., 2008. Intracranial EEG findings in patients with lesional lateral temporal lobe epilepsy. Epilepsy Res.78, 82-91.

von der Brelie, C., Malter, MP., Niehusmann, P., Elger, CE., von Lehe, M., Schramm, J., 2013. Surgical management and long-term seizure outcome after epilepsy surgery for different types of epilepsy associated with cerebral cavernous malformations. Epilepsia. 54, 1699-1706.

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