

CASE REPORTS

Post-operative ipsilateral occipital hematoma in a patient with mesial temporal lobe epilepsy: A case report

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Abstract

We report a case of a 35-year-old right-handed male patient with drug-resistant mesial temporal lobe epilepsy who developed ipsilateral occipital hematoma after right temporal anterior lobectomy and amygdalohippocampectomy. Patient did not report taking any drugs with anticoagulant effect, such as aspirin or valproate. There was no past history of hypertension and the pre-operation tests were normal. Pre-operative brain magnetic resonance imaging revealed no abnormality in the right occipital lobe. Overdraining of cerebrospinal fluid may have triggered this remote cerebellar hemorrhage.

INTRODUCTION

Mesial temporal lobe epilepsy (MTLE) is the most common form of symptomatic partial or focal epilepsy, and hippocampal sclerosis (HS) is often the underlying cause of medically refractory TLE.¹ Although prognosis in MTLE patients is poor with medical treatment, many patients respond well to anterior temporal lobectomy (ATL) surgery and removal of the epileptogenic zone with 50-90% seizure free.² Post-operative hematoma has been found in 3.8% of cases³, usually localized to the resection cavity. We describe here a case of TLE surgery with rare complication of post-operative ipsilateral occipital lobe hematoma.

CASE REPORT

This was a 35 year-old right handed man with a history of seizures since the age of 28 years. He had complex partial seizures one to two times a day that manifested with nausea, oral automatisms, and loss of consciousness lasting for about one min. The patient reported occasional generalized tonic-clonic seizure. Developmental milestones were normal. He had febrile convulsion at 3 years old. There was no history of prenatal or early childhood diseases, no family history of epilepsy, no history

of head trauma, encephalopathy, or infection. The patient was treated with topiramate, carbamazepine, levetiracetam, and herbal medicine, with poor seizure control. His neurological examination was unremarkable. Neuropsychological assessment with the Wechsler Adult Intelligence Scale (WAIS-III) showed long term memory score of 38.9, immediate memory of 9.2, verbal intelligence quotient (IQ) of 89.7, and performance IQ of 85.3.

Brain magnetic resonance imaging (MRI) revealed brain atrophy in the hippocampus and high signal intensity on T2-weighted images, consistent with right HS. (Figure 1) Interictal electroencephalography (EEG) results showed right anterior temporal spikes and sharp waves, and ictal EEG revealed rhythmic theta and delta waves over the right temporal region. The diagnosis of MTLE was made.

Because of his declining memory and poor response to medication, the patient was offered ATL surgery. Preoperative coagulation tests, including platelet count, partial thromboplastin time (PT), activated partial thromboplastin time (APTT), fibrinogen (FBG), and International Normalization Ratio (INR), were all within normal limits. A standard right ATL with amygdalohippocampectomy was performed under general anesthesia.

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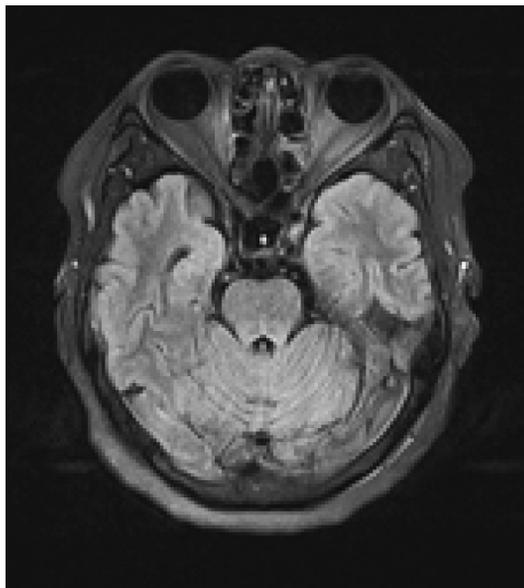


Figure 1. Pre-operative brain MRI showing right hippocampal hyperintensity and enlargement of the right temporal horn, consistent of right hippocampal sclerosis.

At one hour after surgery, the patient complained of prominent headache without nausea, vomiting, or visual impairment. Post-operative immediate head computed tomography (CT) (Figure 2) revealed a hyperdense lesion in the right occipital lobe from a hematoma. The CT scan also identified air around the hematoma close to the midline and dilated occipital horn.



Figure 2. Post-operative (1 hour) brain axial CT showing right occipital lobe hematoma with absence of space-occupying lesion effect or midline shift.



Figure 3. Pre-operative (3 hour) brain axial CT showing increased hyperdense right occipital lobe hematoma with absence of space-occupying lesion effect or midline shift.

The patient was treated with mannitol and furosemide. At 3 hours post-surgery, the patient complained of worsening headache with nausea and vomiting and blurred vision, but no hemiplegia or loss of consciousness. A repeat head CT (Figure 3) showed the hematoma became denser. After the hematoma was removed surgically, the headache improved, and a follow-up CT did not reveal any further sign of bleeding. Pathological findings confirmed HS. At one year follow-up, the patient was seizure free (Engel class I). The memory has significantly improved, with WAIS-III: long memory score of 49.5 and immediate memory of 11.3. Patient did not have any residual visual field defect or visual loss. To further investigate the potential cause of his bleeding, we performed coagulation tests and found that thrombosis factors II, V, VII, VIII, IX, X, XI, plasma protein C and protein S, and platelet function were all normal.

DISCUSSION

TLE is the most common symptomatic partial or focal epilepsy syndrome in adults and is often refractory to medical therapy. Surgery is the treatment of choice in the drug resistant patients.^{4,5} Surgical approaches include restricted ATL, restricted amygdalohippocampectomy, and ATL with selective amygdalohippocampectomy. Post-

operative complications remain a major concern in epilepsy surgery. Procedure related complications are intracranial hematoma, cranial nerve injury, homonymous hemianopsia, hemiplegia, aphasia, persistent memory loss, and central nervous system infection.⁶ Intracranial hemorrhage is relatively common, and is usually found in the resection cavity, followed by the frontal operculum, cerebellar vermis, and flocculonodular lobe.⁷ In addition, intraspinal subdural hematoma has also been reported.⁸

Our patient developed a rare complication of occipital lobe hematoma following ATL and amygdalohippocampectomy. It has been shown that compared to other brain surgery, patients with medically resistant epilepsy were at higher risk for developing peri- and post-operative complications of hematoma.⁹ Elderly patients with brain atrophy or atherosclerosis or those who take aspirin had a higher risk of bleeding. On the other hand, valproate-induced coagulation disorders, like acquired Von Willebrand disease, did not increase the bleeding risk.^{10,11}

Seoane *et al.* performed an autopsy study and found that when the head turns to one side, the counterlateral jugular vein will be compressed by the transverse process of the first cervical vertebra, leading to intracranial venous hypertension, which may cause post-operative intracranial hemorrhage.¹² During surgery, our patient was in the supine position with his head turned to the left side. It is possible that this was a risk factor in this patient for postoperative remote hematoma.

It is possible that excision of non-expanding encephalic tissue contributes to the development of postoperative remote cerebral hematoma¹³ as removal of the brain tumor or traumatic hematoma can downregulate intracranial pressure. Lobe resection can cause a pressure gradient between the operation area and the remote brain area, and this pressure gradient may play a role in the rupture of capillaries in the remote brain area, eventually causing cerebral hematoma.

Our patient is a young male who denied any history of oral aspirin or valproic acid use. Neither aneurysm nor vascular malformation was found during operation. We have also performed extensive coagulation tests and they were all normal.

Opening of the lateral ventricle is a routine part of the ATL procedure. Consequently, CSF drainage can occur. During amygdalohippocampectomy, we needed to identify a temporal angle as a marker, anteriorly and posteriorly expanding the brain tissue excision and exposing the hippocampus

head and body. Furthermore, evidence of air around the hematoma (close to the midline) and dilated occipital horn, as revealed by head CT scan, indicated overdrainage of CSF. It was likely that during the opening of the lateral ventricle temporal horn, cerebrospinal fluid was overdrained, leading to generation of negative intracranial pressure and increased occipital vascular tension. This may have induced blood vessel rupture and bleeding.

Based on this case, it is important not to overdrain cerebrospinal fluid during ATL procedure and amygdalohippocampectomy. Physicians should also be alert to the complication of hematoma post-surgery.

DISCLOSURE

Conflicts of Interest: None

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