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Case Report

Ictal vomiting after cerebellar hemorrhage: A case report☆,☆☆

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ABSTRACT

Vomiting is a typical symptom of cerebellar hemorrhage. Usually only supportive care such as antiemetic drugs are available. A 76-year-old woman presented in a light coma. A head CT demonstrated right cerebellar hemorrhage and the hematoma was surgically evacuated. Her intractable vomiting started 3 weeks after surgery. Because her vomiting was unexplained, we checked her EEG, which demonstrated generalized periodic discharges. We diagnosed her with ictal vomiting. Anti-seizure medication was administered and vomiting was rapidly controlled. In conclusion, physicians must be aware that vomiting may rarely occur as a sign of seizures and status epilepticus.

1. Introduction

To our knowledge, ictal vomiting (ictus emeticus) was first described in 1982 as a manifestation of nonconvulsive status epilepticus (NCSE) associated with temporal lobe epilepsy [1–3]. NCSE is difficult to diagnose because of wide variations in the symptoms [4]. Vomiting is a typical symptom in patients with cerebellar hemorrhage, and is treated by supportive care with antiemetics because the symptoms arise from previous brain damage edema, and increased intracranial pressure. Furthermore, the differential diagnosis of intractable vomiting after cerebellar hemorrhage does not include ictal NCSE in most cases because epilepsy after cerebellar hemorrhage is extremely rare. We encountered a case of ictal vomiting after cerebellar hemorrhage, which was successfully treated successfully with anti-seizure medication.

2. Case study

A 76-year-old woman with hypertension presented in a light coma. She had no relevant past history or a family history of stroke and epilepsy. On examination, her blood pressure was 214/126 mm Hg and her O_2 saturation was 99% in room air. Her Glasgow Coma Scale (GCS)

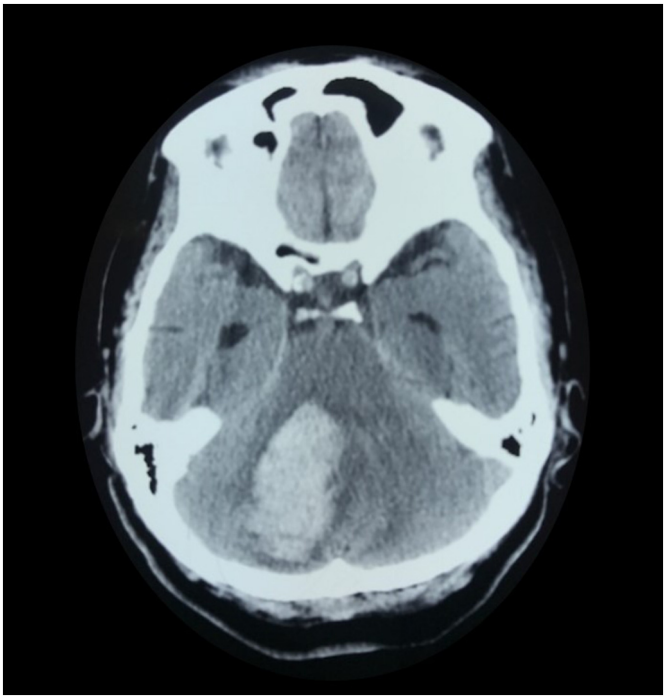

Fig. 1. A head CT scan on admission shows a right cerebellar hemorrhage 6 cm in diameter.

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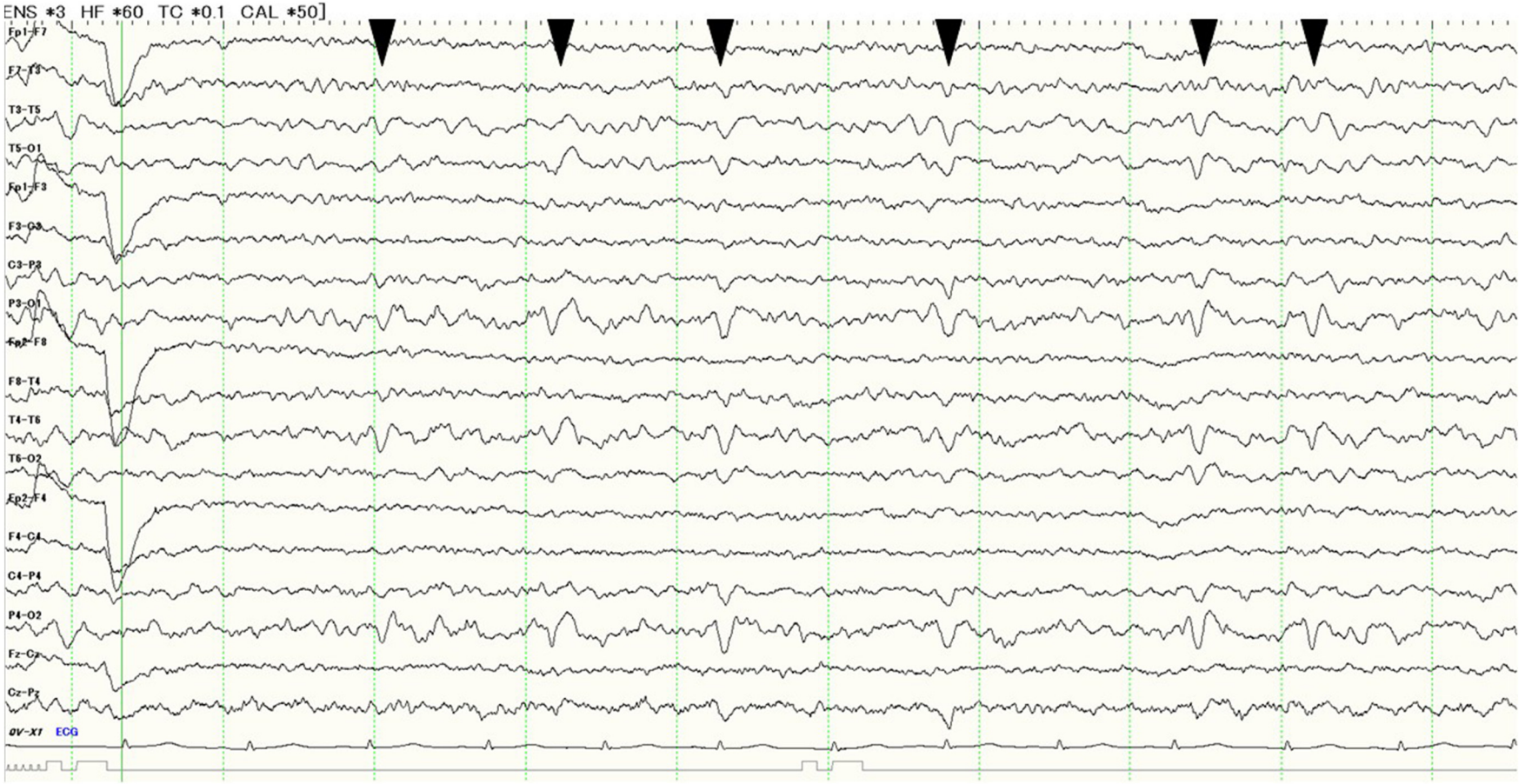

Fig. 2. An EEG demonstrates abundant generalized periodic discharges "Note the occipital predomiance." This pattern of 1 Hz GPDs does not provide this according to the ACNS or Salzberg criteria where 2.5 Hz or greater GPDs are more likely in patients wtih NCSE.

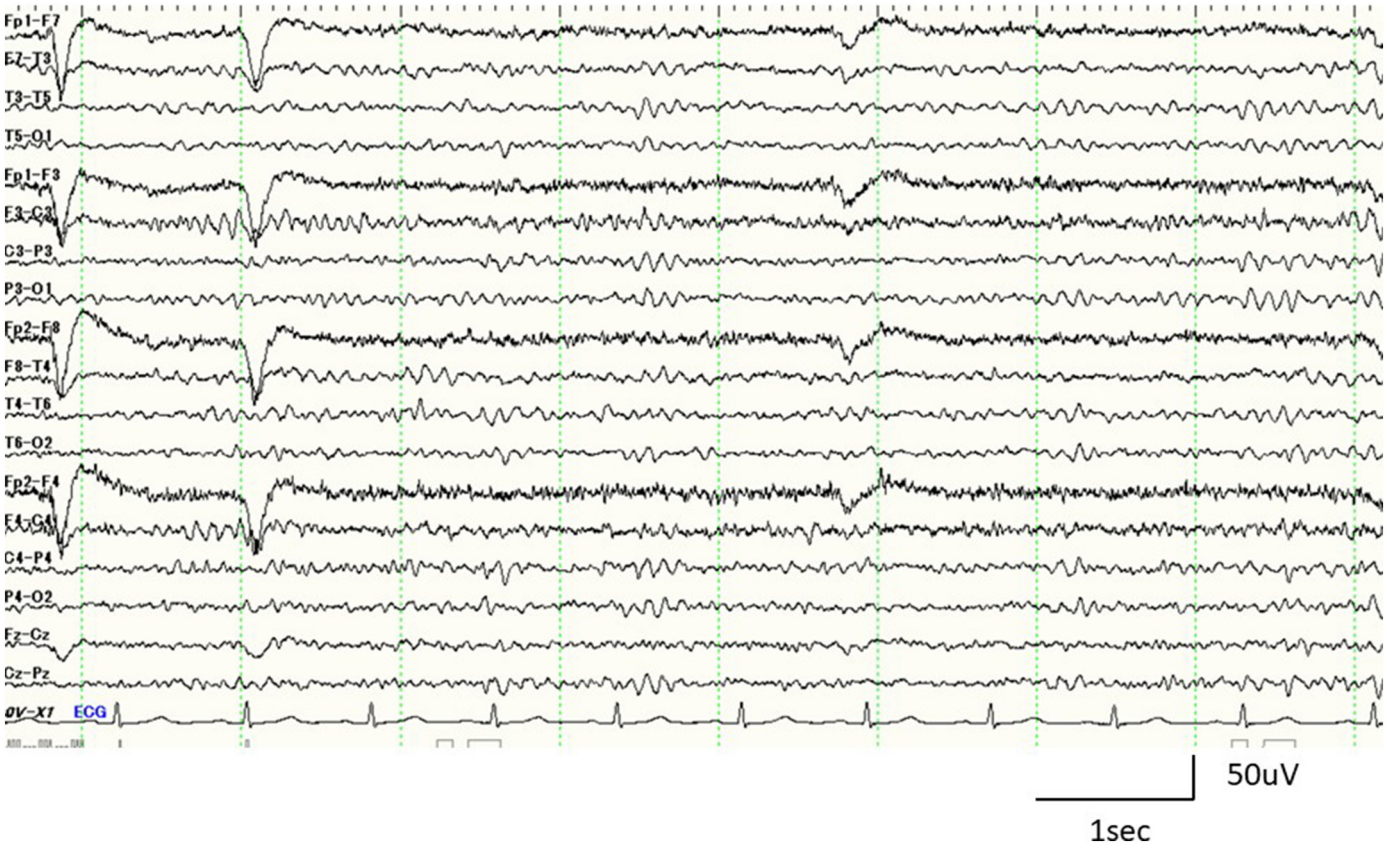

Fig. 3. An EEG after treatment shows normal back ground activity.

was 6 (E1V1M4) and her pupils were 3.5 mm/3.5 mm in light. A head CT scan demonstrated a right cerebellar hemorrhage 6 cm in diameter (Fig. 1). The hematoma was removed emergently. After successful evacuation, her consciousness improved to E4V4M6. Immediately after surgery, she started rehabilitation in stages and eating solid food without vomiting, although she had severe ataxia of the right upper and lower extremities.

Her vomiting began about 3 weeks after surgery, and the frequency increased gradually. Approximately twenty episodes of vomiting per day occurred. She suddenly vomited regardless of any trigger such as her position or the time, and then she became almost bedridden. The vomiting did not accompany vertigo or dizziness. Medications such as antiemetics were ineffective for her vomiting. We considered the possibility of a gastrointestinal tract disease, but an abdominal CT scan and upper and lower endoscopic investigations demonstrated no abnormality. The approximately 3-week interval between the start of intractable vomiting and the onset of the stroke was unreasonable and unexplainable as the normal course of a stroke.

Because the intractable vomiting was sustained 6 weeks after surgery and her head CT scan and a head MRI revealed no explanatory reason, we questioned the unexplainable course, and checked her EEG. Surprisingly, her EEG demonstrated abundant generalized periodic discharges (Fig. 2).

We suspected the intractable vomiting was due to ictal vomiting and started intravenous administration of phosphenytoin (day 1; 22.5 mg/kg, days 2–3: 7.5 mg/kg) and oral administration of a dose of 60 mg/kg of levetiracetam daily. The day after starting the anti-seizure drugs, her vomiting decreased to only two times per day. A week later, her symptom was controlled and she restarted rehabilitation and consumed solid food without nausea. A follow-up EEG revealed improvement of the initial abnormal findings (Fig. 3). And follow-up CT showed no definite cerebellar hemorrhage (Fig. 4). Changes in symptoms and the course of treatment are shown in Fig. 5.

3. Discussion

Vomiting is a common symptom of various disorders from cerebrovascular disease to gastrointestinal disease, but ictal vomiting is a rare condition and can be misdiagnosed as a common disease [5]. The diagnosis in our case was ictal vomiting after cerebellar hemorrhage supported by EEG findings, and the intractable nausea and vomiting disappeared after administration of "anti-seizure" drugs. There are two important

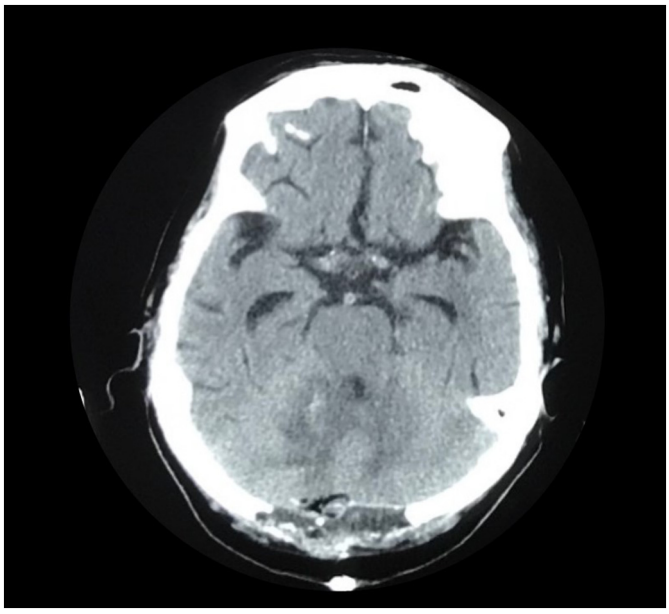

Fig. 4. Postoperative CT demonstrated hematoma was well removed.

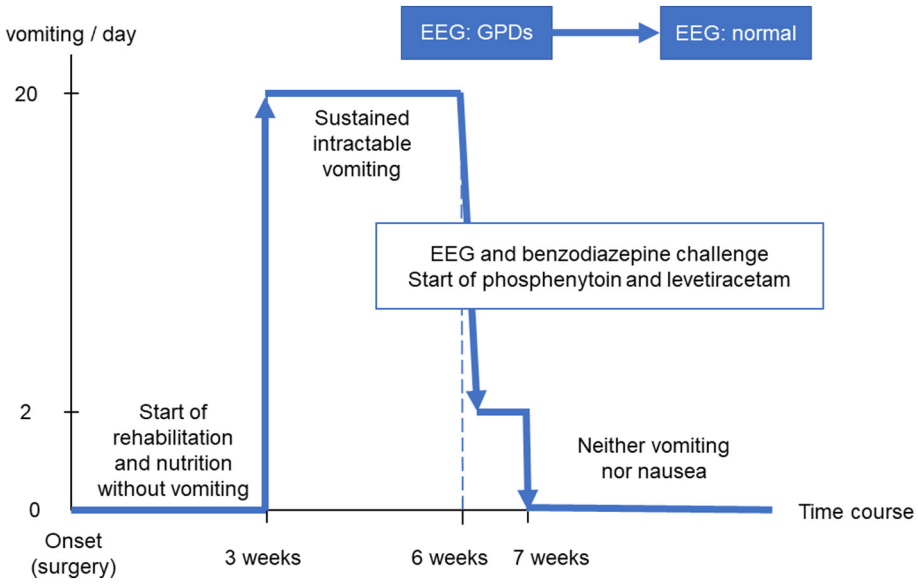

Fig. 5. Chronogram showing association between frequency of vomiting and treatment.

points in this case: (1) a cerebellar hemorrhage can cause seizures, and (2) vomiting with a strange clinical course can be caused by NCSE.

Ictal vomiting is a rare manifestation seen in temporal lobe epilepsy [1–3]. Activation of the anterior insular cortex has been implied as a causative factor [6]. It is also known to be one of the triad of Panayiotopoulos syndrome [7–9]. It is difficult to diagnose "this disease" because vomiting is a common symptom seen with typical gastrointestinal disease or many other diseases, such as cyclic vomiting syndrome.

In recent reports, the subcortical location of the ICH has been shown to be a significant predictor of epilepsy [10,11], but other locations including cerebellar hemorrhage were not statistically significant predictors [11]. On the other hand, Garett et al. reported that cortical location was not a significant predictor of epilepsy and 21% of seizures in all locations occurred in patients with a history of cerebellar hemorrhage [12].

Whether cerebellar lesions can cause epilepsy remains controversial, but several cases with epilepsy have been associated with the cerebellum. Vander et al. reported a case of epilepsia partialis continua following cerebellar hemorrhage [13]. Harvey et al. reported one cerebellar tumor case which ictal EEG recordings with implanted cerebellar electrodes demonstrated focal seizure discharges in the region of the mass [14]. In addition, Morioka et al. reported a case of NCSE after cerebellar hemorrhage, causing a semicomatose state [15]. We conclude that a cerebellar hemorrhage can infrequently cause seizures and epilepsy because of the influence of hydrocephalus or an increase in intracranial pressure. We hypothesized that the hemorrhage compressed the occipital lobe across the tentorium causing ictal vomiting was acquired.

4. Conclusion

We encountered an interesting case of ictal vomiting after cerebellar hemorrhage. Vomiting is a common symptom of cerebellar hemorrhage, but when it has an unreasonable and unexplained course like in our case, investigating the EEG and recognizing ictal vomiting as a symptom of NCSE are important.

Conflict of interests

None of the authors have any potential conflicts of interest.

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Disclosure

The authors report no conflict of interest regarding the materials or methods used in this study or the findings specified in this paper.

Ethical statements

This case report was approved by TMG Asaka Medical Center IRB.

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