

Does Ventricular Opening Promote Remote Cerebellar Haemorrhage?

Ventrikül Açılımı Uzak Serebellar Kanamaya Neden Olur mu?

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ABSTRACT

Cerebellar haemorrhage after supratentorial craniotomy is a rare complication. Because of its significant morbidity and mortality rates, being aware of this complication is important for early diagnosis. In a 30-year-old male with multiple intracranial cavernomas, remote cerebellar haemorrhage (RCH) was observed after removal of symptomatic left temporal lesion. The lateral wall of the temporal horn that was tightly attached to the cavernoma was also opened and excessive drainage of the CSF occurred. The haemorrhage is attributed to opening of the ventricle wall and excessive drainage of cerebrospinal fluid (CSF) during the procedure.

KEYWORDS: Temporal, Cavernoma, Haemorrhage

ÖZ

Supratentoryal kranyotomilerden sonra serebellar kanama görülmesi nadir bir komplikasyondur. Önemli derecede morbidite ve mortaliteye neden olması sebebiyle bu komplikasyonun farkında olmak erken tanı için önemlidir. Çoklu intrakraniyal kavernoması olan 30 yaşındaki erkek hastada, sol temporaldeki semptomatik lezyonun çıkarılmasını takiben uzak serebellar kanama tespit edildi. Kavernom duvarına sıkıca yapışık olan lateral ventrikül temporal hornu ameliyatta açılarak fazla miktarda beyin omurilik sıvısı drene oldu. Kanama nedeni olarak ameliyat esnasında açılan ventrikül duvarından fazla miktarda beyin omurilik sıvısının kaybı düşünüldü.

ANAHTAR SÖZCÜKLER: Temporal, Kavernom, Kanama

INTRODUCTION

Remote cerebellar haemorrhage (RCH) is usually a benign complication of supratentorial neurosurgical procedures (1, 2, 3, 4, 5, 6, 7). Although the entity is attributed to supratentorial craniotomies, the main point seems to be sinking of cerebellum and stretching of vascular structures following excessive drainage of the cerebrospinal fluid (CSF) (3, 4, 5, 6). Here, we report a case of RCH in a patient with multiple cavernomas which occurred following removal of the symptomatic lesion. The ventricle wall was opened during the operation and excessive CSF was drained.

CASE REPORT

A 30-year-old male admitted to our clinic with generalized seizure which was present for 6 years. He was using sodium valproate 500 mg three times a day. His magnetic resonance imaging (MRI) scans demonstrated multiple cavernomas in the right frontal juxtacortical (Figure 1A) and parietal (Figure 1B) and in left frontal (Figure 1C) and temporal (Figure 1D) locations. The electroencephalogram (EEG) revealed that the left temporal cavernoma was responsible for his seizures.

An operation was planned and ten days before the operation sodium valproate was stopped to eliminate excessive

intraoperative bleeding. The patient was operated via left temporal craniotomy and the left cavernoma was removed totally. The lateral wall of the temporal horn that was tightly attached to the cavernoma was also opened and excessive drainage of the CSF occurred. The postoperative MRI scans revealed total removal of the cavernoma and also a left mild cerebellar hemispheric haemorrhage (Figure 2A, B). On the first postoperative day, the patient did well. The following day, the patient suffered from severe headache and ataxia. His follow-up computed tomographic (CT) and MRI scans demonstrated left intracerebellar haemorrhage without any remarkable mass effect (Figure 3A, B). The patient was followed conservatively and did well one week after the operation. He did not mention any seizure on late follow-up examinations.

DISCUSSION

RCH after supratentorial craniotomy is usually a self-limiting phenomenon that should not be mistaken with other pathological conditions. However, it does not seem that the supratentorial craniotomy is the main factor for this entity. As speculated before, opening of cisterns and the ventricular system may cause CSF hypovolemia resulting in cerebellar sagging, transient occlusion of cerebellar bridging veins,

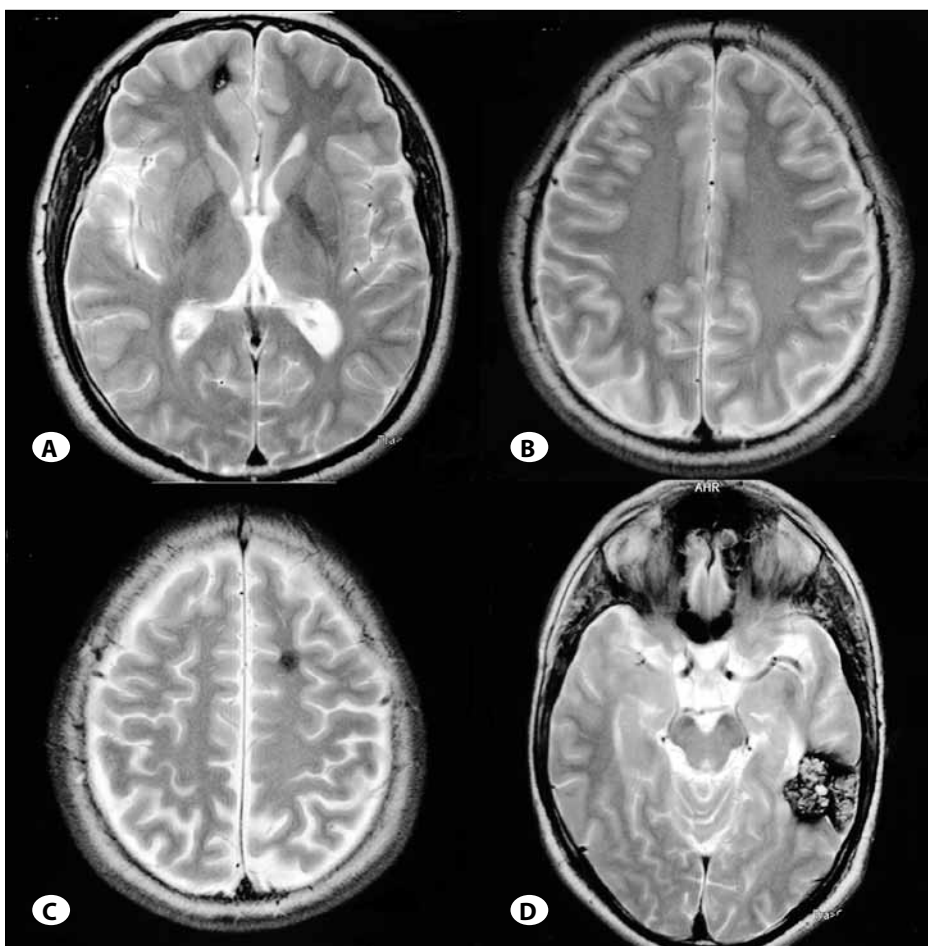


Figure 1: Preoperative axial T2-weighted MR images show multiple cavernomas in the right frontal juxtacortical (A) and parietal (B) and in left frontal (C) and temporal (D) locations with their typical hemosiderin rim.

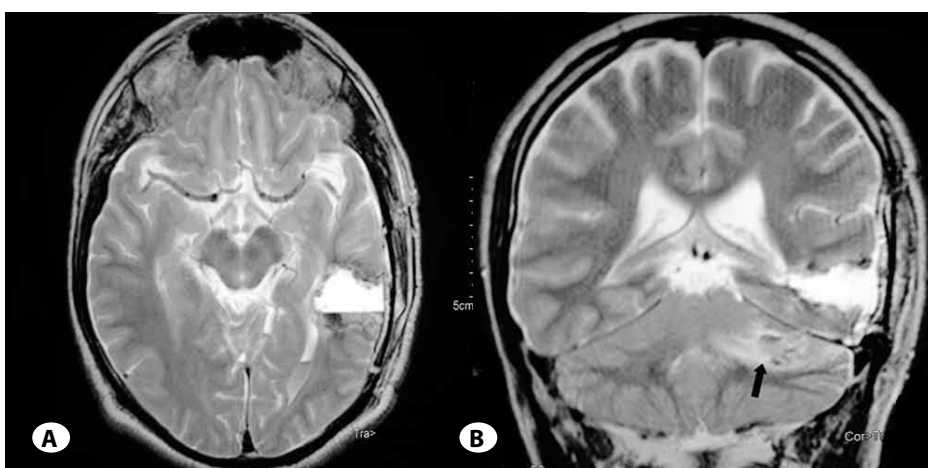


Figure 2: Postoperative axial T2-weighted MR image (A) shows total resection of left temporal cavernoma with small amount of postoperative collection left. Coronal T2-weighted image (B) shows the same collection at left temporal region as well as left cerebellar hemispheric haemorrhage with mild mass effect and minimal adjacent edema (black arrow).

leading to haemorrhagic infarction and haemorrhage (3, 6, 7). Downward displacement of the cerebellum after excessive drainage of CSF may also cause tearing of the superior cerebellar vein.

On the other hand, RCH was observed after aneurysm, tumor, epilepsy and neurotrauma procedures. In the literature, there are also some RCH cases which were present after removal of a cavernoma (1, 3). However, as far as we know this is the first

case of RCH with multiple cavernomas. We even do not think that the nature of the lesion has some relationship with this secondary event.

In this presented case, the cavernoma was attached to the ventricle wall with a large surface. For total removal of the cavernoma, opening of the temporal horn and partial removal of the ventricle wall was necessary. Consequently, excessive CSF was drained from the ventricle. Thereafter, the cerebellum

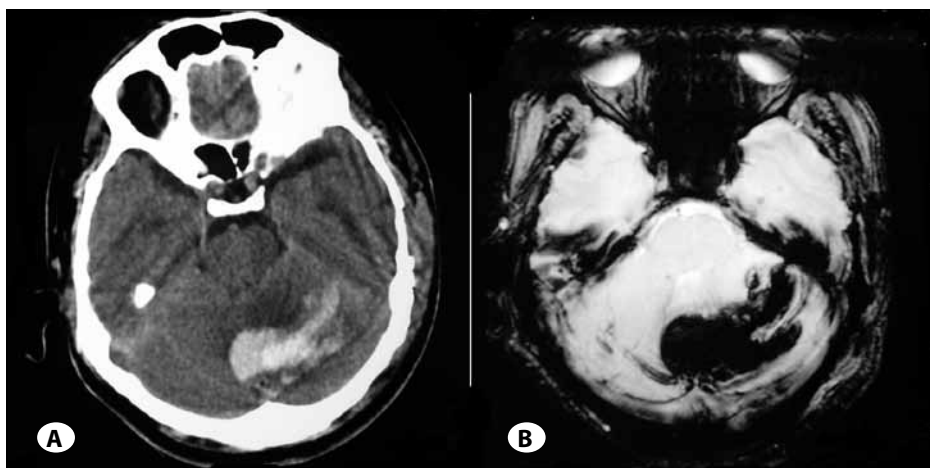


Figure 3: Axial CT scan (A) and MRI gradient echo scan (B) obtained 36 hours after surgery shows the left cerebellar haemorrhage with typical streaky, curvilinear bleeding pattern with blood in the cerebellar sulci.

sank downward with stretching of vascular structures that caused the cerebellar haemorrhage. Even though we stopped sodium valproate 10 days before the surgical procedure and the preoperative bleeding parameters were within normal ranges, the RCH might have been precipitated by this agent.

In conclusion, opening of the cisterns and ventricles during a supratentorial procedure causes excessive drainage of CSF that may lead to RCH. Controlled drainage of CSF is essential if possible.

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