Case report

Remote Cerebellar Hemorrhage

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Abstract

Postoperative cerebellar hemorrhage or remote cerebellar hemorrhage is a rare complication occurring after supratentorial and spinal surgery. Although the mechanism remains unclear, previous reports implicate over drainage of cerebrospinal fluid as the predominant cause.

We report a patient who underwent craniotomy for removal of meningioma. The hemorrhage manifested a few days postoperatively as a headache and transient loss of consciousness. Our patient recovered without further intervention with no major neurologic deficit. Early detection and awareness of this complication may help to avoid unnecessary measures.

Keywords: postoperative complication, remote cerebellar hemorrhage, supratentorial craniotomy

Introduction

Cerebellar hemorrhage is a rare, but increasingly recognized complication following supratentorial craniotomy. The exact etiology remains obscure though a number of factors have been suggested to play a role. Here we present a case and discuss the possible pathogenesis according to a literature review.

Case Report

A 60-year-old woman was admitted to the hospital for removal of a brain tumor. She had a three month history of headaches with no associated symptoms. Her past medical history included hypertension and diabetes mellitus with good control. On examination, she showed flattening of the left nasolabial fold sparing eye closure and eyebrow elevation. The remainder of the neurological examination was normal.

Brain computerized tomography (CT) scan disclosed a hyperdense lesion located in the right frontal pole suggestive of parasagittal meningioma (Figure 1). Her platelet and coagulation profile were normal. The patient commenced dexamethasone and phenytoin. She underwent a bifrontal craniotomy in the supine position. The tumor was found to be extracerebral with arachnoid lining without adherence to the dura. She had no problems post-surgery. An immediate post-operative cerebral CT scan revealed no intraaxial hemorrhage except for a small-sized focus of pneumatocell.

On the fourth day following surgery, she developed a severe headache, nausea, and vomiting which was followed by transient loss of consciousness. Her blood pressure was within normal limits. An urgent cerebral CT scan revealed bilateral cerebellar hemorrhage (Figure 2). Control brain CT scan showed a normal-sized ventricular system and progressive resolution of the cerebellar hemorrhage. The patient recovered without further operative intervention. Brain magnetic resonance (MR) imaging and MR angiography were normal. Pathology demonstrated meningioma of syncytial type, grade 1. The patient was discharged six days after surgery.

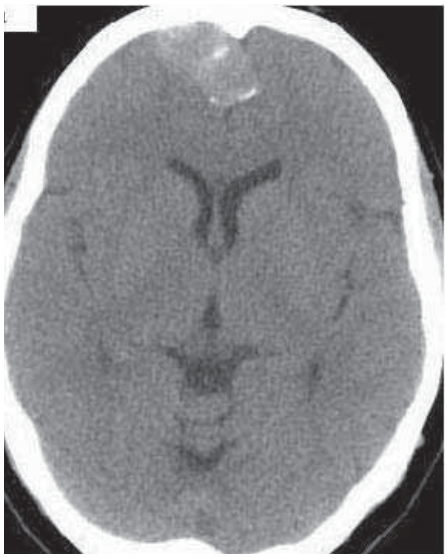

Figure 1. Preoperative CT scan showing right frontal hyperdense lesion, suggestive of meningioma.

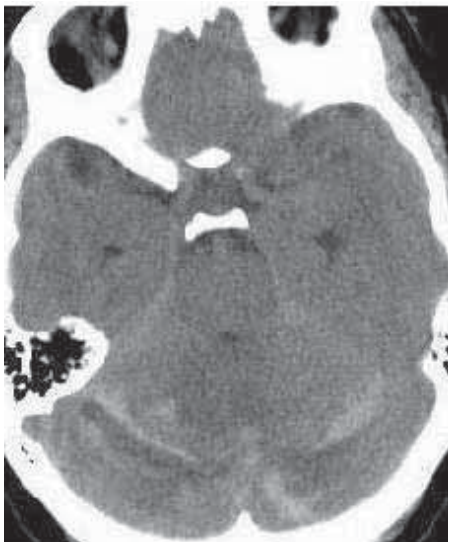

Figure 2. Brain CT scan on the fourth day after surgery showing cerebellar hemorrhage facing the tentorium.

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Discussion

Remote cerebellar hemorrhage (RCH) is a rare, but life-threatening complication of supratentorial[1–4] or spinal surgery.[5–6] The existent reports have yielded an incidence of 0.3 – 4.9% and it is more infrequent after spinal surgery.[7]

The underlying mechanisms of RCH have been extensively discussed. Most authors have agreed that loss of CSF is the underlying reason for RCH which is of a venous origin.[7] This pathomechanism can be due to: 1) mechanical causes such as displacement of the cerebellum after CSF loss with stretching and tearing of the cerebellar veins[2] or 2) the hemodynamic theory which has been suggested by Konig et al.[8] Based on this theory, removal of a supratentorial space occupying mass may induce a reduction in intracranial pressure with a critical increase in the transmural pressure of veins or venules.

RCH seems to be located bilaterally (~53.5%) just as often as unilaterally (~46.5%).[7] Co-affection of the vermis has frequently been reported, although a mere affection of the vermis is seldom seen.[1] The severity ranges from mild to severe. Mild forms typically present with blood in the subarachnoid spaces of the cranial parts of the cerebellum facing the tentorium.[7] Brockman et al. described this cerebellar pattern as a "zebra sign".[9]

The timing between operation, onset of symptoms, drained volume of CSF, and diagnosis of RCH in many cases have not been reported. Most often it occurs during the first ten hours (46%). However, the development of RCH after more than 40 hours is not uncommon (17%).[7] Prognosis of RCH mostly depends on the severity of hemorrhage, and patient's age.[7] It can be associated with a significant morbidity and mortality,[3,10] but some reports found benign outcomes following RCH; such that 32.3% of the patients have no remaining neurological deficits.[7] It is recommended to avoid rapid CSF loss both during and after surgery. However, once RCH has occurred, further treatment is administered in relation to the severity of the hemorrhage and resultant complications. Abnormality of coagulation parameters and vascular malformation should always be ruled out as the underlying causes of other sorts of cerebellar hemorrhage mimicking RCH. Furthermore, blood pressure needs to be monitored contniously. Early detection and awareness of this complication may help to avoid unnecessary intervantions.

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