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Case Report

Sudden death due to a cystic lesion in the cerebellum

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ABSTRACT

A middle-aged female patient with a depressive disorder presented to a mental hospital because of a 2-month worsening history of headache, dizziness, and nausea. The next morning, she was observed to be sleeping, but was then found dead 1 h later. Postmortem computed tomography and autopsy revealed a large cyst in the right cerebellar hemisphere, hydrocephalus, and transforaminal herniation. Careful observation revealed an approximately 0.4 cm × 0.8 cm slightly grayish discoloration in the cyst wall that was diagnosed as hemangioblastoma based on its histological features.

Finally, we concluded that the cause of death in this case was attributable to the brain stem compression, which was caused by obstructive hydrocephalus secondary to the cystic hemangioblastoma in the cerebellum. The symptoms for 2 months before her death had most likely resulted from increased intracranial pressure. Hemangioblastomas usually appear as nodules in the wall of the cyst, but the tumor in our case looked like just a slightly grayish discoloration. Therefore, cystic lesions in the CNS need to be carefully examined.

1. Introduction

Hemangioblastomas are rare, benign tumors of the central nervous system (CNS), and they most commonly occur in the cerebellum of adults [1–3]. Macroscopically, they are usually cystic, and their mass effect induces increased intracranial pressure (ICP), which leads to the clinical symptoms of hemangioblastomas: headache, nausea, vomiting, ataxia, and dizziness [1]. We herein report an autopsy case of cerebellar hemangioblastoma in a middle-aged female patient who had suffered from the above-mentioned symptoms for about 2 months before she died shortly after entering a mental hospital.

2. Case report

A female patient in her forties consulted a psychiatrist in a private mental clinic regarding depression and was prescribed antianxiety agents approximately 7 months prior to her death. About 1 month prior to her death, she visited another mental hospital and complained that she had been suffering from a headache, dizziness, and nausea for the previous month and that these symptoms were worsening. The doctor prescribed antiemetic and analgesic agents. However, her symptoms did not improve, so she visited the same hospital again the day before her death. She complained of headache and vomited several times, and the doctor advised admission to the hospital. The next morning, she appeared to be sleeping, but she was found in cardiopulmonary arrest 1 h later. She was managed by cardiopulmonary resuscitation, but was not revived.

3. Radiologic data acquisition and findings (Fig. 1)

Postmortem computed tomography (CT) for pre-autopsy screening was performed with an eight-channel multislice scanner (Aquilion; Toshiba Medical Systems, Tokyo, Japan). It revealed a large cyst in the right cerebellar hemisphere (Fig. 1a). The cyst volume was calculated to be approximately 41 cm^3 on the three-dimensional workstation. The lateral and third ventricles were enlarged, and the brain sulci and gyri were less apparent than usual. The coronal brain CT image clearly showed that the right cerebellar cyst over the midline displaced and narrowed the aqueduct, causing obstructive hydrocephalus. Furthermore, transforaminal herniation was seen (Fig. 1b).

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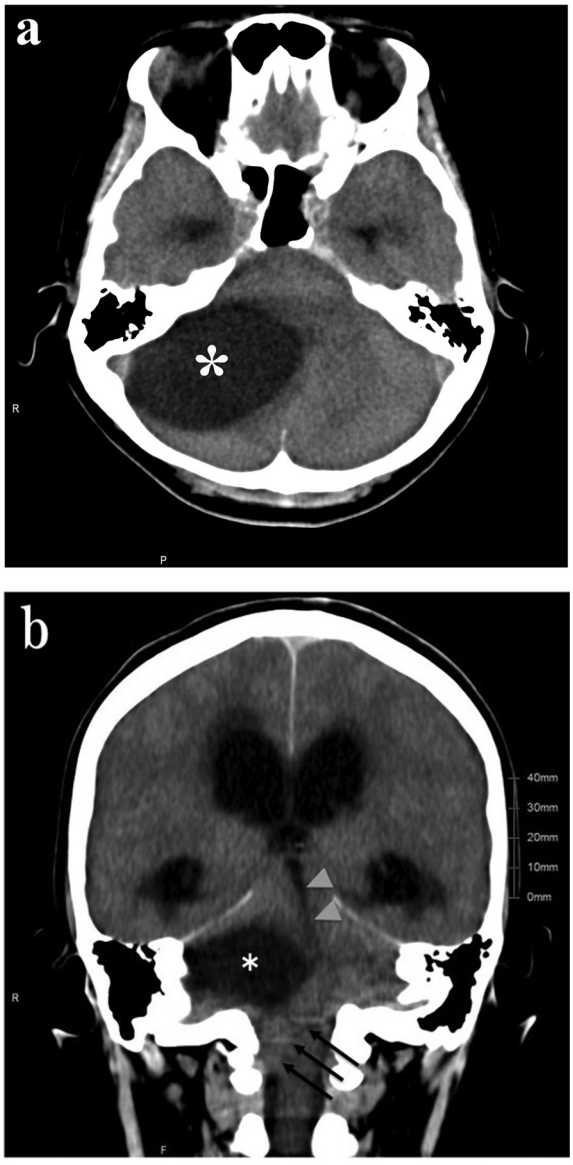

Fig. 1. (a) Postmortem brain computed tomography (CT) at the level of the cerebellar hemisphere showing a large cyst (asterisk). (b) Postmortem coronal brain CT at the level of the brain stem showing enlargement of the lateral ventricles, a large right cerebellar cyst over the midline (asterisk), left shift and compression of the aqueduct (gray arrowheads), and transforaminal herniation (black arrows).

4. Autopsy findings

The patient's body was 155 cm in height and 42 kg in weight. There were no apparent antemortem injuries on her body. The lungs (each 670 g) were moderately congested, and there were no other particular findings in her thoracic or abdominal organs.

Her brain weighed 1230 g and her cerebellar tonsils, especially the right side, herniated downward through the foramen magnum (Fig. 2). The external wall of the expanded right cerebellar hemisphere ruptured during removal of the brain and discharged light yellow fluid (Fig. 2).

The brain was fixed in 8% formaldehyde and dissected. The coronal sections of the cerebrum showed enlarged lateral ventricles. The axial sections of the cerebellum and brain stem showed a 2.5–3 cm × 4–5 cm egg-shaped cystic cavity in the right cerebellar hemisphere and a midline shift from right to left. The fourth ventricle was pushed to the left (Fig. 3). The medulla oblongata was distorted because of transforaminal herniation. The inner wall of the cystic cavity was smooth, and no specific lesions were seen at first glance. However, there was an irregular, 0.4 cm × 0.8 cm area of grayish discoloration in the postero-lateral wall of the cyst (inset of Fig. 3).

Fig. 2. The circular depression caused by the transforaminal herniation is seen on the inferior surface of the cerebellum (arrowheads). The hollow shows the cyst rupture site (arrow).

5. Histopathology (Fig. 4)

Microscopically, the grayish lesion of the cyst wall contained small but variably sized dilated blood vessels and vacuolated cells with clear foamy cytoplasm and hyperchromatic nuclei. Immunohistochemically, many of those cells stained positively for vimentin, inhibin-alpha and S-100, and slightly positively for neuron specific enolase (NSE), and negatively for epithelial membrane antigen (EMA). Some of them appeared positive for glial fibrillary acidic protein (GFAP).

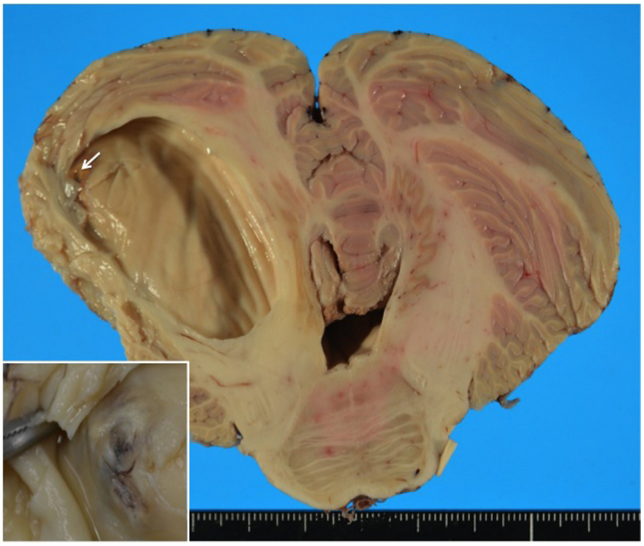

Fig. 3. Axial section of the cerebellum. There is an approximately 2.5–3 cm × 4–5 cm egg-shaped cystic cavity in the right cerebellar hemisphere. Right-to-left midline shift is seen, and the fourth ventricle is pushed to the left. Furthermore, an irregular, 0.4 cm × 0.8 cm grayish discolored lesion (inset) is present in the postero-lateral wall of the cyst (white arrow).