Choroid Plexus PapillomaPresenting With Cerebrospinal Fluid Rhinorrhea and Otorrhea—Case Report—

Yusuke KINOSHITA*, Brian WASITA*,**, Keiichi AKATSUKA*, Atsushi KAMBE*, Masamichi KUROSAKI*, and Takashi WATANABE*

*Division of Neurosurgery, Department of Brain and Neurosciences, Faculty of Medicine, Tottori University, Yonago, Tottori;
**Department of Anatomical Pathology, Faculty of Medicine, Sebelas Maret University, Surakarta, Jawa Tengah, Indonesia

Abstract

A 52-year-old woman presented with right rhinorrhea and right otorrhea manifesting as aural fullness for 2 years caused by a choroid plexus papilloma in the right cerebellomedullary cistern. Computed tomography and magnetic resonance imaging revealed a well defined lobulated mass at the foramen of Luschka, which extended towards the right cerebellomedullary cistern with slight dilation of the ventricular systems. The tumor was totally resected via a right lateral suboccipital approach. Histological examination revealed a choroid plexus papilloma. Postoperative course was uneventful, just after the operation rhinorrhea ceased completely, and hearing of the right ear dramatically improved. Choroid plexus papillomas rarely cause cerebrospinal fluid (CSF) rhinorrhea. Total removal of the tumor resulted in the cessation of CSF leaks.

Key words: cerebellomedullary cistern, choroid plexus papilloma, cerebrospinal fluid rhinorrhea

Introduction

Cerebrospinal fluid (CSF) rhinorrhea due to trauma and cranial surgery is common. Conversely, non-traumatic CSF rhinorrhea is uncommon. Infection of the paranasal sinuses with osteomyelitis of the adjacent bone, congenital anomaly, and direct invasion of the skull base and nasal cavity by tumors are causes of non-traumatic CSF rhinorrhea.8–10) CSF rhinorrhea indirectly caused by remote brain tumors is rare.5) Choroid plexus papilloma (CPP) can increase production of CSF and also can cause an obstruction of CSF flow that leads to hydrocephalus. The resultant chronic increase of intracranial pressure can cause dural and bony defects that lead to CSF rhinorrhea.5,11) CPPs rarely cause indirect CSF rhinorrhea.9) CPP comprise 0.3–1% of all intracranial tumors.9–12)

We report a rare case of non-traumatic CSF rhinorrhea caused by a CPP in the right cerebellomedullary cistern (CMC), and rhinorrhea was stopped after tumor removal. The tumor originated in the fourth ventricle near the fora-
Case Report

A 52-year-old woman with a 2-year history of right rhinorrhea and right otorrhea with aural fullness was referred to our department from another hospital. Her rhinorrhea had been treated as an allergy for 2 years without brain computed tomography (CT) or magnetic resonance (MR) imaging. Radiological examination at the previous hospital then revealed a lesion near the fourth ventricle that extended towards the right CMC.

Neurological examination on admission found a clear liquid discharge from the right nostril, slight cerebellar signs on her right extremities, and right hearing disturbances. Audiometry showed 42.5 dB of the right ear compared with 13.8 dB of the left ear. Her right otorrhea was not discovered. There were no other neurological deficits.

CT revealed a well demarcated, lobulated isodense mass with patchy calcification in the right CMC with erosion on the clivus and the petrous bone, and an isodense area in the sphenoidal sinus, suggesting liquid accumulation (Fig. 1A). CT with contrast medium showed a heterogeneously enhanced mass (Fig. 1B). Bone window CT showed erosion on the right clivus and the petrous bone (Fig. 1C). T1-weighted MR imaging showed a well defined, lobulated isointense mass at the foramen of Luschka, which extended towards the right CMC (Fig. 1D). T2-weighted MR imaging showed a mixed iso-/hyperintense mass and retention of CSF in the sphenoid sinus and right mastoid air cells (Fig. 1E). MR imaging with gadolinium showed a 30 × 35 mm homogeneously enhanced mass (Fig. 1F). CT and MR imaging showed slight dilatation of the ventricular systems.

We performed surgery using a right lateral suboccipital approach. The dura mater was found to be very thin with a trickle of CSF. The brown, soft tumor was found under the right tonsil. The feeding artery around the tumor edge from the posterior inferior cerebellar artery was coagulated and cut. Total removal of the tumor was achieved with care taken to preserve the lower cranial nerves including the hypoglossal nerve, using stimulation and monitoring of each nerve. The postoperative course was uneventful. Just after the operation, rhinorrhea ceased completely, and hearing in the right ear improved dramatically. Audiometry showed 12.5 dB of the right ear compared with 42.5 dB from the preoperative examination. Postoperative CT and MR imaging confirmed total removal of the tumor, disappearance of the fluid accumulation in the right petrous bone, and improvement of the hydrocephalus.

Histological examination revealed a papillary structure of cuboidal epithelium with fibrovascular core and scattered foci of calcification either in the fibrovascular core or in the stroma. There were no malignant signs, suggesting the diagnosis of CPP (Fig. 2).

Discussion

CPPs are rare benign intracranial tumors that arise from...
Table 1  Summary of choroid plexus papilloma (CPP) cases causing cerebrospinal fluid (CSF) rhinorrhea

<table>
<thead>
<tr>
<th>Author (Year)</th>
<th>Age (yrs)/Sex</th>
<th>CPP location</th>
<th>Pathway of CSF leakage</th>
<th>Treatment</th>
<th>Outcome of CSF rhinorrhea</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vigouroux (1908)*</td>
<td>27/M</td>
<td>fourth ventricle</td>
<td>ethmoid sinus</td>
<td>unknown</td>
<td>unknown</td>
</tr>
<tr>
<td>Rovit et al. (1969)**</td>
<td>48/M</td>
<td>third ventricle</td>
<td>not mentioned</td>
<td>total removal</td>
<td>stopped</td>
</tr>
<tr>
<td>Lamberts (1984)[4]</td>
<td>34/M</td>
<td>fourth ventricle</td>
<td>ethmoid sinus</td>
<td>total removal and fistula repair</td>
<td>stopped</td>
</tr>
<tr>
<td>Symss et al. (2009)[12]</td>
<td>61/M</td>
<td>fourth ventricle and major cistern</td>
<td>cribriform plate</td>
<td>fistula repair and total removal</td>
<td>stopped</td>
</tr>
<tr>
<td>Present case</td>
<td>52/F</td>
<td>fourth ventricle and cerebellomedullary cistern</td>
<td>petrous bone to eustachian tube</td>
<td>total removal</td>
<td>stopped</td>
</tr>
</tbody>
</table>

*Cited from ref. 4.

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Address reprint requests to: Brian Wasita, M.D., Division of Neurosurgery, Department of Brain and Neurosciences, Faculty of Medicine, Tottori University, 36-1 Nishi-cho, Yonago, Tottori 683-8504, Japan.
e-mail: brianwasita@yahoo.com 
brian@grape.med.tottori-u.ac.jp