Cerebellopontine Angle Meningioma Associated with Cranial Accessory Nerve Neurinoma

—Case Report—

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Abstract

A 46-year-old female presented with a rare association of cerebellopontine (CP) angle meningioma with accessory nerve neurinoma manifesting as headache, occasional diplopia, speech disturbance, swallowing difficulty, and unsteady gait. Magnetic resonance imaging demonstrated a large tumor in the left CP angle. The tumor was totally removed through a lateral suboccipital approach. During the operation another smaller tumor was found originating from the cranial accessory nerve and was also totally removed. Histological examination found that the larger tumor was a meningotheliomatous meningioma and the smaller an Antoni type A neurinoma. The symptoms were apparently due to the larger tumor. Careful examination of neuroimages is necessary even after the main lesions responsible for the symptoms are identified.

Key words: multiple brain tumors, neurinoma, meningioma, accessory nerve, cerebellopontine angle, jugular foramen

Introduction

Multiple primary brain tumors of different histogenesis are not uncommon in patients with either phacomatosis or a history of cranial irradiation, but are uncommon in the absence of such conditions. The most frequent combination is meningioma and glioma in patients without neurofibromatosis, while meningioma and neurinoma is rare. Accessory nerve neurinoma is also an uncommon tumor. We present a rare case of cerebellopontine (CP) angle meningioma associated with accessory nerve neurinoma without neurofibromatosis, and discuss the clinical features of both multiple primary brain tumors and accessory nerve neurinomas.

Case Report

A 46-year-old female was admitted to our hospital on October 19, 1989 because of headache, occasional double vision, speech disturbance, swallowing difficulty, and unsteady gait that had developed some 2 years prior to admission. There was no family history of neurofibromatosis or any other neurological disorders. Neurological examination on admission revealed Bruns' nystagmus with the larger component to the left, hypesthesia of the left face, diplopia on the left lateral gaze, left peripheral facial nerve paresis, decreased gag reflex and a deviation of the uvula and soft palate to the right on phonation, slurred speech, truncal ataxia, and coordination of the upper and lower extremities predominantly to the left. No cutaneous signs of phacomatosis were observed. T1-weighted magnetic resonance (MR) imaging revealed a large isointense mass in the left CP angle that measured 4 × 3.5 × 3 cm. The tumor was intensely and homogeneously enhanced with gadolinium-diethylenetriaminepenta-acetic acid (Gd-DTPA) (Fig. 1).

She underwent a left lateral suboccipital craniectomy on October 31. A reddish-gray, nodular,
moderately soft, and markedly vascular tumor was found in the left CP angle. The tumor was totally removed using a cavitron ultrasonic suction aspirator. The tumor arose from the dura over the posterior surface of the petrous bone halfway between Meckel's cave and the internal auditory meatus. The dural attachment of the tumor was extensively coagulated. During surgery another tumor was found originating from a rootlet of the left cranial accessory nerve (Fig. 2). The tumor was yellowish pink and round, measured 5 mm in diameter, and was located in the cerebellomedullary cistern near the jugular foramen. This tumor was also removed by excising the rootlet on both sides of the tumor. Histological examination revealed that the larger tumor was a meningotheliomatous meningioma and the smaller an Antoni type A neurinoma (Fig. 3). The smaller tumor, although visible as a small mass, was not identified on the preoperative Gd-DTPA-enhanced MR image (Fig. 1 right).

Postoperatively, she developed fifth through tenth cranial nerve pareses on the left, which later improved gradually. She was doing well with only left hearing loss but no tumor recurrence 3 years 5 months after surgery.

Discussion

Only five cases of neurinoma associated with meningioma in patients without neurofibromatosis have been reported.1,7,13,24,30 Table 1 summarizes the moderately soft, and marked vascular tumor was found in the left CP angle. The tumor was totally removed using a cavitron ultrasonic suction aspirator. The tumor arose from the dura over the posterior surface of the petrous bone halfway between Meckel's cave and the internal auditory meatus. The dural attachment of the tumor was extensively coagulated. During surgery another tumor was found originating from a rootlet of the left cranial accessory nerve (Fig. 2). The tumor was yellowish pink and round, measured 5 mm in diameter, and was located in the cerebellomedullary cistern near the jugular foramen. This tumor was also removed by excising the rootlet on both sides of the tumor. Histological examination revealed that the larger tumor was a meningotheliomatous meningioma and the smaller an Antoni type A neurinoma (Fig. 3). The smaller tumor, although visible as a small mass, was not identified on the preoperative Gd-DTPA-enhanced MR image (Fig. 1 right).

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Fig. 1 T1-weighted MR images with (right) and without (left) Gd-DTPA enhancement, showing a large enhanced tumor in the left CP angle and a smaller one (arrow).

Fig. 2 Intraoperative photograph, showing the spherical tumor (T) arising from a rootlet of the left cranial accessory nerve. F: forceps, PICA: posterior inferior cerebellar artery, R: retractor, VA: vertebral artery, XI: eleventh cranial nerve.

Fig. 3 upper: Photomicrograph of the larger CP angle tumor specimen, showing meningotheliomatous meningioma. HE stain, ×260. lower: Photomicrograph of the specimen of the tumor arising from the accessory nerve, showing Antoni type A neurinoma. HE stain, ×260.

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location and histology of these cases. Cases of bilateral acoustic neurinomas associated with meningioma are omitted because they were considered to be neurofibromatosis II. The coexistence of meningioma and neurinoma is more common in middle-aged women, but ours is the first reported combination of a CP angle meningioma and an accessory nerve neurinoma.

<table>
<thead>
<tr>
<th>Author (Year)</th>
<th>Age/ Sex</th>
<th>Location (Histology)</th>
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<tr>
<td>Gardner and Turner</td>
<td>48/F</td>
<td>Lt CP angle meningioma (fibroblastic),</td>
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<td>(1959)</td>
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<td>Lt acoustic neurinoma (Antoni type A)</td>
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<td>Kitamura et al.</td>
<td>24/F</td>
<td>Lt frontal meningioma (meningotheial),</td>
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<td>(1965)</td>
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<td>Akagi et al.</td>
<td>23/F</td>
<td>Lt lateral ventricle meningioma</td>
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<td>(1973)</td>
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<td>(transitional), Lt acoustic neurinoma</td>
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<tr>
<td>(Antoni type A)</td>
<td></td>
<td>(Antoni type A and B)</td>
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<td>Schnegg and Tribolet</td>
<td>39/M</td>
<td>Lt parietal meningioma</td>
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<td>(1984)</td>
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<td>Lt facial nerve neurinoma</td>
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<td>Wilms et al.</td>
<td>47/F</td>
<td>Rt CP angle meningioma (fibromatosus),</td>
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<td>(1992)</td>
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<td>Rt acoustic neurinoma</td>
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<td>Present case</td>
<td>46/F</td>
<td>Lt CP angle meningioma (meningotheial),</td>
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<td>Lt accessory nerve neurinoma (Antoni type A)</td>
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The clinical manifestations of accessory nerve neurinoma are combinations of fifth to twelfth cranial nerve pareses, nystagmus, cerebellar dysfunction, and myelopathy. Patients with tumors originating from the spinal root exhibit upper cervical myelopathy associated with eleventh cranial nerve dysfunction. The most frequent sign of accessory nerve neurinoma is eleventh cranial nerve paresis, although that of jugular foramen neurinoma is reported as hearing disturbance. Hearing disturbance must be considered an important initial sign or symptom of accessory nerve neurinoma. Only one case has demonstrated purely jugular foramen syndrome.

Small acoustic neurinomas of 1-5 mm size are reported to be asymptomatic. The neurinoma in
our patient measured 5 mm in diameter, and caused little compression of adjacent structures (Fig. 2). Therefore, the preoperative lower cranial nerve pareses were caused by the larger CP angle meningioma.

The smaller tumor was not identified on the preoperative MR image. We recommend a more careful examination of neuroimaging even after the main lesions responsible for the neurological signs are found.

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References


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