Sudden Hearing Loss and Vertigo Caused by a Transitional Meningioma in Pregnancy

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A 36-year-old pregnant female presented to the Department of Otolaryngology of The Third Affiliated Hospital of Sun Yat-sen University with a chief complaint of sudden left ear hearing loss that began 4 months prior and vertigo for 5 days. The sudden left ear hearing loss was accompanied by continuous tinnitus and began when she was 2 months pregnant. Audiology at another hospital revealed an average pure tone of 70 dB hearing level in her left ear (Figure 1A). She did not receive any other examinations or treatment at the other hospital. Five days before presentation to our hospital, she began to experience transient and recurrent vertigo whenever she changed position, especially upon turning her head left. She also complained of nausea and rarely vomiting. She did not complain of any other symptoms and stated she had no family history of significant systemic illnesses.

Complete physical examination, and examination of the ears was normal, except for left posterior semicircular benign paroxysmal positional vertigo. No signs of a systemic illness were noted. Audiometry indicated a left sensorineural hearing loss, with the same pure tone average as 4 months prior. Acoustic emission testing indicated that the function of the outer hair cells in the left cochlea was normal. However, there were no brainstem auditory evoked potential responses, even at a click of 96 dB nHL (Figure 1B and C). On the basis of the information collected, a presumptive diagnosis of retrocochlear disease was made. Magnetic resonance imaging (MRI) was then performed, which demonstrated a space-occupying lesion measuring 3.5 × 2.2 cm² at the left cerebellopontine angle (Figure 2A and B). Thus, a diagnosis of retrocochlear disease was confirmed.

The patient was seen by a neurosurgeon, who recommended prompt surgery. In addition to the lesion causing symptoms such as vertigo, hearing loss, and nausea which affected her daily life, there was the possibility of the development of life-threatening acute intracranial hypertension. She declined surgery because of concern for her pregnancy and was discharged with conservative treatment and close follow-up.

There was no disease progression, and she delivered a healthy infant at 7 months’ gestation. She underwent surgery to remove the tumor in the left cerebellopontine angle after giving birth. The operation was performed without any complications such as intracranial bleeding, infection, or facial paralysis. Histopathological examination of the tumor confirmed a diagnosis of transitional meningioma, World Health Organization grade I.

During follow-up for 8 months, she recovered well and the symptom of vertigo resolved; however, there was no improvement in the pure tone average of the left ear.

Discussion

Meningioma, secondary to acoustic neuroma, is one of the most common benign tumors of the area of the cerebellopontine angle. Meningioma originate from arachnoid cap cells, usually occur between the ages of 40 and 60 years, and are more common in postmenopausal women.1 The first case of a meningioma during pregnancy was reported by Bernard in 1898. It has been hypothesized that changes in hormone levels are the reason meningioma occur in pregnancy. Nevertheless, there is limited clinical experience of hearing loss and vertigo caused by transitional meningioma in pregnancy.

Meningioma is usually diagnosed based on symptoms, or incidentally when imaging studies are performed for other
reasons. However, nonspecific symptoms such as nausea and tinnitus which are not uncommon in pregnancy may delay the diagnosis of a meningioma. In our case, the diagnosis was made by MRI that was performed based on her symptoms and audiology testing results.

Treatment sudden ear hearing loss and vertigo in pregnancy, especially in the case of meningioma, is challenging. Administration of Dextran 40, which is a blood flow promoting agent, is the only successful nonoperative treatment that has been reported for meningioma in pregnancy. The optimum time for surgical intervention during pregnancy is unclear. Meningiomas have been reported to grow rapidly as a result of hormonal changes during pregnancy. The timing of surgical intervention must take into account the gestational age of pregnancy and the presence of any neurological complications. Multidisciplinary management is usually required when a meningioma occurs during pregnancy. For example, if the gestational age is such that the fetus is viable, and there is the development of widespread edema, a midline shift, a change in consciousness, and/or paresis, a dual surgery may be performed, that is, a cesarean delivery followed by tumor resection. On the other hand, if no neurological complications are present, the patient can be followed closely and resection of the meningioma can be delayed until the postpartum period.²

Authors’ Note
Y.L. and B.F. contribute equally to this work.

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