Recurrent sudden sensorineural hearing loss in a 58-year-old woman with severe dizziness: a case report

Nanbin Huang,1 Changwei Li2

ABSTRACT
A case of recurrent sudden sensorineural hearing loss in the right ear is presented. The patient was a 58-year-old Chinese woman with profound hearing loss, a feeling of fullness in the ear, vomiting and severe dizziness for 2 months. A head scan and MRI of the brain and neck showed no cause for the symptoms. The ear, nose and throat specialist diagnosed a microcirculatory dysfunction, rejecting the diagnosis of Meniere’s disease. The patient did not respond to medical treatment and after 2 months attended for acupuncture. It was suspected that the severe dizziness was associated with her neck and back pain. Daily electroacupuncture treatments to her ear, back and neck were given. After 1 month the dizziness was significantly reduced and the hearing loss recovered to a good level. The patient’s symptoms recurred after exposure to cold and strong wind and again recovered with acupuncture. She later suffered a third recurrence of severe dizziness which again responded to acupuncture.

INTRODUCTION
Sudden sensorineural hearing loss (SSNHL) is a common clinical syndrome that frequently poses a diagnostic and therapeutic dilemma. An unusual case is presented where the patient’s age and the presence of severe vertigo, profound hearing loss and lack of response to 2 weeks of medical treatment predicted a poor prognosis. She achieved a good outcome after acupuncture treatment.

CASE PRESENTATION
A 58-year-old woman presented to our acupuncture department with total hearing loss in her right ear, tinnitus, severe dizziness, sound phobia and the feeling of fullness in the right ear for 2 months.

Two months previously she had been exposed to cold and windy weather when she was very tired. She suddenly felt tinnitus in her right ear like a drumbeat and was disturbed by sounds. She came to the ear, nose and throat (ENT) department immediately that day and her blood pressure (BP) was 130/74 mm Hg while her normal BP is 100/70 mm Hg. She was clinically deaf in her right ear, which was confirmed by pure tone audiometry (PTA) (figure 1). A CT scan of the head did not show any abnormality. The ENT doctor diagnosed SSNHL caused by microcirculation dysfunction and admitted her to hospital. She was given a transfusion of 10 mg alprostadil within 3 h of presentation. Unfortunately she suddenly felt severely dizzy during the first 10 min of the infusion, which was much worse 30 min later. She was nauseated and could not balance herself to stand. She lay on the bed with her eyes closed. Repeat alprostadil infusions were given three times in the following few days. However, her dizziness became worse so the infusions were stopped and she was given prednisone for 5 days. In the next month
Case report


Figure 3  Pure tone audiometry on 13 October 2008 after 4 months of treatment.

Figure 4  Pure tone audiometry on 25 October 2008 when the patient had a recurrence.

her dizziness continued. When she tried to lie supine her dizziness got worse, with a feeling that her body was swaying right and left as soon as she reclined to about 75 degrees from the bed. Two months later she abandoned treatment in the ENT department but still had total hearing loss, tinnitus and significant dizziness.

The patient walked into our department with her friend’s help as she had to keep her eyes closed because of the dizziness. The dizziness became worse when she moved her head from side to side or up and down. She also still had sound phobia, drumbeat tinnitus in her left ear and deafness in her right ear, confirmed by a second PTA (figure 2). The head MRI did not show any abnormality but the neck MRI showed that she had slight cervical vertebral disease and she was tender on pressure to her neck and upper back. Her medical history included neck pain after prolonged desk work, although she had not sought medical treatment for this.

We considered a diagnosis of Meniere’s disease and asked the patient to see the ENT doctor again, who was sure that it was not Meniere’s disease. We therefore accepted the previous diagnosis of SSNHL and, also, based on acupuncture theory, suspected that the dizziness might be caused by her upper back and neck problem, separately from the SSNHL. Electroacupuncture treatment was given for both. For hearing loss we used GB20, TE18, GB8, GB2 and TE17, and for dizziness we used all the Shuxue points along both sides of the first five thoracic vertebrae and all the Jiaji points located along the last five cervical spinous processes. The treatment lasted 30 min each time. The frequency of the stimulation was 60 Hz and the intensity was the maximum tolerated. The treatment was carried out daily for 2 months, then three times per week for another 2 months.

After two sessions of acupuncture the patient felt that her dizziness was much better and she could attend our department without assistance. After 34 days of treatment she could hear some sound through the telephone
although she could not distinguish words. After 39 days of treatment the patient’s dizziness and sound phobia disappeared and the tinnitus was getting weaker. After more than 4 months of treatment she felt her hearing was getting much better and could hear complete sentences of telephone conversation. A further PTA (figure 3) showed that her hearing loss had recovered to the level of ‘severe’ hearing loss again. The dizziness fluctuated but was much better than when she first came to our department.

One year after the first episode she had a recurrence of the severe dizziness, which was worse when she moved her head up and down. We examined her upper back and neck again carefully and found that the right side of her back was tender, but not the left side. We treated her upper back pain using the same regimen as before. After one treatment the patient felt significant improvement and 3 h later she only felt dizzy when she moved her head up and down. We continued the treatment for 2 months with total recovery. In the meantime we were surprised that, as the neck and back tenderness and dizziness improved, so did the deafness. The patient’s final PTA (figure 5) showed good recovery from the right ear hearing loss. The timing, treatment and outcomes of the entire disease course are shown in table 1.

DISCUSSION

The incidence of SSNHL is as high as 160 cases per 100 000 per year,1 affecting all ages with no sex predilection. Recurrent SSNHL is infrequent and suggests the presence of another condition. SSNHL is usually unilateral.2 About 80% of patients also have tinnitus, 80% have fullness of the ear and 30% have vertigo.3 4 Recovery rates without treatment are 32–65%.5 However, patients whose hearing shows no change within 2 weeks are less likely to recover, and those with hearing loss for more than 2–3 months are likely to become permanently deaf, with 99% of the hearing improvement achieved in 3 months.6 7 In addition, a poor prognosis is also indicated by the severity of hearing loss, the shape of loss on an audiogram (downsloping is worse), the presence of vertigo and evidence of systemic infection.8 Treatment with oral corticosteroids is widely used, although the supporting evidence is weak.6 9 Exploratory tympanotomy has been used to treat

Table 1 Treatment and outcomes of the first onset of sudden sensorineural hearing loss in the patient’s right ear

<table>
<thead>
<tr>
<th>Time</th>
<th>Treatment</th>
<th>Symptoms</th>
</tr>
</thead>
<tbody>
<tr>
<td>March 2008</td>
<td>Medical treatment commenced</td>
<td>Deafness, dizziness, tinnitus and sound phobia: no response</td>
</tr>
<tr>
<td>May 2008</td>
<td>Acupuncture commenced daily for 39 days</td>
<td>Dizziness, tinnitus, sound phobia: good response by end of treatment. Deafness: some improvement</td>
</tr>
<tr>
<td>July 2008</td>
<td>Acupuncture three times per week</td>
<td>Deafness continued to improve</td>
</tr>
<tr>
<td>October 2008</td>
<td>Acupuncture daily for 1 month, then three times per week</td>
<td>Relapsed dizziness, tinnitus and sound phobia: good response by end of treatment Relapsed deafness: some improvement</td>
</tr>
<tr>
<td>March 2009</td>
<td>Acupuncture three times per week for 2 months</td>
<td>Relapsed dizziness: eliminated 3 h after the first treatment Deafness: improved to a very good level</td>
</tr>
</tbody>
</table>

Figure 5 Pure tone audiometry on 17 July 2009 when the treatment finished.
patients with SSNHL who have a history of a discrete pressure event and who do not recover after 10–14 days of rest\(^7\) and who do not respond to systemic steroid therapy.\(^10\)

Considering the long duration of treatment, this could be a case of spontaneous recovery but we think it more likely to be a response to the acupuncture for the following reasons. First, the patient had no response to the medical treatment in the first 2 months, making permanent deafness likely, but her hearing was improved after 39 acupuncture treatments >3 months after the disease onset. Second, the patient had features of a poor prognosis of recovery (profound hearing loss, severe dizziness and age 58 years). Third, her recurrence of SSNHL also responded well to acupuncture. Finally, in the last 2 months of treatment her hearing loss recovered much faster than before, at a time when spontaneous recovery is very unlikely.

The known causes of SSNHL include infectious, autoimmune, functional, otological, traumatic and vascular factors. However, the majority of SSNHL cases are classified as idiopathic.\(^5\)\(^6\) The cause in this case was diagnosed as microcirculation dysfunction, but we question this diagnosis because vasodilator treatment failed or even worsened the patient’s dizziness.

The patient suffered severe dizziness three times, twice accompanied by the onset of SSNHL and once without any hearing loss or tinnitus. We found tenderness on just the right side of her upper back and/or neck each time, and her dizziness improved after treating this on one occasion within 3 h of acupuncture. We believe that her dizziness may have been associated with unilateral back and neck pain rather than with SSNHL. However, it is possible that the back and neck pain and SSNHL may have shared the same cause in the first two onsets of SSNHL in this patient.

**CONCLUSION**

The profound hearing loss, lack of response to medical treatment in the first 2 months, severe dizziness and vertigo and age of onset predisposed this patient to permanent hearing loss, but she responded well to acupuncture, although requiring prolonged treatment. In addition, acupuncture seemed to be very effective in eliminating the dizziness and sound phobia. Acupuncture may be worth trying in patients with SSNHL who do not respond to medical treatment.

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