Clinical Case Report

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Acupuncture as a primary and independent treatment in the acute phases of sudden sensorineural hearing loss

Case Report

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Abstract

Sudden sensorineural hearing loss (SSHL) is an otological emergency defined as a rapid hearing loss, seriously affects patient's social life. To data, no study has reported the treatment by acupuncture alone in the acute phase. In this report, Acupuncture and Moxibustion therapy of excitation-focus transfer is outlined.

The patient was a 26-year-old young woman who had an SSHL coupled with ear fullness. The patient had no past medical history, but she had undergone variable emotions and had a history of excessive noise exposure. The patient refused to receive any medicine especially steroids and hyperbaric oxygen therapy. She just only received acupuncture treatment.

Her symptoms and outcome measurements were improved every week and completely recovered after the last week.

Even though the article presents a single case and is based on self-reports, there are very clear trends on how patients with SSHL responded to acupuncture treatments.

Abbreviations: PTA = pure tone average, SSHL = sudden sensorineural hearing loss.

Keywords: acupuncture, acute phases, independent treatment, sudden sensorineural hearing loss

1. Introduction

Sudden sensorineural hearing loss (SSHL) with an annual incidence of 5 to 20 people per 100,000 populations has been defined as a rapid hearing loss of >30 dB in at least 3 contiguous test frequencies occurring 3 days or less.[1–3] It has become an otological emergency as the high risk of permanent hearing damage and seriously affected patient's social and professional life. The hearing loss in SSHL is of accompanied with dizziness, vertigo, nausea, and vomiting. Large-scale case studies performed in China, Japan, Europe, and the U.S. have shown that SSHL typically occurs between 40 and 55 years of age, which is higher about 39.5% with equal sex distribution.[4] The prevalence in the age group 18 to 30 is about 16% with a growth trends.[4,5] With an unclear mechanism, a series of causative factors-including microcirculatory disorders, upper respiratory tract infections, autoimmune disorders, and barotrauma have been reported.[4,6–8] Different causative factors make different damage to the functioning of the cochlea or/and internal auditory meatus, and patients will have different levels of syndromes. Many researchers have been aware of this and put forward the necessity to classify SSHL into definite types initially. Some clinical studies[5] depending on the syndrome with or without dizziness or vertigo, divided SSHL into 3 types (simple-type, dizziness-type, and vertigo-type). Some studies divided[9] into 4 types based on hearing curve, which the hearing loss in (low tone frequencies, high tone frequencies, all frequencies, and total deafness). There is not any uniform standard of SSHL classification in the international. But prospective clinical multicenter studies[9] indicated that SSHL should be classified and different types should use different treatments.

Steroids are the most commonly used treatment for SSHL.[10] Duration and dosage of efficacy of intravenously steroids base on the concentration in the inner ear and the improvement of the syndrome, given the uncertainty and variability in management of SSHL.[11] A large proportion of patients with SSHL receives steroids. Nevertheless evidence of the usefulness of steroids is mostly based on retrospective series and is not strong.[12] Moreover, retrospective series studies indicated approximately 40% patients do not provide a response fully to systemic steroids treatment, even in the early phases after onset,[13] without consideration of steroids' systemic effects. So, the use of secondary treatment modalities, like intratympanic steroids,[14] hyperbaric oxygen therapy,[15] and plasmapheresis,[16] has been advocated. However, evidence for the efficacy of any treatment

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Table 1

The intervention: Acupuncture and Moxibustion therapy of excitation-focus transfer.

Acupoints	Stabbing depth	Duration	Manipulation
Yong quan(KI1)	8–15 mm, 2 sides alternately with reducing and slightly heavy manipulation.	The needles were left in for 30 minutes once a day.	Suspending moxibustion for thermal sensitization for 30 minutes persistently.
Ting hui (GB2), Ting gong (SI19), and Er men (TE21)	15–25 mm, only in affected ear with mild stimulation.	The needles were left in for 30 minutes once a day.	Periosteal "pecking" and manual stimulation was done every 10 minutes.

modality is not strong as no official guidelines or position statements from professional organizations concerning the evaluation and treatment of SSHL.[17,18]

Acupuncture as a traditional Chinese therapy has been confirmed the good effects in the treatment of SSHL based on placebo-controlled trials recently.[19,20] Ji and Fang[20] reported the effects of acupuncture therapy in SSHL beyond 1 month after steroids treatment. Despite many studies on acupuncture as an adjuvant therapy after western treatment, no study about acupuncture as a primary and salvage therapy without any other interventions and in the acute phases of SSHL has been carried out. This case report details the successful use of acupuncture therapy without any additional treatment in a young patient in the acute phases of SSHL.

1.1. Case description

The patient was a 26-year-old young woman as a white-collar worker. Her syndromes were just ear fullness and sudden monaural hearing loss (right ear) without dizziness, vertigo, vomiting, nausea, tired, tinnitus, or nystagmus. She was admitted in the Department of Acupuncture and Moxibustion after diagnosed with SSHL by an experienced Ear, Nose, and Throat Department specialist within 1 day after the onset. She had no past medical history like hypertension, coronary heart disease, diabetes, virus infection, hyperlipemia, Meniere diseases, ototoxic drugs, tympanitis, and noise trauma. Her previous individual history was recorded, including regular diet with low fat/salt/sugar, no smoking/drinking history, and no sexual intercourse prior to the onset. But she had undergone variable emotions (e.g., anger, anxiety, sadness, and depression) for stressful overwork pressure and had a history of excessive noise exposure (long-lasting telephone calls or listening to MP3).

1.2. Clinical impression#1

The patient had no obvious differential diagnosis. The primary problems were her right ear's hearing loss accompanied with ear fullness. According to her syndrome we divided her into simple-type (hearing loss alone). The patient refused to receive any medicine especially steroids and hyperbaric oxygen therapy. She seemed to be motivated about the intervention of acupuncture treatment only. She began therapy just 1 day after the onset without delay.

1.3. Examination

The patient underwent clinical history taking. Laboratory determinations of her blood samples, computed tomography, and magnetic resonance imaging scans of brain/auditory nerves and acoustic immitance showed no obvious abnormality. The patient was assessed with pure tone test before and after the treatment weekly. Mean hearing thresholds were expressed as the pure tone average (PTA) of the 0.125-, 0.25-, 0.5-, 1.0-, 2.0-, 4.0-, and 8.0-kHz hearing thresholds. Hearing thresholds were calculated as the difference between PTA prior and past the treatment weekly.

The degree of the residual hearing loss after primary therapy was classified as mild ($\leq$40 dB), moderate (41–70 dB), severe (71–90 dB), or profound ($\geq$91 dB).

1.4. Clinical impression#2

The patient's initial hearing loss thresholds were lesser than 40 dB at the PTA of the 0.125-, 0.25-, 0.5-, hearing thresholds, which were classified as mild-type. After the initial evaluation we believe that the intervention of acupuncture treatment alone was an effective therapeutic option.

1.5. Intervention

Acupuncture and Moxibustion therapy of excitation-focus transfer was adopted on Yongquan(KI1) by stabbing 8 to 15 mm, 2 sides alternately with reducing and slightly heavy manipulation, and associated with suspending moxibustion for thermal sensitization (which means the warm feeling of patient located on the adjacent or distal, the surface or deep induced by stimulating acupoints). Ting hui(GB2), Ting gong(SI19), and Er men(TE21) were needled 15 to 25 mm only in the affected ear with mild stimulation. The needles were left in for 30 minutes. Periosteal "pecking" and manual stimulation were done every 10 minutes. Acupuncture treatment sessions were performed once a day for 1 month by a licensed acupuncturist. The intervention was clarified in Table 1 and Fig. 1. During the intervention, the patient did not receive any further treatment from any other clinics or hospitals.

This study was approved by the Research Ethics Review Board of Zhejiang Hospital. The study procedures were explained to the patient.

1.6. Outcome

The intervention was carried out from October 1st, 2015 to October 30th, 2015 at Zhejiang Hospital. The patient was assessed with pure tone test weekly and instructed on keeping a diary of all her SSHL-related symptoms.

The 1st week, she presented with no improvement, fullness and hearing loss still troubled her. She was still asked keeping a diary of all her SSHL-related symptoms, and stated sporadic symptoms of tinnitus that were "on and off" at night after the 4th acupuncture treatment. A week later, she reported feeling better with fullness and hearing loss with mild infrequent tinnitus 4 days a week. The 3rd week, she reported more improvements with mild symptoms. She reported sleeping better but still with mild infrequent tinnitus 2 days a week. The last week she reported total recovery from her fullness and hearing loss symptoms, and no further tinnitus symptoms since her last visit, she stated "Everything is going well." At the current time, 3 months past treatment, the patient has not needed further treatment for SSHL.

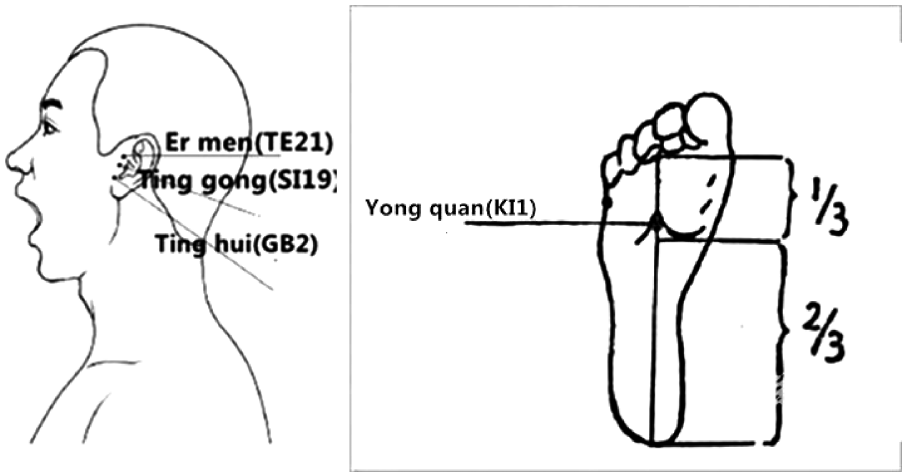

Figure 1. Left in the figure shows the acupoints Er men(TE21), Ting gong(SI19), and Ting hui(GB2), right in the figure shows the main acupoint Yong quan(KI1).

Table 2

Treatment pathway of case presentation participants.

Assessment by interprofessional team	First week	Third week	Last week
Response to treatment	No improvement about fullness and hearing loss, tinnitus occurred after the 4th acupuncture treatment.	More improvement about fullness and hearing loss, minimal tinnitus appeared after the 2nd week acupuncture treatment.	Completely recovery after acupuncture treatment over 1 month.
Affected ear's hearing thresholds (kHz)	0.125-(40dB), 0.25 (45dB), 0.5 (35dB). Hearing loss of more than 30 dB in 3 contiguous test frequencies.	0.125-(10dB), 0.25 (15dB), 0.5 (10dB). Hearing loss of less than 5 dB compared with the normal ear.	0.125-(0dB), 0.25 (10dB), 0.5 (0dB). Nearly the same with the normal ear

Table 2 also shows the hearing thresholds before and after acupuncture treatment.

2. Discussion

This article introduces the case of a young patient whose symptoms were effectively managed with acupuncture alone. Our goals were to determine whether mild and simple hearing loss improved by acupuncture alone and whether the improvements were maintained after the intervention. Our clinical results indicated that acupuncture as an alternative therapy has been a salient approach in SSHL.

In the reported case, our treatment plan calls Acupuncture and Moxibustion therapy of excitation-focus transfer, which has been presented with superior therapeutic effect on SSHL after the western routine therapy.[19] In Traditional Chinese Medicine (TCM), it is believed that SSHL is caused by the Yin-Yang imbalance of internal organs. Acupuncture is considered a useful treatment to balance this skewed condition as some channels originating from those organs flowing. There are various acupuncture points along these meridians stimulated by needles or moxibustion.[21] Acupoints distribute over both the adjacent and distal areas of the disease. Numerous clinical studies indicated that Acupuncture and Moxibustion therapy of excitation-focus transfer was one of the most significant techniques of balancing the meridians.[19] So, we believe that the acupuncture treatment has the potential to reduce the medical costs of SSHL and avoid the side effects of oral or intravenously steroids.[11]

We suppose that the effects will be maintained for at least 3 months and other treatments are not necessary as the hearing loss or tinnitus never occurred during the observation periods. Tinnitus might be the syndrome accompanied with hearing loss, also the possibility of an influence of the lymph fluid of the cochlea by acupuncture was the critical factor underlying the tinnitus occurring in the treatment. However, the observed changes in outcome measures may be attributed to several factors. The fullness or hearing loss could be enhanced by stopping excessive noise exposure and emotion-control for work pressure. The patient could be cured without any intervention as the spontaneous remission rate has been reported as 45% to 65%.[22]

This case report has a few limitations. First, we were unable to prove the efficacy of acupuncture alone only by a single case. Multicenter studies with large samples and a long follow-up period are needed to confirm our observations. Second, because this case report was prospective, there was no control group. Future studies should require a more rigorous design, such as a randomized controlled trial.

Although this article is based on self report, there are very clear trends on how patients with SSHL responded to acupuncture treatments. Acupuncture treatments may be more helpful for SSHL from the case.

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