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Case Report

Bilateral sudden sensorineural hearing loss: a rare case report

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ABSTRACT

Sudden sensorineural hearing loss refers to the unexplained rapid onset of hearing loss occurring in a person who was apparently well. The exact cause of this nature of hearing loss is unknown in most cases, although it is linked to viral infections, vascular compromise or coagulation disorders in the blood, metabolic conditions such as diabetes mellitus, autoimmune conditions of the inner ear, endolymphatic hydrops such as in Meniere's disease, or traumatic injury to the inner ear. A case of a 20-year-old male who was apparently healthy before presenting with the sudden onset of bilateral hearing loss, accompanied by tinnitus and dizziness was presented. There was no headache, loss of consciousness, or visual disturbance, and the patient had no history of head trauma. Otoscopy, anterior rhinoscopy, and neurological examination were apparently normal. The diagnosis of sudden sensorineural hearing loss was made, and the patient's pure tone audiometry results showed profound sensorineural hearing loss on the right side, and moderate sensorineural hearing loss on the left. The patient was treated with methylprednisolone and acyclovir. We have presented a rare case of bilateral sudden sensorineural hearing loss in a young adult male who had no risk factors. The cause of sudden sensorineural hearing loss in this patient was thought to be idiopathic.

Keywords: Bilateral, Hearing loss, Sensorineural, Sudden

INTRODUCTION

Sudden sensorineural hearing loss (SSNHL) is defined as hearing loss of more than 30 dB across three consecutive pure tone frequencies that occurs within three days.[1,2] It is popularly known as "awakening with hearing loss."[2,3] The annual incidence is estimated to be 11 to 77 cases per 100,000 people.[4] SSNHL can afflict a person at any age. The average age is between 40's and 50's, with no gender preference.[2] Bilateral involvement has been documented in about 2% of cases, most patients suffer unilateral losses.[2,3,5,6,] SSNHL is typically idiopathic (ISSNHL) in 90% of patients.[1,5]

In the minority of patients, SSNHL is caused by viral or bacterial infections, inflammatory conditions like sarcoidosis, metabolic causes like diabetes, hypothyroidism, hyperlipidemia, and renal failure, autoimmune conditions such as systemic lupus erythematosus (SLE), Cogan syndrome, hypercoagulable states such as Waldenstrom macroglobulinemia, head injuries, hematological malignancies, and toxins.[1,6] Endolymphatic hydrops example Meniere's disease, and tumors like vestibular schwannomas can also causes SSNHL.[2,5]

CASE REPORT

We report a case of a 20-year-old male who presented with a one-day history of awakening with hearing loss in both ears. This was preceded by seven days of occasional non-pulsating ringing sensations in both ears and dizziness. It was not associated with a sense of aural fullness or pressure. There was no headache, loss of consciousness, convulsion, visual disturbance, body weakness, or fever. There was no previous history of similar illnesses, and before the onset, he had not used any medications or abused any drugs. He had no history

of trauma to the head or ears, and he had not been exposed to loud noise. There is no history of heavy lifting or hearing a 'pop' sound in the head and neck region. He had no chronic illnesses. No previous ear surgery; no family history of blood coagulation disorders.

He had normal vital signs and normal otoscopy on both sides. Tuning fork vibrations using 512 HZ could not be heard. The rest of the ear, nose, and throat examination was normal. A central nervous system examination was normal, apart from the hearing loss. The full blood count and blood glucose were normal. The initial diagnosis was sudden sensorineural hearing loss, and he was started on intramuscular methylprednisolone 240 mg, then 240 mg IM after 24 hours, and 40mg IM on the third day. He was also given acyclovir tablets per oral, at a dose of 400 mg tds7/7. Pure-tone audiometry revealed profound sensorineural hearing loss on the right side, and moderate sensorineural hearing loss on the left.

Throughout the treatment, fasting blood glucose was normal. There was no complication. He did not return for follow-up after five days, although he reported significant improvement when reached through the phone after one month.

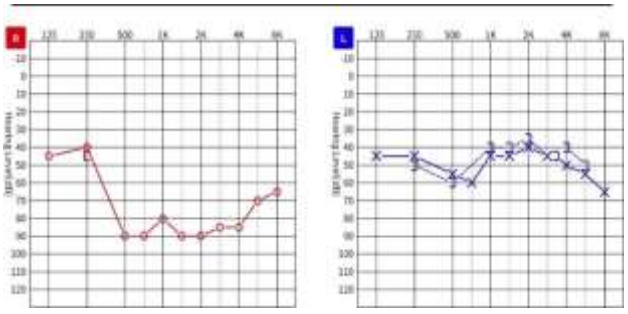

Figure 1: Pure tone audiometry results.

DISCUSSION

Four theories explain the pathophysiology of SSNHL, the first being labyrinthine viral infection. SSNHL is linked to the reactivation of latent viral infections, including cytomegalovirus, mumps, rubella, rubeola, and HSV 1 and 2.[5,6] The second hypothesis is labyrinthine vascular compromise.[2,6,5] The cochlea is an end organ with no collateral circulation. Thrombosis, embolism, or vasospasms lead to SSNHL.[6] The third mechanism of SSNHL is intracochlear membrane rupture caused by cochlear hydrops, tearing of Reisner's membrane, and subsequent potassium poisoning, which drastically changes the endo cochlear potential.[2,5] The fourth pathophysiological process is immune-mediated inner ear illness.[5,6] The diagnosis of SSNHL includes abrupt onset sensorineural hearing loss, usually severe and of unknown cause. Tinnitus, vertigo, nausea, and vomiting may all occur. There is no history of recurring episodes and no additional cranial nerve involvement, save for cranial nerve VIII.[3,1] Typically, the patient has difficulty following up on conversations, experiencing excessively loud sounds, having difficulty hearing in the presence of background noise, or having difficulty hearing high-pitched sounds.[1,3]

It is critical to perform an otoscopic examination to rule out cerumen impaction, tympanic membrane perforation, middle ear effusion, or tumour. Rinne and Weber tuning fork tests should be done. Fistula tests should be performed to rule out a third window. The central nervous system is examined to rule out any neurological issues.[1] Routine laboratory or radiological investigations are strongly discouraged.[1] Antinuclear antibody (ANA), rheumatoid factor, and erythrocyte sedimentation rate (ESR) tests are typically performed when an autoimmune aetiology is suspected.[2] When metabolic factors are suspected, check random blood glucose (RBG), serum cholesterol and thyroid stimulating hormone (TSH), which when found high, triiodothyronine (T3), and tetraiodothyronine (T4) levels can also be tested.[1,2] Imaging tests are used to demonstrate labyrinthine vascular impairment. Multiple sclerosis, and cerebellopontine angle tumours patients can be easily diagnosed by gadolinium-enhanced magnetic resonance imaging.[5] Pure tone audiometry (PTA) is essential to documenting the hearing level and should be done within 14 days. Auditory brainstem response (ABR) can be done when a retro cochlear cause is suspected.[1,2]

In our patient, we could not find any obvious cause of his sudden hearing loss through history and physical examination, so we considered it most likely idiopathic sudden sensorineural hearing loss. The basic investigations requested a full blood picture and random blood glucose aimed to rule out potential conditions like diabetes and acute viral infection.

Whatever treatment is given, one-third of patients return to their baseline hearing, one-third improve slightly, and one-third suffer lifelong hearing loss.[3] Early therapy with systemic steroids is critical for a better prognosis.[1] Steroids are the primary treatment for SSNHL, with systemic steroids preferred for those who can tolerate them and intratympanic steroids for those with diabetes, a current infection, peptic ulcer disease, or a past psychotic reaction to systemic steroids.[4] Systemic steroid therapy is usually prednisolone at a dose of 1 mg/kg/day, while intratympanic steroid therapy is usually dexamethasone or methylprednisolone.[6] Up to four 0.4 to 0.8 ml injections of 24 mg/ml dexamethasone into the middle ear space are permitted in two weeks.[1] Other therapies utilized, although not routinely, include carbogen therapy, vasodilators, and hyperbaric oxygen therapy.[5,6] Rheological agents like warfarin, low molecular weight heparin, or low molecular weight dextran can be used to reduce blood viscosity and enhance labyrinthine circulation, but should not be routinely prescribed.[1] Antiviral therapy plays a limited role. There is no evidence to support the routine use of antiviral treatment in SSNHL.[1] In our patient, we opted for high-dose

intramuscular steroids, because the patient had no risk factors and could tolerate steroids. However, we shortened the course of steroids to avoid complications. Antivirals were given to our patient, although little benefit was expected from them.

For patients with SSNHL caused by other illnesses such as hypothyroidism, hypertension, diabetes, or dyslipidemia, prompt treatment of these primary conditions is expected to improve their hearing.[2] Antibiotic therapy is recommended in cases of bacterial infections, for example, Lyme disease and syphilis.[1] Lip reading, sign language, auditory training, hearing aids, and cochlear implants are some recommended rehabilitative techniques.[1]

CONCLUSION

A rare case of bilateral sudden sensorineural hearing loss, occurring in a healthy and relatively young patient, in whom a shorter course of high-dose intramuscular steroids seems to have good results with no complications.

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