

# Sensorineural Hearing Loss Following Typhoid Fever in a Young Female: A Rare Clinical Complication from Nepal

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## RESULTS

Although her fever resolved, there was no improvement in her hearing despite steroid therapy. She was referred to a tertiary center, where repeat audiometry reconfirmed profound bilateral SNHL. Hearing aids were trialed without success, and she was eventually recommended for a cochlear implant.

## DISCUSSION

The classic symptoms of typhoid fever develop gradually, starting with fever, chills, and fatigue, followed by abdominal discomfort, nausea, and either constipation or diarrhea in the second week [3]. Atypical presentations are increasingly common, as seen in our patient who presented with fever, bilateral hearing loss, and tinnitus. The Widal test remains the primary diagnostic method for typhoid in developing countries due to cost constraints and the need for specialized training for blood and stool cultures [4].

A detailed physical examination, including otoscopy, was performed to assess the ear. Otoscopy showed intact tympanic membranes with grade 3 retraction of the pars tensa, likely due to chronic suppurative otitis media (CSOM). The Weber and Rinne tuning fork tests, combined with pure tone audiometry, differentiated between conductive and sensorineural hearing loss [5].

SNHL is more often linked to viral than bacterial infections [3]. In this case, however, the hearing loss was due to *Salmonella typhi*. A study of six cases with cochleovestibular lesions from typhoid reported onset typically between the second and third weeks of illness, with a predilection for the left ear [6]. Our patient presented with bilateral SNHL. The pathogenesis of SNHL in typhoid is attributed to endotoxins damaging the organ of Corti, capillary congestion, and cochlear hydrops [6]. Recovery rates for SNHL vary, with spontaneous improvement in 32% to 65% of cases. Prognosis is influenced by factors like age, degree of hearing loss, audiometric configuration, and promptness of treatment [5].

In endemic regions, typhoid fever is usually treated with oral antibiotics. Fluoroquinolones, such as ciprofloxacin and ofloxacin, are commonly used in multidrug-resistant cases [7]. Our patient received IV ceftriaxone. Data on systemic steroid use in typhoid fever with SNHL is sparse. A randomized trial in Indonesia showed adding dexamethasone to chloramphenicol reduced mortality without increasing complications. The exact mechanism by which steroids improve SNHL remains unclear, though it is thought that they reduce inflammation and swelling in the cochlea [3]. More research is needed to confirm steroid efficacy in SNHL treatment.

Timely treatment is critical, as studies show delays and a down-sloping audiometric curve correlate with worse recovery outcomes [8]. Glucocorticoids should be started promptly, with a typical regimen of 30 to 60

mg of oral prednisone daily, tapered over 1 to 2 weeks [9]. Our patient was started on 1 mg/kg/day of oral prednisolone in a tapering dose.

As her hearing did not improve, cochlear implantation was recommended. Cochlear implants are effective for treating profound hearing loss, particularly when speech perception is poor bilaterally. Although outcomes are generally favorable, they can vary, with duration of deafness being a key predictor of success [10].

This case highlights a rare but significant complication of typhoid fever: profound bilateral SNHL. Despite the patient's young age, her hearing loss did not improve with steroid therapy. This underscores the need for further research to better understand the pathophysiology and develop optimal management strategies for SNHL associated with typhoid fever.

#### javascript:void(0)AUTHOR CONTRIBUTIONS

**Nischal Shrestha** : Conceptualization, Data curation, Formal analysis, Investigation, Methodology, Project administration, Supervision, Validation, Writing - original draft, Writing - review & editing. **Pingala Khadka** : Methodology, Writing - review & editing. **Priti Khanal** : Writing - review & editing, **Gyan Raj Arya** : Investigation, Methodology, Writing - review & editing. **Mahr Un Nisa** : Writing - review & editing.

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#### CONFLICT OF INTEREST STATEMENT

The authors have no conflicts of interest to disclose.

#### CONSENT

Written informed consent was obtained from the patient to publish this report in accordance with the journal's patient consent policy.

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Figure 1: Audiogram showing both air conduction and bone conduction curves are below 20 db and air-bone gap is more than 10 db

