International Clinical and Medical Case Reports Journal
Case Report (ISSN: 2832-5788)

A Rare Case of Bilateral Sensorineural Hearing Loss with Oral Fluoroquinolone Use

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Citation: *Kaitlyn Thomesen, Ayana Ribka. A Rare Case of Bilateral Sensorineural Hearing Loss with Oral Fluoroquinolone Use. Int Clinc Med Case Rep Jour. 2024;3(6):1-3.*

Received Date: 22 May, 2024**; Accepted Date:** 31 May, 2024**; Published Date:** 07 June, 2024

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ABSTRACT/SUMMARY

We present a case exposing the rare complication of Sensorineural Hearing Loss (SNHL) following oral fluroquinolone therapy. The patient developed SNHL following two days of oral therapy. Though this is a rare complication, we recommend understanding and fully educating patients on fluroquinolone side effects and concerning symptoms to be aware of while undergoing fluoroquinolone therapy. Additionally, it is equally as important for physicians should look to optimize side effect profiles for any medical intervention they recommend.

Keywords: Sensorineural hearing loss; Fluoroquinolone; Side effects

BACKGROUND

Fluoroquinolones (FQ) are a popular class of antibiotic due to their wide-ranging activity against community gram positive and negative bacteria. The Food and Drug Administration (FDA) has issued its strongest warning and recommended limiting use of FQ to patients who have no other treatment options due to increasing bacterial resistance and serious safety issues. These potentially permanent side effects can involve tendons, muscles, joints, nerves, and central nervous system. Thus, the side effects for fluoroquinolone's are well documented and patients are often educated on the most common side effects. Additionally, fluoroquinolone ear drops are most associated with possible hearing changes in patients. However, tinnitus is the most common associated hearing change. In even more rare cases, there are some patients who report tinnitus while taking oral fluoroquinolones. It is the rarest of cases that complete hearing loss will be seen with oral therapy [1].

CASE REPORT

A 57-year-old man with diabetes mellitus type II, coronary artery disease, cerebral vascular accident and alcohol use disorder presented to the Emergency Department (ED) with sudden bilateral hearing loss. Two days prior, he was evaluated in the ED for left groin and testicular pain and discharged on levofloxacin. Patient returned to the hospital, reporting sudden hearing loss after his first dose of levofloxacin, with continued testicular pain. He denied any recent trauma to his ears, exposure to loud noise, otalgia, otorrhea, recent viral illness, tinnitus, or vertigo. Review of his medication did not reveal any recent exposure to ototoxic medications. Routine laboratory studies revealed leukocytosis (25.7k/cmm), chronic stable normocytic anemia (11.8g/dl) and thrombocytosis (397K/cmm). Otologic examination by otolaryngology (ENT) was unremarkable except for inability to hear tuning forks and acute reduction in hearing acuity. Audiogram revealed bilateral Sensorineural Hearing Loss (SNHL). MRI of the brain did not show any acute intracranial process. On hospital day one, blood cultures revealed growth of gram-positive cocci; ultimately speciated as Methicillin Sensitive Staphylococcus Aureus (MSSA) [2,3].

DIFFERENTIAL DIAGNOSIS

Of the possible pathologies that could result in acute sensorineural hearing loss, trauma, exposure to loud noises, fluoroquinolone use, otitis media, or age-related changes were all considered. Trauma and noise exposure were ruled out quickly in the setting of the patient remaining at home since the onset of his symptoms and he had no reported trauma or noise exposure. During his ENT exam, there was no evidence of trauma or swelling of his tympanic membrane. Additionally, no other members of his household experienced recent hearing loss or provided collateral information about loud noise exposure. For otitis media, the physical exam was benign, ruling out an infectious etiology for the hearing loss. Also, as the patient was appropriately treated with antibiotics, there was minimal to no improvement to hearing acuity. Age-related changes were considered but quickly dismissed in the setting of the acuity of symptom onset and the patient's age. Thus, the only resulting differential from the initial list was fluoroquinolone exposure as the cause for hearing loss [4,5].

TREATMENT

Patient underwent three weekly transtympanic steroid injections during his hospitalization with mild improvement in his hearing. His bacteremia was treated with an intravenous nafcillin course.

DISCUSSION

We report a case of SNHL which developed suddenly after a patient took one dose of oral fluoroquinolone. FQ are known to be ototoxic and can result in less than 1% of patients developing tinnitus. Rarely, patients taking fluroquinolones will develop SNHL, typically from the use of fluroquinolone drops into the external ear canal. Based on our literature review, SNHL from oral intake of FQs is even rarer. In cases when cause for SNHL remains undetermined, routine serologic tests for infection or autoimmune causes are not recommended in the absence of clinical suspicion for a specific etiology. Autoimmune work up including evaluation for metabolic risk factors such as diabetes, hyperlipidemia, thyroid dysfunction could be considered. The cornerstone of therapy is steroid therapy, which can be administered via oral, intratympanic or combined steroid. Our patient received intratympanic injections due to an active infection. Recovery from SNHL is gradual and can take up to

four to five weeks following drug withdrawal. Early initiation of therapy, ideally within two weeks of onset of hearing loss, yields a higher likelihood of response. The rate of complete recovery is unknown. In conclusion, FQ associated SNHL is a rare but life altering, potentially permanent side effect. Counseling patients on the risk and signs of SNHL and timely consultation of ENT to initiate therapy are critical for best outcomes [6,7].

LEARNING POINTS

- Understand the possibly side effects of fluoroquinolone use.
- Recognize and manage oral fluoroquinolone associated sensorineural hearing loss.
- Treatment for SNHL associated to fluoroquinolone exposure.

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