CASE REPORT

Otosyphilis In An HIV-Infected Patient: The First Case in Vietnam

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DOI: 10.55489/njcm.140220232622

ABSTRACT

Syphilis has been re-emerging around the world, especially in MSM and people living with HIV. Because of the high number of infections, complications of the disease that were previously rare, now appear again. Otosyphilis is one of them. We reported a case of a 31-year-old MSM patient, HIV-positive, with sudden hearing loss of both ears and tinnitus due to syphilis. This is the first case of otosyphilis detected in Vietnam. The diagnosis of otosyphilis may be delayed because its symptoms are similar to those of other diseases. Therefore, there should be a highly suspected indicator of otosyphilis that can help clinicians orient the diagnosis and handle it in a timely manner.

Keywords: syphilis, otosyphilis, neurosyphilis, HIV, sudden hearing loss

ARTICLE INFO

Financial Support: None declared
Conflict of Interest: None declared
Received: 05-12-2022, **Accepted**: 02-02-2023, **Published**: 28-02-2023
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How to cite this article:
Pham Phuoc Hung Lam, Tam Thanh Nguyen, Ngoc Hieu Nguyen. Otosyphilis In An HIV-Infected Patient: The First Case in Vietnam. Natl J Community Med 2023;14(2):124-127. DOI: 10.55489/njcm.140220232622

www.njcmindia.com | pISSN09763325 | eISSN22296816 | Published by Medsci Publications

INTRODUCTION

The rate of syphilis has been increasing rapidly all over the world, with a high concentration on men who have sex with men (MSM) and people living with HIV.[1] In Vietnam, syphilis remains one of the most common sexually transmitted diseases. Because of the high number of infections, previously rare complications may appear, especially in immunocompromised subjects. Otosyphilis is a rare cause of sensorineural hearing loss and is often overlooked upon diagnosis.[2] If not treated, it can lead to irreversible deafness; on the other hand, if intervened early and treated properly, about 50% of cases will improve to varying degrees.[3] The characteristic of hearing loss of otosyphilis is that it usually starts suddenly, in both ears, and progresses gradually.[4] The accompanying symptoms are tinnitus and dizziness.[5]

CASE REPORT

A 31-year-old male patient, unmarried, MSM, had sudden hearing loss, tinnitus, and dizziness (loss of balance when walking and changing posture) in both ears. After a week of the symptom onset, he was examined and treated by an otolaryngologist with a diagnosis of unexplained sudden deafness. The results of carotid artery doppler ultrasound, sinus nasal endoscopy, cerebral magnetic resonance imaging (MRI) all appeared normal. Treponema pallidum Hemagglutination Assay (TPHA) and HIV tests were both positive, and the CD4 count was 279 cells/mm^3. The pure-tone audiograms showed a moderate bilateral sensorineural hearing loss with the pure-tone averages of the right and left ears were 52.5 dB and 47.5 dB, respectively (WHO's Grades of hearing impairment, 2008) (**Fig.1a, 1c**).[6] The patient was prescribed Piracetam, Desloratadine, Flunarizine, Mecobalamine, Betahistine, and Acetylleucine for treatment.

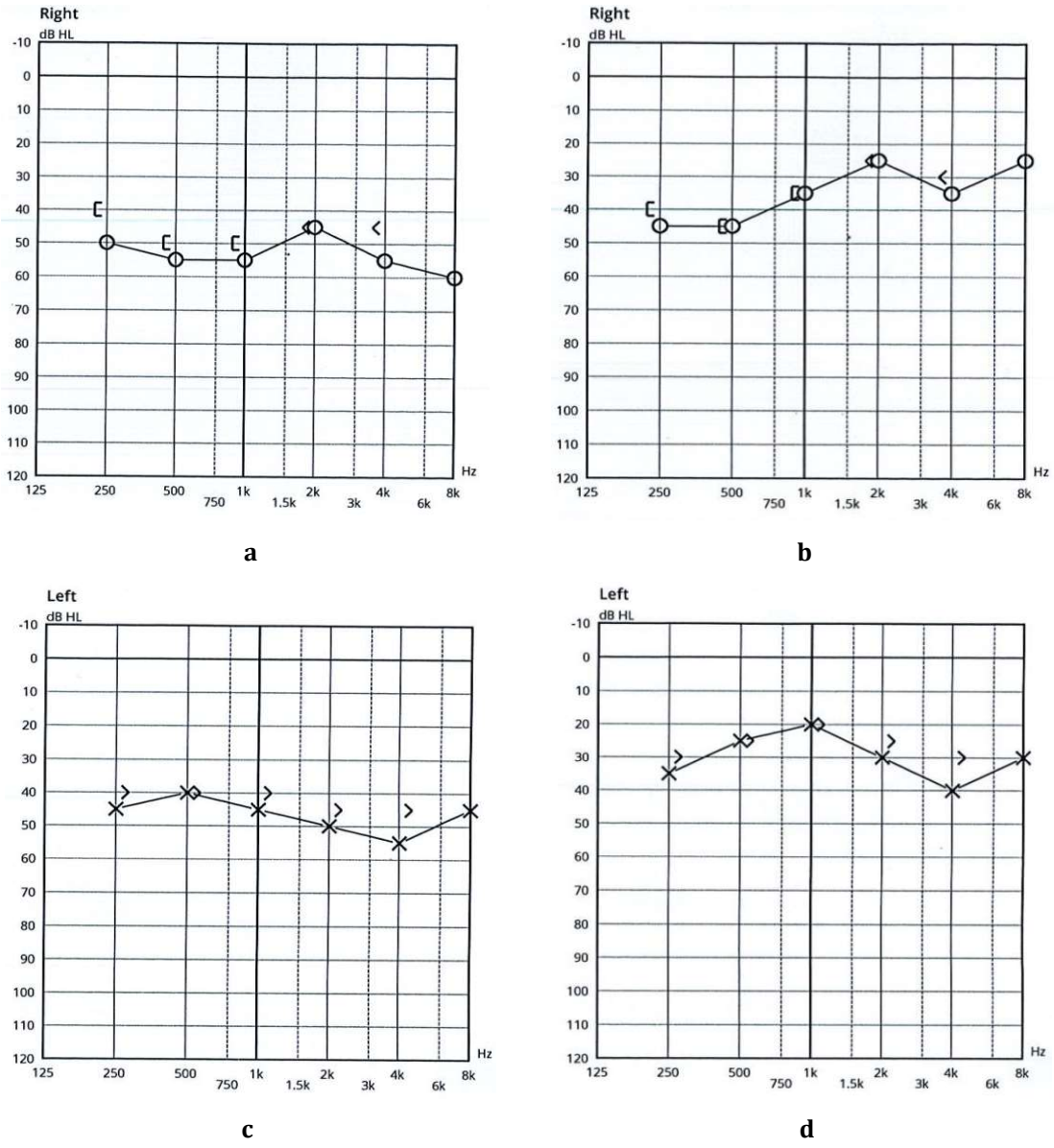

Figure 1: Illustration of the patient's hearing ability before (a, c) and after treatment (b, d)

After two weeks of treatment, his symptoms were even worse, then he went to the STIs clinic of Ho Chi Minh City Hospital of Dermato-Venereology. As a result, no cutaneous manifestations of syphilis were observed. Serum rapid plasma reagin (RPR) test was at 1:16. The cerebrospinal fluid (CSF) results indicated a diagnosis of neurosyphilis with an increased white blood cell count (WBC) (121 cells/mm^3), slightly elevated protein level (0.76 g/L), weakly reactive RPR, TPHA (+++), real time-PCR *Mycobacterium Tuberculosis* (-). The patient was diagnosed with neuro-otosyphilis/HIV.

The patient was treated with benzylpenicillin sodium 24 million IU/day IV for 14 days. The patient continued to be treated with benzathine penicillin G 2.4 million IU/week IM for three weeks. He relieved dizziness and his hearing improved during the course of treatment with CSF-WBC = 51 cells/mm^3, CSF-protein = 0.534 g/L and CSF-RPR (-).

Three months after treatment, his left ear was no longer tinnitus but the right one was still buzzing (down around 50% compared to before treatment). The pure-tone audiogram in the right ear indicated a sensorineural hearing loss from slight grade at 1000, 2000, 4000, and 8000Hz, to moderate at 250 and 500Hz (**Fig.1b**). The pure-tone audiogram in the left one showed a mild hearing impairment (**Fig.1d**). The pure-tone average of the right side was 35 dB and that of the left was 28.75 dB.

One year after treatment, the patient had a serum RPR titer of 1:4. His symptoms were completely gone, but the right ear was still buzzing slightly. He felt his hearing was fully restored for both ears.

Table 1: Relationship between otosyphilis and CD4 in HIV patients[7, 8, 9,10]

CD4 Count	Patient (%)
<200	3 (17.65)
200 - 349	6 (35.29)
350 - 500	5 (29.41)
>500	3 (17.65)

Discussion

Otosyphilis is a sexually transmitted disease that, if not treated, can lead to permanent hearing loss. It is considered a complication of neurosyphilis.[2], while neurosyphilis can be seen at any stage of *Treponema pallidum* infection.[11] Therefore, damage to the auditory nerve can also occur during any stage of syphilis. For neurosyphilis in HIV-infected patients, Christina's study found that the number of CD4 cells ≤ 350 was 3.1 times higher than for those with CD4 cells > 350. Therefore, HIV-induced immune impairment may increase the risk of neurosyphilis.[12]

Some studies showed HIV-infected patients had higher rates of otosyphilis infections than non-HIV-infected ones.[3,13] This can be explained immunologically that the complex immunosuppression in patients with HIV, which mainly affects the T-lymphocyte arm of the immune response.[14] This process may facilitate the reactivation of dormant temporal bone-treponemes and dictate the onset of clinical otosyphilis. Thus, human immunodeficiency virus may contribute to the progression of otosyphilis.

Combining the CD4 results in our study with several other studies around the world, we found that the proportion of patients with otosyphilis varied depending on CD4 (**Table 1**). HIV-infected patients with normal CD4 levels were less likely to be infected with otosyphilis than for those with reduced CD4 cell numbers. CD4 cells between 200 and 349 had the highest risk of otosyphilis infection (35.29%). However, due to the small sample sizes of the studies, more research is needed to further clarify the link between CD4 and otosyphilis.

Conclusion

For an HIV-positive patient with a low CD4 count, with sudden hearing loss, we should order serological tests for syphilis to see whether *Treponema pallidum* could be the reason or not.

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