

Unilateral hearing loss due to pegylated interferon- α 2b and ribavirin therapy

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Combination of pegylated interferon and ribavirin is the standard of care in patients with chronic hepatitis C virus infection. However this therapy has many side effects, including flu-like symptoms, neuropsychiatric symptoms and cytopenias. Auditory symptoms like tinnitus and hearing loss have only rarely been reported.

A 40-year-old man, incidentally detected to have hepatitis C virus (HCV) infection a year ago, was referred to our hospital for further management. He was asymptomatic and physical examination was unremarkable. Investigations revealed normal complete blood counts, renal function tests, glucose and bilirubin, and elevated alanine aminotransferase (ALT 126 U/L). Anti-HCV was positive, HCV viral load was 4.2×10^6 IU/mL and genotype was 3. Ultrasonography abdomen revealed normal size and echotexture of liver. He was diagnosed to have chronic HCV infection and was started on pegylated interferon α 2b 80 μ g subcutaneously per week (body weight 62 kg) plus oral ribavirin 800 mg/day. He used to have fever and flu-like symptoms lasting for 2–3 days after each dose of interferon. Hemoglobin declined by 3 gm/dL by week 12 and he lost 5 kg of weight. His viral load had become negative by week 4 (rapid virological response) and remained negative at week 12 (early virological response). In the 19th week of antiviral therapy, he started having pain in left ear associated with some hearing loss.

He denied any history of hearing loss or exposure to any ototoxic drugs in the past. Tympanic membrane did not reveal any abnormality. MRI of the middle ear was normal. Pure tone audiometry showed a profound sensorineural hearing loss of 70/120 dB in his left ear and normal hearing of 18/18 dB in the right ear. The patient decided to discontinue further therapy. At the end of treatment his ALT values were normal and HCV RNA was undetectable.

He was prescribed multivitamins and anti-inflammatory drugs. Pain in the left ear decreased but hearing loss showed no improvement over a 6-month follow up. HCV RNA was undetectable indicating sustained virological response.

This case illustrates a rare adverse reaction of sudden unilateral sensorineural hearing loss in a patient receiving pegIFN α 2b and ribavirin combination therapy for chronic HCV infection. MRI ruled out other causes for such acute unilateral hearing loss such as temporal bone fracture, rupture of round or oval window membranes or vestibular schwannoma.

Both unilateral and bilateral acute sensorineural hearing loss with interferon therapy have been rarely reported in literature, unilateral being more common [1–6, 9, 10].

In a prospective study, 32 (44%) of 73 patients receiving interferon developed abnormalities on audiometry [1]. These resolved completely within 7–14 days after discontinuation of therapy.

In another prospective study, 9 of 27 patients with chronic hepatitis B receiving interferon-alpha developed sensorineural hearing loss [2]. They further observed that this loss increased gradually with subsequent doses but recovered completely after discontinuation of treatment.

Various hypothesis for ototoxicity associated with interferon therapy are autoimmune (detection of anti-endothelial cell autoantibodies and response to prednisolone) [1, 3–5], direct

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ototoxicity [6], transient ischemia and microvasculature changes. Tunca et al. [7] postulated damage to outer hair cells; however Akyol et al. [8], reported decreased number of fibroblasts and prominent cytoplasmic vacuolation in mice cochlea with normal hair cells. Another explanation can be development of cytopenia related to bone marrow suppression, consequently leading to infection or bleed and hearing loss. Bilateral loss indicates central mechanism whereas unilateral loss indicates local lesion. Our patient had anemia but total leukocyte count and platelet count were within normal range.

Most of the reported cases have occurred in late stages of treatment [1, 4, 6, 9] though occasional cases have occurred as early as day 1 after starting treatment [2, 9, 10]. Early onset may indicate hypersensitivity reaction. Most of the patients recover completely on stopping the treatment [1, 3, 4, 6] but permanent hearing loss has also been reported [2, 9, 10].

The reason for lack of recovery of hearing loss in some patients remains unanswered. Physicians should be aware of this complication and careful monitoring of patients is recommended for early detection.

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