A Tale of Audiograms: Improvement of Idiopathic Sudden Sensorineural Hearing Loss in a Patient with Pre-existing Hearing Loss

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Introduction:

Idiopathic Sudden Sensorineural Hearing Loss (ISSHL) is the newest UHMS approved indication for Hyperbaric Oxygen Therapy (HBO2). We present a successful treatment case of ISSHL with audiograms prior to hearing-loss, and after treatment with HBO2.

Materials & Methods:

A 79 year-old male with long-standing bilateral high frequency hearing loss from artillery fire presented 12 days after developing low-frequency ISSHL in the right ear. His baseline audiogram documenting his pre-existing hearing loss is shown in Fig .1 and his initial audiogram after ISSHL but pre-hyperbaric treatment is shown in Fig.2, allowing us to quantify his ISSHL. Notably, the exact degree of ISSHL was profound at 60db, 70db, 65db and 45 db over 4 continuous frequencies. He was unable to hear conversational speech. The patient had been given oral steroid therapy for the preceding 12 days without improvement and were continued. On Day 13, HBO2 commenced at 2 ATA for 2 hours daily. The patient received a total of 20 treatments.

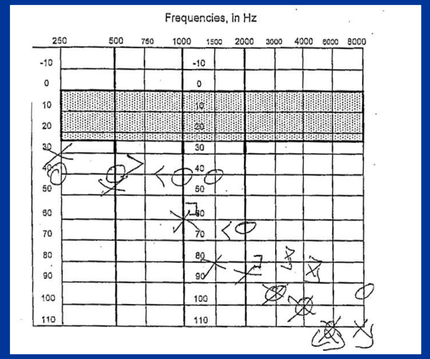

Fig. 1: Baseline Audiogram (10 months prior)

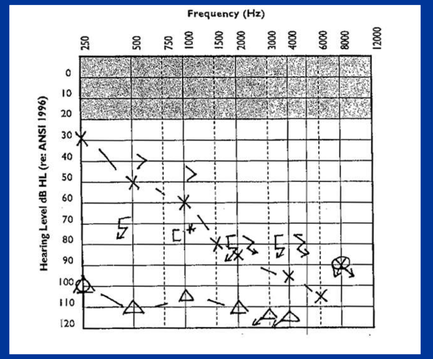

Fig. 2: Day 4 post ISSHL, 0 HBO2 treatments

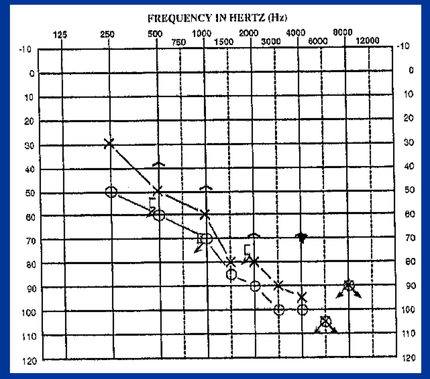

Fig. 3: Day 26 post ISSHL, 20 HBO2 treatments

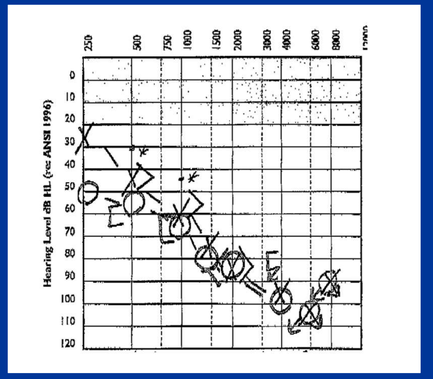

Fig. 4: Day 45 post-ISSHL, 20 HBO2 treatments

Results:

Despite starting HBO2 one day shy of the 14 day UHMS recommended window, the patient improved rapidly. Repeat audiogram after 9 treatments , Day 26, is shown in Fig.3 and showed a residual hearing loss of 10db, 20 db, 30 db, 25 db over 4 continuous frequencies, which was an improvement of 50db, 50db, 35 db, 20 db. His audiogram after completion of his 20 HBO2 session therapy is shown in Fig 4 and showed a remaining hearing loss of 10db, 15 db, 25 db, 20 db compared to baseline , an improvement of 50db, 55db, 40 db, 25 db

Conclusions:

This case allows us to accurately compare the exact degree is ISSHL in a patient with pre-existing hearing loss documented by a baseline audiogram, as well as document substantial improvement with HBO2.
The patient's response to Hyperbaric Oxygen Therapy and steroids, despite starting him at the upper edge of the UHMS-recommended 14-day window, suggests possible benefit in extending the HBO2 therapeutic window, perhaps as much as that recommended by the American Academy of Otolaryngology (3 months).

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