



Improvement in Neurologic Symptoms Following Hyperbaric Oxygen Treatments for Presumed Soft Tissue Radionecrosis

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Background

- Acoustic neuroma, or vestibular schwannoma, is a benign, usually slow growing tumor that develops on the vestibular nerve leading from the inner ear to the brain.
- Symptoms can include hearing loss and/or tinnitus on the affected side, vertigo, loss of balance/unsteadiness, and facial numbness.
- Treatments include surgical resection and radiation therapy (e.g., stereotactic radiosurgery, which delivers a precisely targeted dose of radiation to a tumor).

Materials and Methods

- A 56-year-old woman was referred for consideration for hyperbaric oxygen treatments (HBOT). She underwent subtotal resection of a left acoustic neuroma approximately 9 years prior, and subsequent stereotactic radiosurgery (12.5 Gy) the following year.
- Though she had no recurrence of neuroma, she was experiencing progressive neurologic symptoms which developed after treatment. Her chief complaint was worsening balance with difficulty walking.
- In the absence of other explanations, her worsening symptoms were thought to be due to soft tissue radionecrosis as a consequence of her radiosurgery. MRI showed T2 FLAIR hyperintensity in the left lateral cerebellum and left pons, although these findings could not be positively correlated with her symptoms. A trial of hyperbaric oxygen was planned.

Results

- Initially the patient was unable to walk touching heel-to-toe and had difficulty keeping her balance.
- After 23 HBOT, she was able to do 4-5 heel-to-toe steps on her own, and she noted that she was feeling more confident about her balance.
- At 32 HBOT, she noted continued improvement and was able to complete 8 heel-to-toe steps.
- Following 36 HBOT, she noted that the rate of progress in improvement had slowed. She completed 40 HBOT over approximately 8 weeks, and at that point it seemed reasonable to conclude hyperbaric treatments.
- Follow-up imaging showed no discernable change from pre-HBOT.
- Seven months after completion of HBOT, the patient reported “doing really well” with no deterioration, and possibly slight continued improvement, of her balance. She was able to babysit her granddaughter because she felt confident in her ability to maintain her balance. She considers this is a huge benefit for her quality of life.

Summary

- A trial of hyperbaric treatment for possible central nervous system soft tissue radionecrosis can result in marked improvements in a patient’s neurological symptoms and quality of life. Objective measures of neurological function can be devised to help guide treatment decisions