Outpatient Vestibular Rehabilitation for a Patient Three Months Post Acoustic Neuroma Resection: A Case Report

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Background

An acoustic neuroma is a benign and slow growing intracranial tumor that originates from cells of the vestibular nerve within the inner ear. Acoustic neuromas are estimated to occur in 10-20 individuals per 1,000,000 in the US. The tumor and subsequent surgery frequently lead to vestibular impairment.

Common signs and symptoms of vestibular dysfunction include:
- Dizziness
- Headache
- Oscillopsia
- Unsteadiness
- Dizziness

The vestibular system functions to:
- Coordinate head and eye movement through the vestibulo-ocular reflex (VOR)
- Maintain postural stability
- Provide input for spatial orientation
- Oscillopsia
- Disequilibrium

Case Description and Examination

The patient was a 51 year old male who was completely independent prior to diagnosis with chief complaints of:
- Headaches
- Unsteadiness
- Occasional facial numbness

The patient began experiencing severe headaches 8 months prior to IE. The patient was diagnosed with a right sided acoustic neuroma. Resection surgery was performed at 8 months prior to IE and PT initial examination (IE) was 3 months prior to IE. The patient was also to be completed daily corrective saccade therapy.

Proscribed plan of care for 30-45 minute sessions twice a week for eight weeks. A home exercise program was also to be completed daily. Interventions focused on VOR adaptation and postural stability.

Patient was educated on Symptom Management Guidelines:
- The patient was expected to minimize symptom provocation in order to challenge vestibular function, however, there was a strong emphasis on not over-provoking symptoms.
- Exercise intensity was set to achieve no more than 1-2 minutes of symptoms immediately following completion of exercise.

Outcomes

- After 4 weeks of treatment the patient demonstrated improvements with VOR and postural stability exercises with decreased symptom provocation.
- Upon re-evaluation he demonstrated minimal improvements in all outcome measures.
- During his fifth week of treatment he cancelled two appointments due to severe headaches.
- The following week, his referring physician reported the patient needed a hold from PT due to the increase in his headache severity and frequency.

Interventions

Figure 1. Injury Timeline

The patient began experiencing severe headaches 8 months prior to IE. Diagnosed with right sided acoustic neuroma at 8 months. Resection surgery performed at 3 months prior to IE. PT initial examination (IE) was 1 month prior to IE. Therefore, corrective saccade therapy was also to be completed daily.

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Figure 2. VOR Exercises

A. Horizontal head turns performed at a speed allowing the patient to maintain visual focus of a letter placed on an index card held at arm's length distance
B. Vertical head turns performed at a speed allowing the patient to maintain visual focus of a letter placed on an index card held at arm's length distance

Figure 3. Postural Stability Exercises

A. Slow forward marches for 25 feet while holding a 10 pound ActivMotion Bar with gaze fixation
B. Forward gait for 25 feet with self-toss and catch with 2 pound medicine ball
C. Walking on a treadmill at 1.3 mph while identifying letters on a white board as called by the therapist

Figure 4. Acoustic Neuroma

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Discussion and Conclusion

- This case study was limited in demonstrating its purpose as the patient was unable to complete the full eight weeks of his intended plan of care.
- Minimal improvements in VOR function after four weeks may support the use of vestibular rehabilitation for this patient with chronic symptoms of UVH.
- This case may suggest the importance of direct communication between the therapist and referring physician as continued treatment for symptom management was recommended despite the physicians recommended hold from PT services.
- Future research may focus on expected outcomes for patients with chronic UVH with delayed vestibular rehabilitation following acoustic neuroma resection.

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References