Self-reported hearing loss versus objective hearing loss in vestibular schwannoma patients, results in 422 patients

Maria Peris-Celda¹, Avital Perry¹, Christopher S. Graffeo¹, Panagiotis Keredouzis¹, Geffen Kleinstern², Matthew J. Carlston³, Michael J. Link¹,³

¹Department of Neurologic Surgery, ²Department of Health Science Research, ³Otolaryngology-Head and Neck Surgery, Mayo Clinic, Rochester MN
• The authors have no disclosures
Introduction

• Sensorineural hearing loss is one of the main symptoms of vestibular schwannomas (VS) and has an impact on the quality of life of the patients.
• It remains unclear whether the degree of perceived hearing loss adequately correlates with objective hearing loss.
• The purpose of this study is to compare objective audiology data and subjective hearing data in a large cohort of patients diagnosed with VS in a tertiary center.
Methods

• 422 patients diagnosed with unilateral VS treated at Mayo Clinic, Rochester, MN were included

• All the patients completed a 64-item questionnaire between 2014 and 2016 which included variables related to perceived hearing function, and had an audiogram performed within a year from the date of completion of the questionnaire

• Demographic, self-reported hearing data, and audiology data were studied.

• The results were statistically analyzed using SPSS software
Results: demographics

- 422 patients were included
- 47.2% males, 52.8% females
- The mean age at the time of questionnaire completion was 55 years
Results: audiology data

- Audiology data included pure tone average (PTA), word recognition score (WRS), and AAO-HNS hearing class (HC)

- Distribution of hearing class in the study population
Results

Self-reported presence or absence of hearing loss
Self-reported hearing loss was significantly associated with worse HC (C or D) and higher PTA (p<0.001) but not with lower WRS.

Scale of perceived degree of hearing loss (1 normal-10 complete deafness)
PTA had a positive linear correlation ($r=0.690$, $p<0.001$), and WRS had a negative linear correlation ($r=-0.758$, $p<0.001$).
**Results**

Inability to use the phone on the side of the VS
Significantly associated with higher PTA, lower WRS and worse HC (p<0.001)

Significantly associated with PTA> 50Db and WRS< 50% alone or in combination (p<0.001)

The presence of tinnitus
Not associated to higher PTA, but associated with loss of concentration

Objective and subjective hearing loss on the tumor side
Both were associated with significantly affected personal relationships attributed to hearing loss, and difficulty with conversation (p<0.001)
Discussion

• To our knowledge this is the first study comparing subjective and objective hearing data in the VS population

• This could reevaluate the need for serial audiology exams in VS patients who report stable hearing
Conclusions

• A scale of 1-10 of perceived degree of hearing loss and reported ability to talk over the phone on the VS side were associated with objective hearing data.

• Both objective hearing loss, and subjective hearing loss on the tumor side were associated with significantly affected personal relationships attributed to hearing loss, and with difficulty to carry a conversation.

• This study supports the accuracy of the self-reported degree of hearing loss in patients with unilateral sensorineural hearing loss.