



Hearing Benefits of Cochlear Implantation in Older Adults with Asymmetric Hearing Loss



HEALTH
UNIVERSITY OF UTAH

Heather Smith, BM¹; Mackenzie Bramwell, BA²; Mana Espahbodi, MD¹; Vera Draper, AuD³; Neil S. Patel, MD^{1,3}; Richard K. Gurgel, MD, MSCI^{1,3}

¹Department of Otolaryngology, University of Utah, Salt Lake City, UT; ²University of Utah College of Health, Salt Lake City, UT; ³Department of Veterans Affairs Medical Center, Salt Lake City, UT

Introduction

- Cochlear implantation (CI) has been demonstrated to confer significant hearing benefit to patients with single-sided deafness (SSD) and asymmetric hearing loss (AHL).¹⁻²
- CI candidacy criteria were expanded by the FDA in 2019 to include patients with SSD and AHL.³ However, Medicare currently does not cover CI for patients with SSD or AHL, leading to a critical need to gather evidence surrounding the benefits of CI for these patients in the aging adult population.⁴
- The objective of this study is to examine the audiometric and patient-reported benefits of CI in older adults with SSD and AHL.

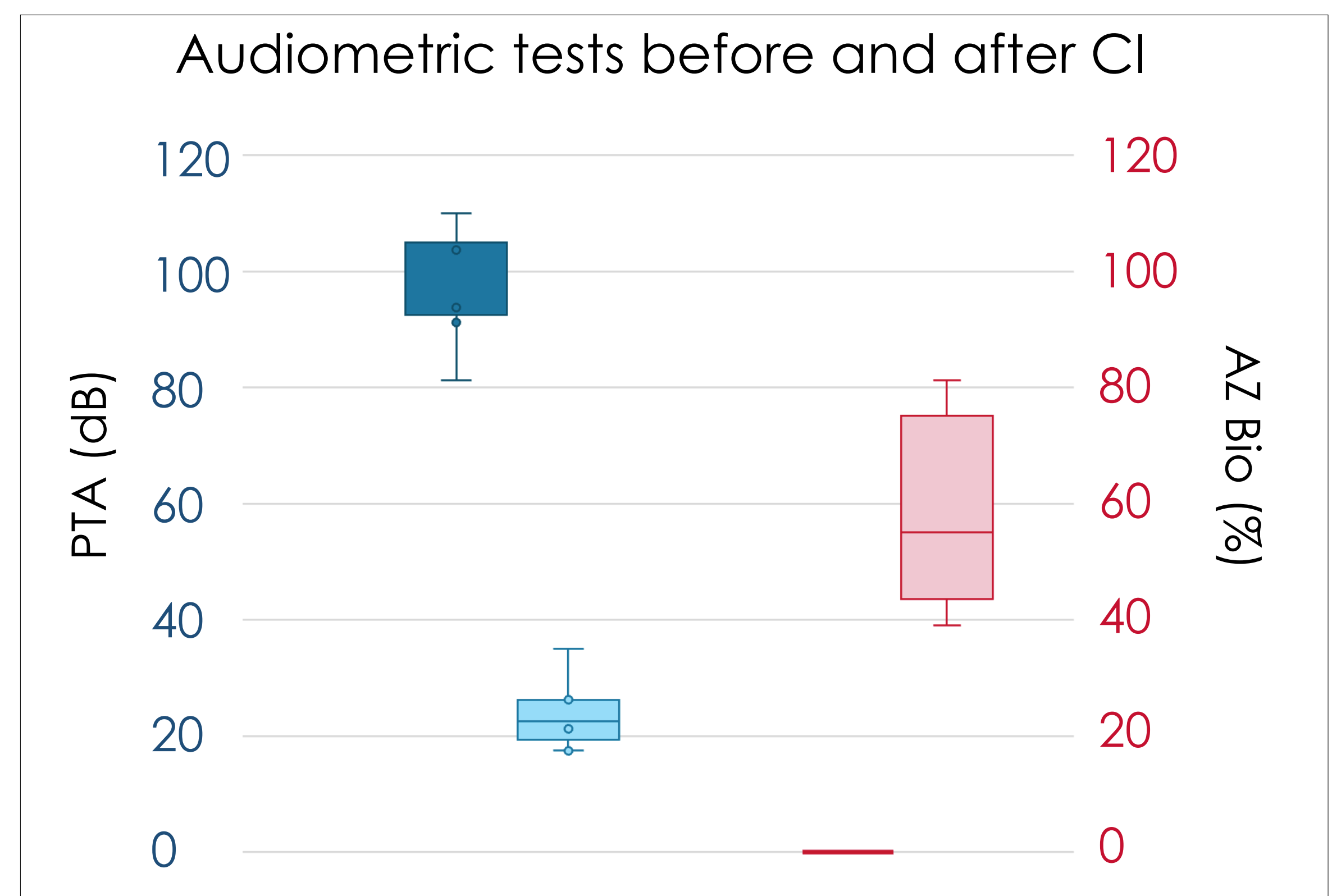
Methods

- Retrospective chart review at a Veterans Affairs Medical Center
- Inclusion criteria: patients ≥60 y/o with SSD or AHL who underwent unilateral CI between 2022-2023
- Demographic information, medical history, and audiometric testing information (including pure tone average [PTA], CNC word scores, and AZBio Sentence Recognition in Quiet) was collected from patient charts
- Descriptive statistics, Wilcoxon signed-rank, and McNemar chi-square tests were performed with SPSS to analyze symptoms and audiometric tests where available

Results

- 10 patients were included, aged 60-90 years old (median 72), 80% male, 100% white
- Median follow-up of 13.6 months (IQR 7.8-16.0) after implantation
- Most common etiology of HL was idiopathic (60%)
- Median age at hearing loss was 49.5 years (IQR 44.3-67.5), with median duration of 18.9 years (IQR 6.7-23.9)
- Daily average CI use was 10.2 hours per day (median; IQR 7.7-12.4)

Patient characteristics	n=10
Median Age	72 years (IQR 62-79)
Sex	80% Male
Etiology of HL	60% Idiopathic
Median duration of HL	19 years (IQR 7-24)
Median Follow up	13.6 months (IQR 7.8-16.0)
Daily Average CI use	10.2 hours/day



Measure*	Preoperative	Postoperative (with CI)	p-value
Median PTA (CI ear) (n=9)	104.4 dB	22.5 dB	0.008
Median AZBio Sentence Recognition in Quiet (CI ear) (n=5)	0.0%	55.0%	0.043
Median CNC word score (CI ear)	0.0%	-	-
Dizziness (% of patients)	60%	30%	-
Tinnitus (% of patients) (n=7)	90%	40-60%	-

*n=10 unless otherwise indicated
Bold = statistically significant (p≤0.05)
- = not enough data

Conclusions

- In this group of older adults with SSD or AHL, CI demonstrated significant benefits in hearing thresholds and sentence recognition in the implanted ear.
- The average of 10 hours of daily use suggests patients are utilizing their CI for most of the day
- Data collection is ongoing to include patients at a second surgical center



HEALTH
UNIVERSITY OF UTAH



References

1. Oh SJ, Mavromatis MA, Fan CJ, et al. Cochlear Implantation in Adults With Single-Sided Deafness: A Systematic Review and Meta-analysis. *Otolaryngol Head Neck Surg.* 2023;168(2):131-142. doi:10.1177/01945998221083283
2. Dillon MT, Kocharyan A, Daher GS, et al. American Cochlear Implant Alliance Task Force Guidelines for Clinical Assessment and Management of Adult Cochlear Implantation for Single-Sided Deafness. *Ear Hear.* 2022;43(6):1605-1619. doi:10.1097/AUD.0000000000001260
3. FDA-Summary of Safety and Effectiveness Data. July 22, 2019. Accessed June 1, 2024. https://www.accessdata.fda.gov/cdrh_docs/pdf/P000025S104B.pdf
4. Centers for Medicare & Medicaid Services, Cochlear Implantation Decision Memo. April 4, 2005. Access June 1, 2024. <https://www.cms.gov/medicare-coverage-database/view/ncacal-decision-memo.aspx?proposed=N&NCAId=134>

Abstract

