

**INTRODUCTION**

- Sensorineural hearing loss (SNHL) is a complication following chemotherapy and radiotherapy (RT) for nasopharyngeal carcinoma (NPC).
- Patients treated for NPC are also prone to developing other otologic complications, including conductive hearing loss (CHL) from otitis media with effusion (OME) or serous otitis media (SOM) due to the disease process.
- This study describes the long-term audiological outcomes of patients with NPC after receiving treatment at a single academic center.

**METHODS**

- An IRB approved retrospective review of electronic medical records was conducted to identify 90 patients diagnosed with NPC from 2004 to 2019.
- Pre and post treatment audiology data was collected and compared over time using paired t-test (SPSS 27).

Demographics n = 21	
Mean Age at Dx	53.5 years
Mean BMI	26.15 kg/m <sup>2</sup>
Males	72%
Asian Race	47%

Table 1: Demographic data for NPC cohort

**RESULTS**

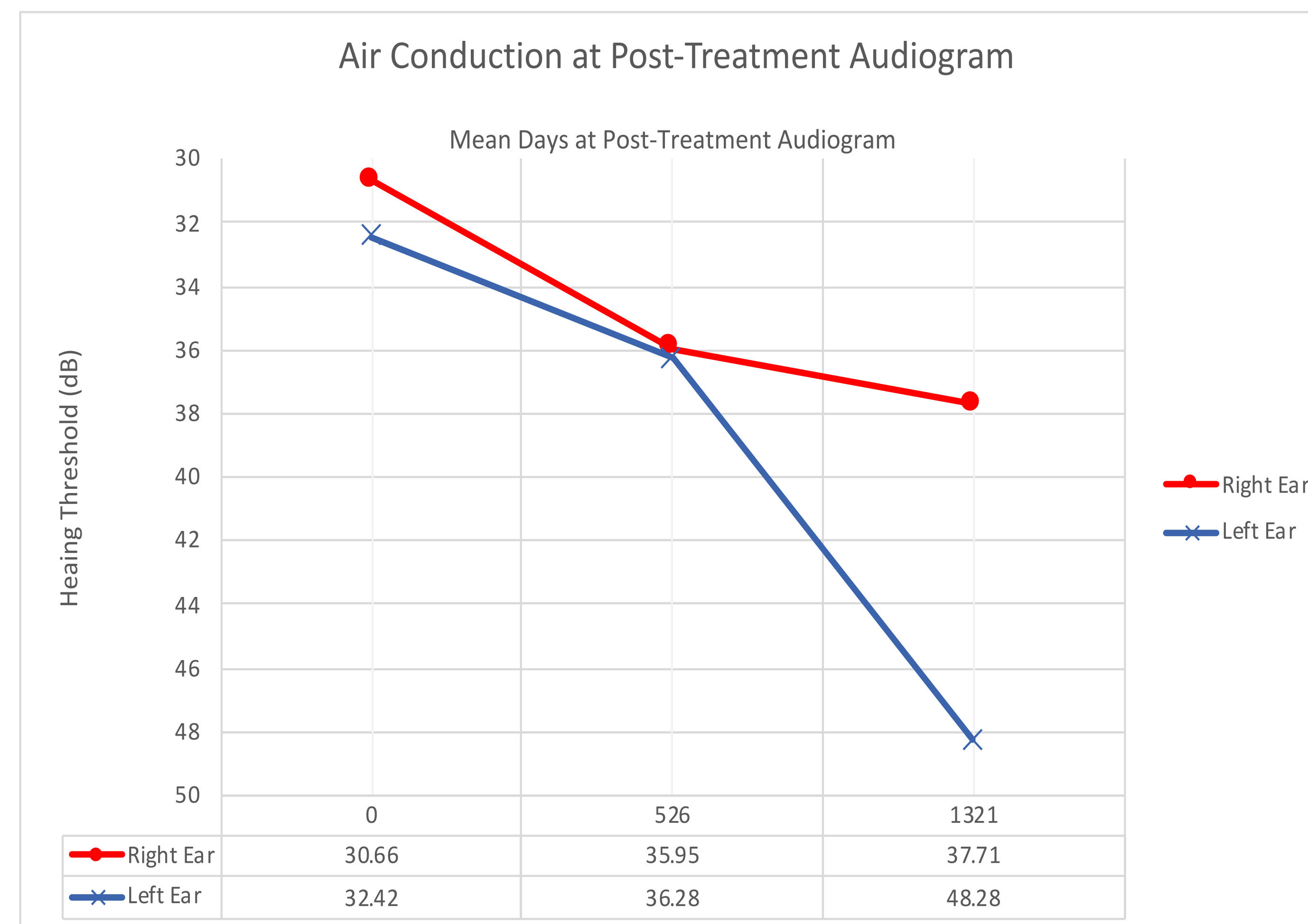


Figure 1: Mean Air Conduction at two Post-Treatment Audiograms. Time point 0 indicates pre-treatment AC level. Days 526 and 1321 are the average number of days since treatment when the audiograms were collected.

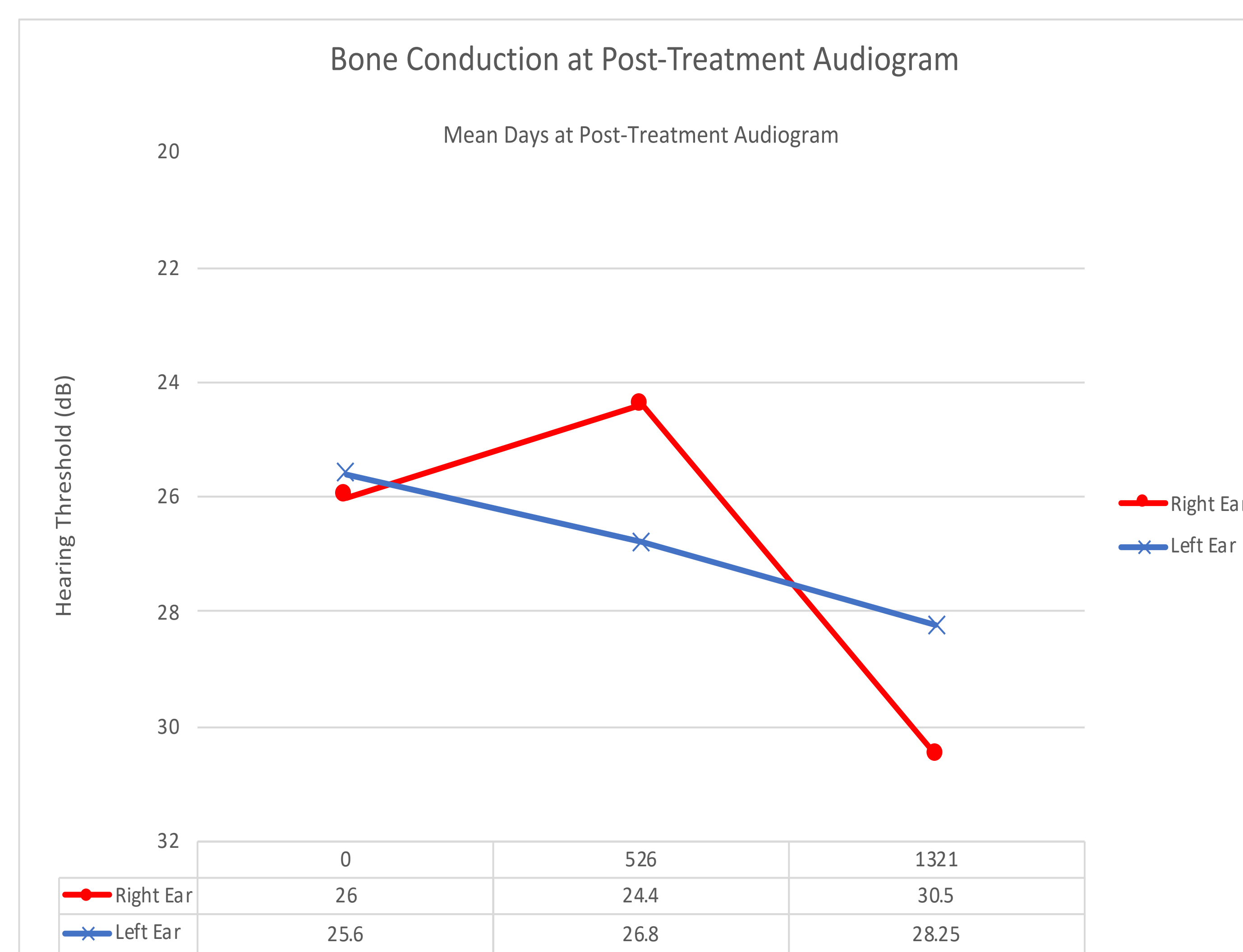


Figure 2: Mean Bone Conduction at two Post-Treatment Audiograms. Time point 0 indicates pre-treatment BC level. Days 526 and 1321 are the average number of days since treatment when the audiograms were collected.

- Mean air conduction (AC) worsened following treatment bilaterally
  - Right Ear: 30.66 dB to 35.95 dB (p=0.081) to 37.71 (0.005)\*\*
  - Left Ear: 32.42 dB to 36.28 dB (p=0.27) to 48.28 (p=0.008)\*\*
- Mean bone conduction (BC) did not significantly worsen following treatment
  - Right Ear: 26 dB to 24.40 dB (p=0.55) to 30.5 (p=0.37)
  - Left Ear: 25.60 dB to 26.80 dB (p=0.76) to 28.25 (p=0.15)

**DISCUSSION**

- NPC is known to cause CHL due to obstruction of the eustachian tube, resulting in OME/SOM.
- Treatment for NPC can also lead to OME/SOM as platinum-based chemotherapy drugs and cochlear radiation can also result in eustachian tube dysfunction. However, treatment also can lead to SNHL due to direct damage to the cochlea.
- Our results indicate the importance of obtaining pre-treatment and post-treatment audiograms in patients with NPC as they are prone to developing audiological complications secondary to both the disease process of NPC as well as treatment.

**CONCLUSIONS**

- Over the follow-up period AC worsened significantly while BC did not, indicating that the audiological effect of treatment on this cohort of patients was predominately CHL.
- Pretreatment and regular post-treatment audiological evaluation can help in early identification of hearing loss and in maintenance of hearing.
- Further study is required to evaluate the utility of surgical intervention for hearing loss after treatment of NPC and to ascertain the change in SNHL in these patients over time.

**CONTACT INFORMATION**

Somya Shankar, MS4  
Sidney Kimmel Medical College at Thomas Jefferson University  
Email: [somya.shankar@students.jefferson.edu](mailto:somya.shankar@students.jefferson.edu)