INTRODUCTION

Deficits in binaural hearing cause difficulty in localizing sound sources, assigning contextual meaning to sounds, and sharpening sound detection and discrimination in multisource environments.

Patients with asymmetric hearing loss have inferior hearing function compared to those with symmetric hearing loss at comparable hearing threshold levels.

In its most severe form, single-sided deafness can be associated with considerable impact quality of hearing but are often not well recognized.

Current definitions of hearing asymmetry guide evaluation for vestibular schwannomas but are not based on binaural hearing deficits or the perception of hearing asymmetry.

In this study, we investigate the relationship between ear preference perception and audiotometric threshold asymmetry using a categorical measure of ear preference strength. We demonstrate that ear preference strength maps to degrees of audiotometric asymmetry and is a very good classifier of interaural asymmetry magnitude. This finding enables practitioners to identify patients who are at risk for asymmetric hearing and may warrant detailed audiotmetric testing and treatment.

METHODS

Survey Instruments

Subjects recruited from UCSF outpatient Audiology clinics completed standard audiology and a questionnaire evaluating ear preference (shown above).

The visual analog scale was scored from -50 (exclusive left ear use) to 0 (no preference) to 50 (exclusive right ear use). The 7-point categorical rating scheme was scored as follows: no ear preference = 0; left or right somewhat = -1, 1; left or right strongly = -2, 2; and left or right completely = -3, 3.

Audiometric Testing

Audiometric testing performed at 0.25, 0.5, 1, 2, 3, 4, 6, and 8 kHz.

• Definitions:
  - Auditory asymmetry: air conduction interaural threshold difference (ITD) of 15 dB or greater at any 2 frequencies between 0.25 and 8 kHz.
  - ITDmax: the maximum average ITD at any 2 frequencies.

CONCLUSIONS

• Patient-reported ear preference is a good to excellent classifier of interaural asymmetry.

• Increasing ear preference strength is associated with increased odds of greater hearing asymmetry.

• Ear preference strength maps to the best estimate audiometric asymmetry magnitudes:
  - No preference to ITDmax < 15 dB
  - Somewhat/strongly prefer to ITDmax ≤ 15-44 dB
  - Completely dependent to ITDmax ≥ 45 dB

A single question about ear preference strength can be used to identify patients with asymmetric hearing expeditiously and promptly to guide evaluation and treatment.

REFERENCES