Analysis of the Characteristics and Co-Morbidities of Patients with Pseudohypoacusis

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INTRODUCTION

Hearing loss affects nearly 538 million people[1]. It can be the result of an underlying disruption in the physiology or anatomy of the hearing apparatus or due to non-organic causes. Pseudohypoacusis is one of many names for this phenomenon and is the result of either psychogenic causes of hearing deficits or due to malingering/feigning.

In those with psychogenic hearing loss there is an underlying subconscious cause. These cases are usually due to a hysterical or conversion reaction by the patient.

The other typical pattern is in those that are malingering or feigning the hearing loss. This can be motivated by financial or other additional benefits either real or perceived.

This study aims to demonstrate the characteristics of patients with pseudohypoacusis in order to better identify those patients with either psychogenic or malingering components to hearing loss. This should aid in the ability to not only save resources but allow us to ensure these patients are getting the help they require to return their hearing and life back to as normal a level as possible.

METHODS

Retrospective chart review of 31 patients a tertiary care hospital Otolaryngology clinic from 2014 – 2019 with hearing loss and ultimate diagnoses of pseudohypoacusis, functional hearing loss, or non-organic hearing loss.

Inclusion criteria: Objective measures of hearing did not correlate with subjective measures.
Exclusion criteria: Abnormal findings on otoscopy or tympanometry that would otherwise explain the presence of abnormal pure tone averages obtained

Elements of the patients' medical histories were recorded. These including psychiatric history, previous otologic surgery and associated otologic signs and symptoms such as tinnitus, otalgia, otorrhea, aural fullness, and vertigo.

Methods of identifying the presence of possible pseudohypoacusis during pure tone audiometry were performed at the discretion of the audiologist unless specifically requested by the physician. Such methods included the use of a Stenger test and DPOAEs. ABRs were often ordered to further confirm the diagnosis of pseudohypoacusis as indicated.

RESULTS

Demographics	N (%)
Age	20-74 (Mean: 48 Median: 49)
Gender	
Male	6 (19)
Female	25 (81)
Laterality	
Left	7 (23)
Right	1 (3)
Bilateral	23 (74)
Race	
Caucasian	8 (26)
African American	5 (16)
Hispanic	15 (48)
Other	3 (10)
Primary Language	
English	23 (74)
Spanish	8 (26)
Occupational Hearing Loss	5 (16)

Table 1: Characteristics of patients found to have pseudohypoacusis

Psychiatric History (n)
Depression (12)
Anxiety (1)
PTSD (2)
Conversion Disorder (3)
Bipolar Disorder (2)
Schizophrenia (1)

Table 2: Psychiatric disorders in patients with pseudohypoacusis. 17 total patients reported or had a psychiatric disorder documented.

	Right			Left		
Laterality	**PTA-SRT**	**ABR**	**DPOAE**	**PTA-SRT**	**ABR**	**DPOAE**
Bilateral	15	20	Present 1-4 kHz	13	20	Present 1-4kHz
Bilateral	22	20	Present 1-6 kHZ	13	20	Present 1-6 kHz
Left	3	n/a	Present 1-6 kHZ	27	n/a	Present 1-6 kHz
Bilateral	12	25	Present 1-10 kHz	28	25	Present 1-10 kHz
Bilateral	10	25	Present 1.5-4 kHz	12	35	Present 1.5-4kHz
Bilateral	n/a	35	Present 1-6 kHz	n/a	40	Present 1-5 kHz
Bilateral	10	n/a	n/a	n/a	n/a	n/a
Bilateral	38	n/a	Present 1-5 kHz	50	n/a	Present 1-5 kHz
Bilateral	33	45	Absent	43	30	Absent
Bilateral	15	75	Absent	38	70	Absent
Left	8	n/a	Absent	10	n/a	Present 3-6 kHz
Bilateral	30	70	Present 1.5 kHz	42	65	Present 1.5 kHz
Left	-2	n/a	Present at 1.5-3 kHz	17	n/a	Present 1.5 - 3 kHz
Bilateral	32	n/a	n/a	n/a	n/a	n/a
Bilateral	17	75	Present 1.5 kHz	12	75	Absent 1.5 - 6 kHz
Bilateral	18	n/a	Present 2,3,5 kHz	52	n/a	Present 1-4 kHz
Bilateral	n/a	n/a	Present 1-6 kHz	42	n/a	Present 1-6 kHz
Bilateral	10	n/a	Absent 1-6 kHz	22	n/a	Absent 1-6 kHz
Left	3	35	Present 1-6 kHz	12	n/a	Absent 1-6 kHz
Left	7	n/a	Present 1-6 kHz	23	n/a	Present 1-6 kHz
Bilateral	58	60	Present 1.5-6 kHz	13	65	Refer 1-6 kHz
Right	17	30	Present 1-6 kHz	8	30	Present 1-6 kHz
Bilateral	n/a	n/a	Present 1-6 kHz	n/a	n/a	Present 1-6 kHz
Left	0	50	n/a	n/a	70	n/a
Bilateral	n/a	n/a	Absent at all but 2 kHz	n/a	n/a	Absent
Bilateral	n/a	n/a	Present at 1.5-3 kHz	n/a	n/a	Present 1.5- 3 kHz
Bilateral	45	60	Present 1-3 kHz	n/a	n/a	Present 1-3 kHz
Bilateral	25	n/a	n/a	17	n/a	n/a
Bilateral	33	n/a	n/a	18	n/a	n/a
Left	-12	n/a	Absent	48	40	Absent
Left	2	n/a	n/a	40	n/a	n/a

Table 3: Comparison of objective and subjective measures of hearing loss. The columns of PTA-SRT demonstrate the inconsistencies seen on conventional audiometry that signal the possible presence of pseudohypoacusis. These patients then had objective measures of hearing performed such as DPOAEs and ABR. When ABR testing revealed a normal hearing threshold, the suspicion of pseudohypoacusis is confirmed (Red boxes). In some patients, exaggerated hearing loss was diagnosed when ABR thresholds revealed a baseline level of sensorineural hearing loss (Green boxes). In many instances patients did not follow up to have ABR performed or the results of ABR testing were unreliable (n/a).

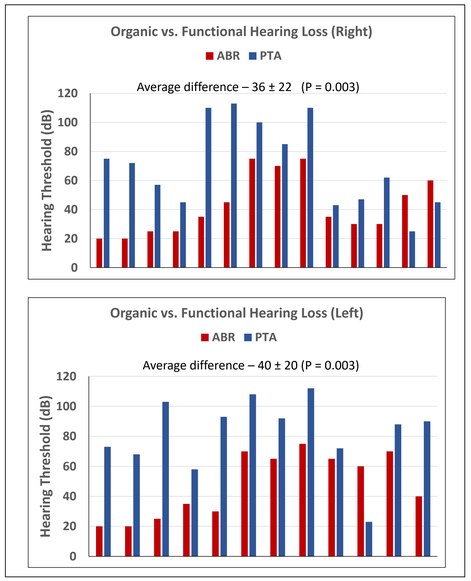

Figure 1: Organic vs. Functional Hearing loss. Organic hearing loss is measured by auditory brainstem response thresholds (ABR). This is compared with the pure tone average (PTA) obtained with conventional audiometry. The PTA is the average of 500, 1000 and 2000 pure tone thresholds and serves as a marker of hearing threshold. The difference between these two can serve as a marker of the amount non-organic hearing loss exhibited by patients.

DISCUSSION

Psychiatric History

Case studies of patients with pseudohypoacusis have shown that it is common for these patients to present with hearing loss in the setting of such disorders as attention deficit hyperactivity disorder, major depressive disorder, conversion disorder, or panic disorder.[2-4]

As shown in Table 2, our findings corroborate these previous reports as 17 of the 31 patients with pseudohypoacusis had a history of psychiatric disorders. Depression was the most common psychiatric issue these patients experienced.

Additional examples include worsening hearing after the passing of a family member, hearing loss following an episode of cardiac arrest, hearing loss following an episode of abuse, and finally hearing loss following a military deployment and subsequent diagnosis of PTSD (no loud noise exposure was reported).

Audiometry

On pure tone audiometry these patients usually function with an internalized reference level or anchor that has a certain loudness level.[5] Nearly two-thirds of cases are typically bilateral.[5,6]

In our study 74% of patients demonstrated bilateral hearing loss. The average difference between objectively measured hearing levels with ABR and those obtained with PTA was found to be 36 dB (p= 0.003) for the right side and 40 dB (p = 0.003) for the left side (Figure 1).

The reason for the bilateral presentation is that patients will often have some level of underlying organic hearing loss and it is easier to respond the same way for both ears. They also are under the belief the hearing losses should be bilateral. Loss might be exaggerated in the poorer ear to maximize the benefits that can be derived from the loss in that ear.

Many specific tests have been developed to aid in the identification of patient with non-organic hearing loss.[6] One common method that is easy and reliable is to look at the discrepancy between speech reception thresholds and pure tone average. A discrepancy of greater than 10 dB has been shown to indicate a nonorganic hearing loss.[5-7] Our study is in agreement with these findings as all patients in which there was a difference of >10 dB were identified as having pseudohypoacusis (Table 3).

In conclusion, patients with pseudohypoacusis require a multidisciplinary approach for diagnosis. In doing so we as Otolaryngologists can prevent the use of unnecessary surgical hearing amplification and ensure these patients get the treatment they need.

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