

Original Article

Assessment of incidence of Hearing Loss among Diabetes Patients

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ABSTRACT:

Background: The present study was conducted for assessing the incidence of hearing loss among diabetic patients. **Materials & methods:** A total of 100 type 2 diabetic patients were enrolled. Complete demographic and clinical details of all the patients was obtained. Hearing thresholds were examined at frequencies of 500, 1,000, 2,000, 3,000, 4,000 and 6,000 Hz using an Auricle Plus audiometer in a double-walled sound booth, in accordance with the guidelines for pure tone averages (PTA). All the results were recorded in Microsoft excel sheet and were analysed using SPSS software. **Results:** Out of these 100 patients, hearing loss was seen in 18 percent of the patients. Among these 18 patients, 12 were males and 6 were females. **Conclusion:** It can be concluded that progressive sensorineural hearing loss is a complication of type 2 DM. **Key words:** Diabetes, Hearing loss

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INTRODUCTION

Diabetes mellitus (DM) is a chronic disease derived from the inadequate production of insulin in the pancreas or from the ineffective use of available insulin. It is characterized by increased blood sugar levels and is a genetically inherited disease. Age-related hearing loss is one of the most common health conditions affecting individuals aged 65 years and older. Hearing organs experience aging-associated degenerative changes, with aging being the most frequent cause of sensorineural hearing loss in adults.¹⁻³ Hearing loss is regarded not only as a communication disorder, but as a major disease that severely impairs patient quality of life, due to social withdrawal, psychological alienation, loss of confidence, and increased depression and anxiety. Age related hearing loss is one of the three leading common chronic diseases in elderly individuals, along with arthritis and hypertension, and its incidence is increasing rapidly. In 1857, Jardeao proved that diabetes mellitus causes hearing loss. Previously, various studies have shown that diabetes mellitus causes hearing loss.⁴⁻⁶ Hence, the present study was conducted for assessing incidence of Hearing Loss among Diabetes Patients.

MATERIALS & METHODS

The present study was conducted for assessing incidence of Hearing Loss among Diabetes Patients. A total of 100 type 2 diabetic patients were enrolled. Complete demographic and clinical details of all the patients was obtained. Hearing thresholds were examined at frequencies of 500, 1,000, 2,000, 3,000, 4,000 and 6,000 Hz using an Auricle Plus audiometer in a double-walled sound booth, in

accordance with the guidelines for pure tone averages (PTA). The average of both ears was used for analysis. The PTA of both ears at each frequency was obtained for frequency analysis. An average hearing threshold ≥ 26 dB was defined as hearing loss. All the results were recorded in Microsoft excel sheet and were analysed using SPSS software.

RESULTS

A total of 100 type 2 diabetic patients were enrolled. Mean age of the patients was 45.6 years. among these 100 patients, 56 percent were males and remaining 44 percent were females. Out of these 100 patients, hearing loss was seen in 18 percent of the patients. Among these 18 patients, 12 were males and 6 were females. Mean age of the diabetic patients with and without hearing loss was 43.6 years and 48.1 years respectively.

Table 1: Age and gender

Variable	Number	Percentage
Mean age (years)	45.6	
Males	56	56
Females	44	44

Table 2: Incidence of hearing loss

Hearing loss	Number	Percentage
Present	18	18
Absent	82	82
Total	100	100

Table 3: Comparison among diabetic patients with and without hearing loss

Variable	With hearing loss	Without hearing loss
Mean age	43.6	48.1
Males (n)	12	44
Females (n)	6	38

DISCUSSION

Prevalence of Diabetes Mellitus (DM) is increasing worldwide and it is more pronounced in India. According to the estimation total number of diabetes patients in India is around 40.9 million and by 2025 the number would be around 69.92 million. New cases relates to the development of chronic complications. Chronic complications of Diabetes Mellitus can be attributed to number of changes occurring at variable time period involving the vascular system, nerves, skin and lens. These complications are the cause of considerable morbidity and mortality and negatively affect the quality of life in individuals with diabetes. Hence it becomes important that chronic complication is recognized early and necessary interventions made.⁷⁻⁹ Hence, the present study was conducted for assessing incidence of Hearing Loss among Diabetes Patients.

A total of 100 type 2 diabetic patients were enrolled. Mean age of the patients was 45.6 years. among these 100 patients, 56 percent were males and remaining 44 percent were females. Out of these 100 patients, hearing loss was seen in 18 percent of the patients. Padhy RN et al, in a previous study, evaluated the incidence of Hearing Loss, vitiligo and tinnitus among Diabetes Patients. 240 patients were categorized according to their age (< 60 years and > 60 years), gender, chronicity of diabetes mellitus (<10 years and >10 years), related complications (hypertension, nephropathy and retinopathy) and modalities of diabetic treatment taken by patients. Ear manifestations were found among 240 diabetes patients: HL in 148 cases (61.67%), tinnitus in 70 cases (29.17%) and vertigo in 17 cases (7.08%). The association of age (p=0.21) and sex (p=0.58) with HL, tinnitus and vertigo were not statistically significant. Nevertheless, the duration of diabetes as well as the treatment modalities for it, in relation to these ailments were statistically significant (p=0.07) and (p=0.05), respectively.¹⁰

In the present study, among these 18 patients, 12 were males and 6 were females. Mean age of the diabetic patients with and without hearing loss was 43.6 years and 48.1 years respectively. In another study conducted by Oh I-H et al, authors assessed the contributions of diabetes mellitus (DM) and hypertension, both chronic diseases associated with aging, as well as aging itself, to hearing loss in health screening examinees. Their study included 37,773 individuals who underwent health screening examinations. The relationships between hearing threshold and subject age, hearing threshold at each frequency based on age group, the degree of hearing loss and the presence or absence of hypertension and DM were evaluated. The prevalence of hearing loss increased with age, being 1.6%, 1.8%, 4.6%, 14.0%, 30.8%, and 49.2% in subjects in their twenties, thirties, forties, fifties, sixties, and seventies, respectively (p<0.05). Hearing value per frequency showed aging-based changes, in the order of 6000,

4000, 2000, 1000 and 500 Hz, indicating greater hearing losses at high frequencies. The degree of hearing loss ranged from mild to severe. Aging and DM were correlated with the prevalence of hearing loss (p<0.05). There was no statistically significant association between hearing loss and hypertension after adjusting for age and DM.¹¹

CONCLUSION

It can be concluded that progressive sensorineural hearing loss is a complication of type 2 DM.

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