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ORIGINAL RESEARCH

Demographic profile and ENT clinical manifestations in diabetes mellitus patients- A cross sectional study

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ABSTRACT

Background: Diabetes mellitus is one of the most challenging health problems in developing countries like India. Various ear, nose & throat (ENT) manifestations are known to occur in diabetes. **Aim:** This study evaluates the different ENT manifestations seen among people suffering from diabetes. **Materials and methods:** This cross sectional observational studywas conducted in department of otorhinolaryngology, in a tertiary care hospital, India, over a period of one year. 200 patients with pre-existing or newly diagnosed diabetes mellitus as per the National Diabetes Data Group and World Health Organization issued diagnostic criteria with or without ENT symptoms were examined and findings were documented. **Results:** Among the total diabetic patients, 80% had ENT manifestations ranging from inflammatory to non-inflammatory associations. SNHL was the most common (27%) non-inflammatory condition, mostly bilateral (71%). Among the inflammatory conditions, furuncle was the commonest association. Most of the patients (31%) were 40-49 years age group, predominantly male (62.5%). **Conclusion:** Awareness regarding diabetes mellitus and ENT manifestation associations will help in early interventions resulting in less complications and better quality of life.

Keywords: Diabetes mellitus, ENT manifestations, SNHL

INTRODUCTION

Diabetes Mellitus (DM) is a potential epidemic in India with more than 62 million diagnosed cases [1]. India (31.7 million) topped the world with the highest number of people with diabetes mellitus followed by China (20.8 million) in 2000 [2]. In 2016, an estimated 1.6 million deaths were directly caused by diabetes. According to the International Diabetes Federation (IDF), globally, there were 463 million people or 9.3% of the world's population living with diabetes in 2019, with 80% originating from low- and middle-income countries (LMICs).Overall, it is estimated that 700 million or 10.9% of the world's population will have the disease by 2045[3]. Diabetes is beginning to appear much earlier in life in India, meaning that chronic long-term complications are becoming more common. Various ENT manifestations are known to occur in diabetes. These are secondary to micro and macrovascular disease, neuropathies as well as immunodeficiency secondary to impaired leukocyte/ phagocyte function [4].

General considerations for otolaryngologists as surgeons revolve around the immunodeficiency and the decreased ability of diabetics to heal their surgical wounds and their increased susceptibility to infection. Although several studies have shown specific ENT manifestations in people suffering from diabetes, there are not many studies which enlist all the ENT manifestations in a single study.Diabetic neuropathy, which affects the eighth cranial nerve directly or at the cochlear level, may present with variable degrees of hearing loss, while chronic infections like malignant otitis externa that affect the external ear are usually observed among diabetes patients and usually are associated with struc-tural damage[5].Sufficient data support that hearing loss is one of the commonly occurring diseases in diabe-tes patients that could affect quality of life and lead to hearing disabilities and psychological depression[6].

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AIM & OBJECTIVE

We have enlisted different ENT manifestations seen among people suffering from diabetes coming to our tertiary care hospital.

MATERIAL AND METHODS

This was a cross sectional observational hospital based study carried out in the department of otorhinolaryngology in a tertiary care hospital, central India.

A total of 200 patients with pre-existing or newly diagnosed diabetes mellitus as per the National Diabetes Data Group and World Health Organization issued diagnostic criteria attending OPD of our tertiary care centre with or without ENT symptoms over a period of one year were examined.

Inclusion criteria

- Patients age ≥20 years, both genders
- Both symptomatic as well as asymptomatic patients
- Patients provided written informed consent for the study

Exclusion criteria

- Patients age less than 20 years
- Patients with immunocompromised conditions like HIV, malignancy, patients on corticosteroids or other immunosuppressive therapy
- Patients with hearing loss directly attributed to any other cause like ototoxicity, prolonged exposure to noise, head or ear trauma
- Patients not provided consent for the study

Detailed history of the patients was taken regarding various ENT complaints. History of treatment, if any, was also noted. All the patients were subjected to general physical and ENT clinical examination. Patients with abnormal tuning fork tests were subjected to pure tone audiometry (Interacoustics AC 40). Any other necessary investigations such as laboratory tests like culture sensitivity, blood sugar levels, FNAC and radiological investigations like CT scan, X- ray, MRI and diagnostic procedures like video laryngoscopy and nasal endoscopy were done in addition when needed to arrive at a specific diagnosis. The various ENT manifestations observed in these patients were documented. Simultaneously, the clinical features of such manifestations were observed and the management was planned wherever indicated.

Statistical analysis

All statistical analyses were performed using version 22 software. A value of $P< 0.05$ was considered statistically significant

RESULT

Out of total patients, majority of them (31%) were 40-49 years of age group, predominantly males (62.5%). Most of them (60%) resided at rural areaand 55% were belong to middle socio-economic class. (Table no.1)

Table 1: Demographic characteristics of study patients

Socio Demographic		No. of patients	Percentage (%)
Age group (In Years)	20-39 years	50	25%
	40-49 years	62	31%
	50-59 years	42	21%
	60-69 years	26	13%
	70-79 years	12	6%
	>80 years	8	4%
Gender	Male	125	62.5%
	Female	75	37.5%
Residential Area	Rural	120	60%
	Urban	80	40%
Socio Economy Class	Lower	55	27.5%
	Middle	110	55%
	Upper	35	17.5%
BMI	Under Weight	40	20%
	Normal	90	45%
	Over Weight	70	35%

ENT manifestations

Incidence of ENT manifestations were 160 (80%) patients among total.Sensory neural hearing loss (SNHL) was the most common (27%) clinical manifestation followed by 9% had acute otitis externa, 9% had deviated nasal septum, CSOM and acute pharyngitis/laryngitis, were 7% respectively. details shown in Table:2.

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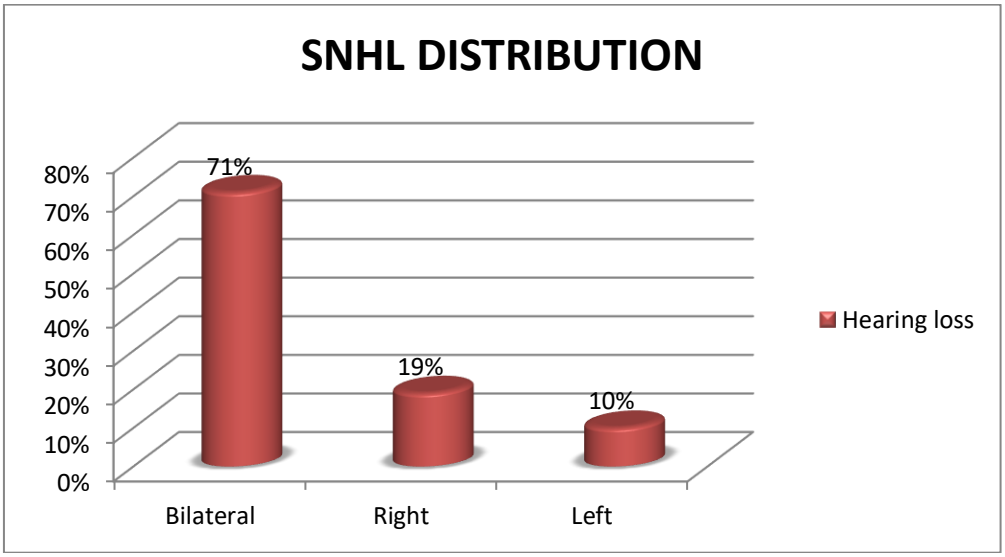
Table no.2: ENT Manifestations among study subjects

ENT manifestation	No. of cases	Percentage(%)
Deafness	54	27%
CSOM	14	7%
Acute otitis externa	18	9%
Malignant otitis externa	4	2%
Pinna perichondritis	1	0.5%
Deviated nasal septum	18	9%
Nasal vestibulitis	10	5%
ChronicDacryocystitis	3	1.5%
Fungal sinusitis	8	4%
Acute laryngitis/pharyngitis	14	7%
Vocal cord lesions	7	3.5%
Deep neck space infection	2	1%
Others	1	0.5%
Clinically normal	46	23%

Out of total patients examined, 27% had SNHL, out of total SNHL patients 71% had bilateral, 19% had right side and 10% were detected to have hearing loss clinically and then subjected to PTA(Figure:1)

Graph 1: SNHL Distribution



DISCUSSION

SNHL is commonly seen in diabetics, and this is due to neuropathy and microangiopathy. There are a number of physiologically plausible theories about the underlying mechanism responsible for hearing loss occurring with diabetes [7]. Diabetics are particularly prone to certain infections. Malignant otitis externa, commonly due to Pseudomonas aeruginosa, typically presents in the older diabetic with severe otalgia, otorrhea, fever and leukocytosis [8].

Another infection specific to diabetics and other immunocompromised hosts is invasive fungal sinusitis (rhinocerebral mucormycosis). Presentation with fever, facial swelling, black eschar in the nasal cavity, gradually progressing orbital swelling, eye pain and diminished vision is very typical. Management requires appropriate antifungal therapy and aggressive surgical debridement [9].

We have reported very higher (80%) incidence of ENT manifestation among diabetic patients; our findings are supported by Gazzaz ZJ et al [10] and Khanna S et al [11], reported prevalence of ENT manifestations were 92% and 85.4% respectively.

In the present study the most common clinical manifestation were SNHL, similar findings also observed by Bainbridge et al [12], Kurien et al [13] and T Irwin et al [14]. Hearing loss was more common in diabetic patients as compared to non diabetics.

J. R. Cullen and M. J. Cinnamond studied Forty-four diabetics, who were compared with 38 controls. Analysis of variance showed the diabetics to be significantly deafer than the control population [15].

Current study observed that acute otitis externa was the second common ENT manifestation among diabetic, among them fungal debris in their ears were common, in agreement to H.S. Satish, et al [16]. Most common complaint was of ear itching, blockade and also pain

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Among the malignant otitis externa reported in this study, all came with complaints of ear pain and facial weakness, 66.6% had involvement of Left ear and 33.3% had involvement of Right ear, constant finding seen a study done by Ghazi et al [17].

Nasal vestibulitis finding of the current study were accordance to Maryanne Luzar et al [18], they havefound that nasal carriage of staphylococcus aureus was more frequent among patients with diabetes (77%) than among those without diabetes (36%).

This study found fungal sinusitis was 4%, comparable with the Parikh et al [19], in their study reviewed 43 patients of invasive fungal sinusitis, among which 10 patients were diabetic. 4 out of 10 (40%) diabetic patients died of Invasive Fungal Sinusitis and 66% of survivors had persistent neurological or visual morbidity.

Most common manifestation in the throat was acute pharyngitis/laryngitis, which accounted to 7%, all patients presented with hoarseness of voice. 42% patients had vocal nodule, 29% had vocal polyp and 29% had vocal cord cyst. Among the incidental findings, 9% patients had deviated nasal septum, but only 26% among them had complaints of nasal obstruction, in accordance with the Sethi DS, et al [20]. These could not be attributed to diabetes, but they are part of associated ENT conditions.

CONCLUSION

We can conclude that the incidence of ENT manifestations among diabetic patients was very higher after we did our clinical examination. Most of them had specific ENT manifestations. SNHL was the most common whereas malignant otitis externa and invasive fungal sinusitis was most deadly ENT manifestations. With such a large number of positive ENT manifestations, it is prudent that all the diabetics need to be subjected to ENT examination

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Conflicts of interest: none

REFERENCES

1. Joshi SR, Parikh RM. India - diabetes capital of the world: now heading towards hypertension. J Assoc Physicians India. 2007; 55:323–4.
2. Kaveeshwar SA, Cornwall J. The current state of diabetes mellitus in India. Australas Med J. 2014; 7(1):45-48.
3. International Diabetes Federation. IDF Diabetes Atlas. 9th ed. Brussels, Belgium: International Diabetes Federation; 2019.
4. AgarwalMK,JhaAKandSinghSK.Otorhinolaryngologicalstudiesindiabetics.Indian J. OtolaryngolHeadNeckSurg.1998Apr;50(2):116–121.
5. Gazzaz Z, Makhdom M, Dhafar K, Maimini O, Farooq M, Rasheed A. Patterns of otorhi-nolaryngological disorders in subjects with diabetes. International Medical Journal Malasia 2011; 10: 13-16
6. Pemmaiah K, Srinivas D. Hearing loss inDiabetes Mellitus. International Journal of Collaborative Research on Internal Medicine & Public Health 2011; 3: 725-731
7. Amos AF, McCarty DJ, Zimmet P. The rising global burden of diabetes and its complications: estimates and projections to the year 2010. Diabet Med 1997; 14: S185.
8. Ren H, Wang Z, Mao Z, Zhang P, Wang C, Liu A et al. Hearing Loss in Type 2 Diabetes in Association with Diabetic Neuropathy. Archives of Medical Research. 2017; 48(7), 631-7.
9. Parhiscar A, Har-EL G. Deep neck abscess: a retrospective review of 210 cases. TheAnnals of otology, rhinology & laryngology. 2001; 110(11):1051-4.
10. Gillespie, M. Boyd, Bert W. O'Malley Jr, and Howard W. Francis. "An approach tofulminant invasive fungal rhinosinusitis in the immunocompromised host.Arch Otolaryngol Head Neck Surg.1998; 124(5): 520-6.
11. Khanna S, Singh MP and Sunil KC. Understanding and treatment of serious ENTcomplicationsinDiabetesMellitus–Astudy.JIndianMedAssoc.2016;114:15-8.
12. Bainbridge KE, Hoffman HJ and Cowie CC. Diabetes and hearing impairment in theUnited States: audiometric evidence fromtheNationalHealthandNutritionExaminationSurvey1999to2004.AnnInternMed.2008:149:1-10.
13. KurienM.,ThomasKandBhanuT.Hearingthresholdinpatientswithdiabetesmellitus.TheJournalofLaryngology&Otology.1989; 103(2):164-168.
14. Taylor I and Irwin J. Some audiological aspects of diabetes mellitus. The Journal ofLaryngology&Otology.1978;92(2):99-113.
15. Cullen JR, Cinnamond MJ. Hearing loss in diabetics. The Journal of Laryngology &Otology.CambridgeUniversityPress;1993; 107(3):179–82.
16. Satish HS, Vishwanatha B and Manjuladevi M. A clinical study of otomycosis. IOSRJournalofDentalandMedicalSciences.2013;5(2):57-62.
17. Doroghazi RM, NadolJr JB, HyslopJr NE, Baker AS and Axelrod L. Invasive externalotitis:Reportof21casesandreviewoftheliterature. TheAmJofMed.1981; 71(4):603-614.
18. LuzarMA,ColesGA,FallerB,SlingeneyerA,DahGD,BriatC,etal.Staphylococcusaureus nasal carriage and infection in patients on continuous ambulatory peritonealdialysis.NewEnglandJournalofMedicine.1990; 322(8):505-9.
19. Parikh SL, Venkatraman G and DelGaudio JM. Invasive fungal sinusitis: a 15-yearreviewfromasingleinstitution.AmJRhinol.2004; 18(2):75-81.
20. SethiDS,StanleyRE.Deepneckabscesses–changingtrends.JLaryngolOtol.1994; 108(2):138-43.