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Original Article

An Overview of Otorhinolaryngeal Problems in Geriatrics



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SUMMARY

Background: The increase of geriatric population, as well as their age-related problems, is of great concern for the society and for the governments all over the world and also in India. The main objectives were to overview and find the prevalence of Oto-rhino-laryngological problems in the geriatric population.

Method: A prospective study of geriatric patients was undertaken in ENT & HNS Department, S.C.B Medical College & Hospital, Cuttack, India, from November 2014 to August 2016.

Inclusion criteria –The patients of age 60 yrs & above who attended ENT outpatient department were studied. Among 3563 patients studied, 363 patients were admitted. The patients were segregated according to sex (male/female), ages (60–64 yr group, 65–69 yr group, 70 yr & above), disease ratio, and prevalence of diseases, associated co-morbidities, and socio-economic aspects.

Results: Total patients studied were 3563. The otological problems were being prevalent in geriatrics among study population (51.77%) in which presbycusis was the highest with 17.71% of total and 34.21% of otological problems. The problems related to nose were 13.03%, among which epistaxis was 4.98% of total and 37.60% of nasal problems. The neck and throat problems were 35.20%. The problems were more in males (63.65%) than in females (36.35%).

Conclusion: The hearing loss is the most prevalent diagnosis amongst all otologic problems and epistaxis amongst nasal symptoms. The emergence of head & neck cancers among the geriatric population is a great concern in a developing country like India.

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1. Introduction

The World Health Organization (WHO) has considered 65 yrs and above as geriatric age. In India, the parameter for geriatric age group has been accepted as 60 yrs and above, in the 'National Policy On Older Persons' adopted by the Government of India in January, 1999.¹ In India the size of the elderly population, i.e. persons above the age of 60 years is fast growing, although it constitutes 7.4% of total population. In Odisha it is 8.1%. This may rise up to 10.4% by 2020 making 142 million people, 60 years and above.¹ The problems of elderly are many. As the life expectancy increases the problems increase proportionately. For a developing country like India, there will be mounting pressures on various medical care providers. As the numbers of elderly patients with Oto-rhino-laryngological problems seeking medical care will increase significantly, over the next several

decades, knowledge of the prevalence of the diseases and basic principles of geriatric medicine will become essential for otolaryngologists. Oto-rhino-laryngological problems, especially hearing loss and balance disorders interfere with the social interaction of geriatric patients and can worsen co-existent health problems. Every otolaryngologist should understand the unique health care needs of the elderly. The Maintenance and Welfare of Parents and Senior Citizens Act, 2007 (India) was enacted to ensure need based maintenance for parents and senior citizens and their welfare, ensuring that they may not merely live longer, but lead a secure, dignified and productive life and these are major challenges.¹ The purpose of this study is to assess the state-of-the-art knowledge of prevalence of Oto-rhino-laryngological diseases among the elderly and to define important areas for future study in the geriatric population.

2. Material & method

Before starting the study, the study design was prepared. The permission from institutional Ethical committee was obtained prior

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Table 1
Age and Sex distribution of patients n = 3653.

Disease symptoms	Age and Sex distribution of patients n = 3653						Total
	60–64 Yrs		65–69 Yrs		>70 Yrs		
	M	F	M	F	M	F	
Otological	537	489	322	151	259	133	1891 51.77%
Nasal	91	65	86	45	141	48	476 13.03%
Throat & neck	314	177	250	153	290	102	1286 35.2%
Total	942	731	658	349	725	248	3653 (M:F = 1.75:1)
	56.3%	43.7%	65.3%	34.7%	74.5%	25.5%	
	1673		1007		973		

Chi-square = 137.013; Df=4; p – value = 0.000 (for age groups only)

to the beginning of the study and informed consent from human subjects were taken where ever necessary. A prospective longitudinal study was conducted in Ear Nose and Throat and Head and Neck Surgery Department of S.C.B. Medical College & Hospital Cuttack, Odisha, India from November 2014 to August 2016. A total 1,20,125 patients were enrolled in ENT OPD during this period and among them only 3563 (2.97%) patients were of geriatric age group. Among these 3563 patients studied, 363 patients were admitted to the indoor patient department. The patients were segregated, according to sex (male/female), ages (60–64 yr group, 65–69 yr group, 70 yr & above), disease ratio, and prevalence of diseases, associated co-morbidities and socioeconomic aspects.

Inclusion criteria: The patients of age of 60 yrs & above who attended ENT outpatient department were studied.

Exclusion criteria: Patients below 60 yr age and patients with vertigo of systemic and neurological origin.

With due attention to the patients, complaints were noted & the detailed history pertaining to Oto-rhino-laryngological problems and co-morbid diseases was taken from each individual. The information regarding age, sex, habitat, occupation, socioeconomic status were noted. The physical examinations of ear, nose, throat and neck were done along with systemic examination. They were thoroughly examined using Bull's lamp and head mirror, Heine's otoscope, nasal speculum, indirect laryngoscopy mirror and tuning forks of 256 Hz, 512 Hz, 1024 Hz frequencies. The vestibular function tests were done in patients complaining of vertigo or unsteadiness. We conducted Pure Tone Audiometry and Impedance Audiometry tests where necessary to evaluate impaired hearing. The investigations like fasting blood sugar, kidney function tests, serum electrolytes, liver function tests etc were done whenever required. Cardiological evaluation was done when required. Subsequently, in patients with nasal, pharyngeal and laryngeal problems, nasal endoscopy, nasopharyngoscopy and laryngeal endoscopy were done depending upon indications respectively. Other radio-logical investigations were done as per indications. The final diagnosis of disease was done by clinical examination and required investigations. The p-value and statistical analysis were done by means of Chi-square test.

3. Results

Following all the examination protocols the data were analyzed. A total 1, 20,125 of patients were registered in ENT OPD and among them only 3653 (2.97%) new patients were noticed to be of geriatric age group. The analysis showed that the maximum patients were in the age group of 60–64 yr (46.02%). The rest were between 65 and 69 yr (27.70%), and among 70 yr & above (26.77%) as shown in Table 1. The minimum age was 60 year and maximum age was 87 year. The mean age was of 71.35 yrs, with Standard deviation being 7.9.

The Oto-rhino-laryngeal problems were more prevalent in males (63.65%) than females (36.35%) in the present study. The male to female ratio was 1.75:1. Among these 99.53% were married and 0.47% were unmarried. The symptoms of problems related to ear were maximum among study population (51.77%), followed by problems related to throat and neck (35.20%) and nasal problems (13.03%) (Table 1). Taking into considerations of the age groups we found there was significance of observation (p -value = 0.000). Among 3653 patients, 1891 patients showed otological problems in which the presbycusis was the highest in incidence with 17.71% of total and 34.21% of otological problems. This was followed by CSOM (8.98%), otitis externa (8.02%), tinnitus (6.54%), Wax (3.06%), ASOM (2.13%), otomycosis (2%), Retracted Tympanic Membrane (1.64%), Vertigo (1.54%) and Maggots (0.13%). Patients having both presbycusis and tinnitus were included. Benign paroxysmal positional vertigo (BPPV), Meniere's disease, vestibular neuritis, and sudden unilateral vestibular dysfunction associated with a sudden unilateral hearing loss were included under symptoms of Vertigo (Table 2). In the present study it is observed that the problems were more prevalent in the age group of 60–64 yrs.

Among 476 rhino-logical problems, maximum patients complained of epistaxis that was 4.9% of total and 37.6% of nasal problem, followed by rhino sinusitis 2.18%, Anosmia 1.4%, nasal mass 1.26%, Nasal myiasis 1.20%, Rhinitis 0.88%, Dacryocystitis 0.73%, atrophic rhinitis 0.47% (Table 3). 10 different diseases of oral cavity, throat and neck was found in the study population. Among which chronic pharyngitis was 7.64% of total which is 21.69% of all throat disorders followed by neck swelling (6.41%), mucositis (6.19%), laryngopharyngeal reflux disorders (4.22%), hoarseness of voice (3.59%), growth & ulcer in oral cavity (3.36%), dysphagia (1.83%), stridor (1.39%), tonsillitis (0.30%), Oral Sub Mucous Fibrosis (0.27%) (Table 3). The patients having hoarseness of voice were found to have benign lesions, malignant lesions, neurological disorders and presbylarynges. The co-morbid diseases like hypertension and diabetes mellitus were significantly present.

Table 2
Distribution of different Otological Problems in study population.

SL.No	Disorders of ear	No. of patient	Total %	Otological %
1	Presbycusis	647	17.71	34.21
2	CSOM	328	8.98	17.34
3	Otitis Externa	293	8.02	15.49
4	Tinnitus	239	6.54	12.64
5	Wax	112	3.06	5.92
6	ASOM	78	2.13	4.12
7	Otomycosis	73	2.00	3.86
8	RTM	60	1.64	3.17
9	Vertigo	56	1.53	2.96
10	Maggots	05	0.13	0.26
	TOTAL	1891	51.77%	

Table 3
Distribution of different rhinological problems in study population.

SL.No	Disorders of nose	No. of patient	Total %	Nasal %
1	Epistaxis	179	4.90	37.60
2	Rhinosinusitis	80	2.18	16.80
3	Anosmia	51	1.40	10.71
4	Nasal mass	46	1.26	9.66
5	Nasal myiasis	44	1.20	9.24
6	Allergic Rhinitis	32	0.88	6.72
7	Dacryocystitis	27	0.73	5.67
8	Atrophic rhinitis	17	0.47	3.57
	TOTAL	476	13.03%	

Table 4
Distribution of different Throat and Neck problems in study population.

SL.No	Disorders of throat& neck	No. of patient	Total %	Throat %
1	Chronic Pharyngitis	279	7.64	21.69
2	Neck Swelling	234	6.41	18.19
3	Mucositis and glossitis	226	6.19	17.57
4	LPR	154	4.22	11.97
5	Hoarseness of Voice	131	3.59	10.19
6	Growth & Ulcer in Oral cavity	123	3.36	9.56
7	Dysphagia	67	1.83	5.21
8	Stridor	51	1.39	3.96
9	Tonsillitis	11	0.30	0.85
10	OSMF	10	0.27	0.77
	TOTAL	1286	35.20%	

4. Discussion

It is difficult to distinguish between the effects of normal ageing and disease. Due to ageing, degeneration and atrophy of various organs in the body takes place which leads to various health

problems. The extent to which older individuals are affected by symptoms and disease is often a reflection of lifestyle choices and the degree of available functional reserve. Hearing loss severely affects the quality of life, especially, in the background of low socioeconomic status where access to health care facilities is restricted due to various reasons. It increases the disability burden on society and could be a cause of depression, isolation and suicidal tendencies. In the current study we found maximum geriatric patients were in the age group of 60–64 years (46.02%) followed by 65–69 yr (27.70%) and 70 yr & above (26.77%). The mean age was of 71.35 yrs, with Standard deviation being 7.9. The Oto-rhinolaryngeal problems were more prevalent in males (63.65%) than females (36.35%) in the present study. The male to female ratio was 1.75:1. Among these 99.53% were married and 0.47% were unmarried. This study showing high incidence of geriatric problems in males as comparable to a study conducted by Giri P A et al. from Maharashtra India during 2009 who observed that 784 (61.7%) were males and 486 (38.3%) were female patients with M:F ratio of 1.61:1 in their study population of 1270 3. This may be due typical social trends in India relating to gender bias, ignorance and negligence towards female patients (see Tables 4 and 5).

Among these, otological problems, especially presbycusis scores high (17.71% of total and 34.21% of otological problems) the incidence corresponds to WHO reports, which showed that approximately one-third patients above the age of 65 years are affected by hearing loss; the prevalence is the highest in South Asia and Sub Saharan African countries.² A study conducted by P.A. Giri et al., showed that presbycusis was the most common otological disorder (53.9%) which is very high as compared to ours.³ Also in their study it has been observed that on progression of ageing the incidence of presbycusis increases i.e. 50.2% between 60 and 64 yrs, 55% between 65 and 69 yrs and 56.4% above 70 yrs of age.³ Our study also

Table 5
Showing comparative analysis of different study series.

Diseases	Authors				
	Okhakhu et al. N = 440 (>65 yrs)	Elad Dagan et al. N = 597	P.Giri et al. Total N = 1270	Nepali et al. N = 500	Present study N = 3653
Otological problems	n = 319	n=	63.97%	n = 217	n = 1891
Presbycusis	32.2	–	53.93%	29.9	34.21%
CSOM	10.6	0.50	–	19.4	17.34%
Otitis externa	9.7	5.19	–	–	15.49%
Tinnitus	0	0.84	–	12.9	12.64%
Wax	19.7	1.68	–	15.7	5.92%
ASOM	0	2.36	–	–	4.12%
Otomycosis	–	–	–	8.3	3.86%
ET Dysfunction	2.5	–	–	–	3.17%
Vertigo	6	23.45	–	13.8(BPPV)	2.96%
Maggots	0	–	–	–	0.26%
Rhinological	N = 73		5%	N = 88	N=476
Epistaxis	15.1	13.57	–	32.9	37.60
Rhinosinusitis	64.4	1.34	–	31.8	18.91
Anosmia	–	–	–	–	10.71
Nasal mass/tumor/polyp	6.8	–	–	23.9 (polyp)	9.66
Myiasis	0	–	–	–	9.24
Allergic rhinitis	–	–	–	–	6.72
Atrophic rhinitis	–	–	–	–	3.57
Throat & neck	N = 37		31.03%	N = 195	N = 1286
Chr.pharyngitis	45.9	–	–	48.7	21.69
Swelling neck	–	–	–	–	18.19
Mucositis &glossitis	–	–	–	–	17.57
LPR	–	–	–	–	11.97
Hoarseness of voice	–	3.35	–	–	10.19
Growth & Oral ulcer/head and neck malignancy	–	–	–	–	9.56
Dysphagia/swallowing disorders	–	11.39	–	–	5.21
Stridor	–	–	–	–	3.96
Tonsillitis/pharyngotonsillar disorder	–	1.84	–	–	0.85
OSMF	–	–	–	–	0.77
Neck abscess	–	–	–	–	–

corresponds to the studies of Nepali et al. and Okhakhu et al.^{5,7} Ageing factors include hair cell loss, atrophy of stria vascularis, loss of cochlear neurons and central loss due to degradation of executive function.⁴ This is also observed in the present study that as the age increases the incidence of presbycusis also increases (Table 6).

Overall incidence of chronic suppurative otitis media (CSOM) in our study was 17.34% of total aural problems, which corresponds to a study conducted by Nepali. R et al. (19.4%) suggesting that, the incidence and etiological factors are identical in Indian subcontinent.⁵ But another study conducted by Okhakhu A.L. et al. in Benin city of Nigeria showed that CSOM was prevalent in only 10.6% between 2008 and 2012 which is significantly less than our study indicating that the prevalence of CSOM may vary depending upon the Geographic distribution of habitats.⁶

Tinnitus increases in incidence with age. In our study tinnitus was observed in 12.64% of otological disorders (6.54% of all ENT problems) which is almost similar and comparable to the findings of Nepali. R, Sigdel. B & Tuli B S (12.9%).⁵

The vertigo in old age occurs due to degenerative vestibulopathy (atrophy and collapse of semicircular duct, undifferentiated cellular proliferation and deposits in saccule), BPPV, Meniere's disease, multiple sclerosis, diabetic vestibulopathy.⁶ The incidence of vertigo in a different study like that of Okhakhu A.L. et al. was 5%.⁷ These patients may attend the otolaryngology clinic either on regular OPD periods or may present in emergency. The incidence of benign paroxysmal positional vertigo (BPPV) in adults causing vertigo in old age is 13.8% of all otological disorders as observed by Nepali R. et al., but they did not mention the vertigo of other causes.⁷ There are not many literatures about the incidence of BPPV

in adults. Elad Dagan et al. observed that, the incidence of BPPV was 8.88% in an emergency outpatient department, who also observed the aggregate percentage of vertiginous or balance disorders was 23.45%, which seems appreciably high.⁸

In current observations of authors, the incidence of vertigo of various etiologies was only 2.96%. It might be due to the fact that the management of vertigo is undertaken by physicians of other disciplines as the vertigo is a symptom of multifactorial origin. Francis X. Creighton, Jr. et al. observed that, most of the vertiginous syndromes and vestibular disorders were in the range of age groups of 66–100 yrs. They also concluded that most common geriatric diagnoses were otogenic in nature between these ranges.⁹

With ageing, the coarsening & lengthening of the hairs within external auditory canal act as physical impediment to self cleaning of the ear and declined activity of cerumen gland with age makes ear drier & difficult to clean.¹⁰ So wax formation in old age leads to problems. Calcifications of the eustachian tube cartilage and atrophy of the tensor veli palatini were found to be increased in prevalence and severity with increasing age. The functional compliance also changes with aging, therefore affecting the overall function of the eustachian tube, leading to retracted tympanic membrane and otitis media.

Throat disorders in the current series, were 35.20% and chronic pharyngitis was most common amongst them followed by neck swellings (18.19%), mucositis and glossitis (17.57%), Laryngopharyngeal reflux disorders (11.97%) and hoarseness of voice (10.19%) and so on. The criteria for diagnosing chronic pharyngitis in the present study were as such: the complaints of constant sore throat, hawking, foreign body sensation in the throat, granular congestion in the pharyngeal wall. It could be due to age related changes like

Table 6
Age Wise Distribution of Different Oto-rhino-laryngeal Diseases n = 3653.

Diseases	Age Wise Distribution of Different Oto-rhino-laryngeal Diseases n = 3653					
	Age groups					
	60–64 yrs (1673) (46.02%)		65–69 yrs (1007) (27.70%)		>70 yrs (973) (26.77%)	
	number	% of total	Number	% of total	Number	% of total
Otological 1891 (51.77%)						
Presbycusis (647)	185	5.06	216	5.91	246	6.73
CSOM (328)	183	5.00	115	3.14	30	0.82
Otitis Externa (293)	163	4.46	70	1.92	60	1.64
Tinnitus (239)	84	2.29	71	1.94	84	2.29
Wax (112)	72	1.97	22	0.60	18	0.49
ASOM (78)	43	1.17	15	0.41	20	0.54
Otomycosis (73)	45	1.23	20	0.54	8	0.21
Secretory OM (60)	35	0.95	15	0.41	10	0.27
Vertigo (56)	22	0.60	21	0.57	13	0.35
Maggots (5)	0	0	4	0.10	1	0.02
Chi square value = 199.505; df = 18; p value = 0.00						
Rhinological (476)						
Epistaxis (179)	94	2.57	38	7.07	47	1.28
Rhinosinusitis (80)	33	0.90	24	0.65	23	0.62
Anosmia (51)	26	0.71	13	0.35	12	0.32
Nasal mass (46)	26	0.71	10	0.27	10	0.27
Myiasis (44)	20	0.54	11	0.30	13	0.35
Allergic rhinitis (32)	15	0.41	12	0.32	5	0.13
Dacryocystitis (27)	13	0.35	10	0.27	4	0.10
Atrophic rhinitis (17)	9	0.24	5	0.13	3	
Chi square value = 11.356; df = 14; p value = 0.658						
Larynx & neck (1286)						
Chr pharyngitis (279)	139	3.80	66	1.80	74	2.02
Neck swelling (234)	114	3.12	45	1.23	75	2.05
Oral mucositis 226	111	3.03	44	1.20	71	1.94
LPR (154)	74	2.02	40	1.04	40	1.04
Hoarseness of voice (131)	73	1.99	30	0.82	28	0.76
Dysphagia (67)	37	1.01	17	0.46	13	0.35
Stridor (51)	17	0.46	23	0.62	11	0.30
Others (144)	40	1.09	50	1.36	54	1.47
Chi square value = 49.311; df = 14; p value = 0.00						

degenerative and atrophic changes in the pharyngeal wall and muscle and poor mucosal hygiene. Head and neck cancer constitute major health problem in Geriatrics. Generally the patients having throat and neck problems present with neck swelling, hoarseness of voice, stridor, dysphagia, nasal mass and nasal obstruction. Voice disorders include benign vocal fold lesions (polyps, nodules, cysts, papillomas), chronic inflammatory laryngitis (reflux-related conditions), autoimmune disorders, medication-induced conditions), muscle tension disorders, neurologic disorders (essential tremor, Parkinson's disease, spasmodic dysphonia, amyotrophic lateral sclerosis), vocal fold immobility, vocal malignancies, and vocal fold atrophy. Age related voice changes appear to be more common in males.¹¹ With increasing age, fatty degeneration of laryngeal muscle increases and fibre density and elastin fibres in the vocal folds decrease.¹¹

Among rhinological problems, maximum patients were complaining of epistaxis i.e. 37.60% of all nasal conditions and 4.9% of total due to various conditions like hypertension and malignancies. Between 7 and 10% adults have epistaxis at some time or other but only 6% of cases are seen by otolaryngologist.¹² Our findings are similar to the study of McGarry¹² and of Nepali R. et al. (32.9%).⁵ Rhinosinusitis was the next common clinical presentation (16.8% of all nasal conditions and 2.46% of all other conditions). Okhakhu A.L. et al. noticed rhinosinusitis in 64.1% and epistaxis in only 15.1% of nasal cases.⁶ Anosmia (1.4%) With ageing, there is a decline in number of receptor cells, thinning of olfactory epithelium, decrease of olfactory bulb size with cumulative effect of environmental damage (virus, bacteria & air pollutant)¹³ which leads to deficiency in threshold sensitivity of smell. Due to poor hygiene and atrophic changes in nose in elderly, maggots in nose are common in our region and climate. In our study maggots were found in 1.35%.

The prevalence of the geriatric Oto-rhino-laryngological morbidity could be much high as all patients cannot reach the health centers and many do not seek health care. Mostly 60–65 age groups were more affected by ENT diseases (46.02%); the reason being the geriatric patients in age group 60–64 years can report to the hospital themselves whereas the patients above 70 years need help to reach the hospital (Table 6). Maximum patients were male (63.65%). It may be due to our skewed sex ratio and female patients having tendencies to ignore or minimize their symptoms, or delay in seeking medical care. The high proportion of male population in the study is probably due to social negligence, personal ignorance, ambulatory problems and non awareness of health problems amongst females patients. They do not care for themselves and also are neglected by family members leading to low hospital attendance. Contrary to the other related studies we observed maggots in ear (0.26%) and in nose (9.24%) and atrophic rhinitis (3.5%) in addition to all other conditions. Probably this is because, our state belongs to a tropical climate in which these problems are more common. Poverty, malnutrition and low socioeconomic conditions of the majority of populations are other additive factors.

We observed stridor in 3.96% mostly due to different obstructive pathologies, allergic rhinitis in 6.72% and laryngopharyngeal reflux disorders in 11.97% of examined populations which were not observed in other studies which shows there is a significance of occurrences in geriatrics. Analysis of significance of studies showed that observations on otological (p -value = 0.000) and throat and neck problems (p -value = 0.000) had showed the significant variations where as rhinological symptoms did not show any significant variations (p -value = 0.658) in the present study, the causes of which are difficult to explain (Table 6).

5. Conclusion

Emergence of Head & neck cancers among geriatrics and Epistaxis among nasal symptoms and Laryngopharyngeal reflux disorders is a great concern in our state and in a developing country like India. Hearing loss especially presbycusis is the most prevalent diagnosis and otological problems are common. Global ageing is a success story with people living longer and generally healthier lives. Increased life expectancy reflects a number of health transitions occurring across the globe at different rates. We need to have otolaryngologists, who are well versed in the needs of older patients requiring help in medical, social and psychological areas. Busy Otorhinolaryngologists may feel hard pressed to come up with the extra time to spend with elderly patients, but the time spent is for a worthy investment.

Disclosures

- a) Conflicts of Interests – None
- b) Sponsorships – None
- c) Funding – None
- d) Written consent of patient – taken
- e) Animal rights – Not applicable.

Appendix A. Supplementary data

Supplementary data related to this article can be found at <https://doi.org/10.1016/j.ijge.2017.10.002>.

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