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Assessment of diagnosis and treatment of geriatric patients in otorhinolaryngology

Otorinolaringolojide geriatrik hastaların tanı ve tedavilerinin değerlendirilmesi

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Abstract

Aim: Otorhinolaryngological problems worsen the social interaction of the elderly and cause addiction and depression in patients. There are a limited number of studies in the literature that examine the otorhinolaryngological disorders of the geriatric population. Through analysis of ENT patients' demographic features, diagnostic distributions, and service processes in ENT inpatient ward, this study aims to obtain data that can guide the efforts in improving future service offered for these patients.

Methods: In this cross-sectional study, the records of patients aged 65 years and over who were consulted from outpatient or emergency clinics and other departments, such as the intensive care unit to the ENT Department of KSBU Evliya Çelebi Training and Research Hospital between 01.01.2017 and 31.12.2019 (including 31.12.2019) were scanned retrospectively. Diagnoses, laboratory, radiological and audio-vestibular evaluations, and treatment processes of the patients included were analyzed.

Results: Among 12509 patients included in the study, 5792 were female (46.3%) and 6717 (53.7%) were male. The most frequent consultation to the ENT outpatient clinic was due to otological complaints with 8594 (68.7%) patients. The main tests used in the evaluation of patients were 5272 audiometric tests, 1585 laboratory tests (hemogram - biochemistry), and 508 computed tomography. The most common diagnoses were hearing loss (24.89%), followed by cerumen impaction (22.07%). Various surgical interventions were performed on 332 (2.65%) patients included in the study. Most common surgical operations were head/neck surgery (134 surgeries), and the most common surgical intervention was tracheotomy (46 patients).

Conclusion: Majority of geriatric patients are outpatients and frequently present with autological complaints. Surgical operation was performed to geriatric patients mostly due to oncological disorders.

Keywords: Geriatrics, Otorhinolaryngology, Epidemiology

Öz

Amaç: Otorinolaringolojik problemler, yaşlıların sosyal etkileşimini daha da kötüleştirmekte, hastalarda bağımlılık ve depresyona neden olabilmektedir. Literatürde geriatrik populasyonun otorinolaringolojik rahatsızlıklarını inceleyen sınırlı sayıda çalışma bulunmaktadır. Bu çalışma ile KBB hastalıkları bölümüne başvuran yaşlı hastaların demografik özelliklerini, tanı dağılımlarını, KBB hastalıkları yataklı servisindeki süreçlerini analiz etmek suretiyle gelecekte kendilerine sunulacak hizmetin kalitesini artırmaya yönelik çabalarda yol gösterici olabilecek veriler elde etmeyi amaçlanmıştır.

Yöntemler: Bu kesitsel çalışmada; 01.01.2017 – 31.12.2019 (31.12.2019 dahil) tarihleri arasında ayaktan polikliniğe başvuran ve acil-tıp kliniği, yoğun bakım gibi farklı branşlardan KSBÜ Evliya Çelebi eğitim ve araştırma hastanesi KBB bölümüne konsülte edilen 65 yaş ve üstü hastaların dosyaları retrospektif olarak tarandı. Çalışmaya dahil edilen hastaların tanıları, laboratuvar, radyolojik ve odyo-vestibüler değerlendirmeleri ve tedavi süreçleri analiz edildi.

Bulgular: Çalışmaya dahil edilen 12509 hastanın 5792'si kadın (%46,3), 6717'si (%53,7) erkekti. KBB polikliniğine en sık başvurunun 8594 (%68.7) hasta ile otolojik şikayetler nedeniyle yapıldığı görüldü. Hastaların değerlendirilmesinde kullanılan başlıca tetkikler 5272 odyometrik test, 1585 laboratuvar testi (hemogram - biyokimya), 508 bilgisayarlı tomografidir. Hastalıklar sıklık sırasına göre incelendiğinde ilk ikisi sırasıyla; işitme kaybı %24,89 ve sıkışmış serümen %22,07'dir. Çalışmaya dahil edilen hastalardan 332'sine (%2,65) muhtelif cerrahi müdahaleler yapılmıştır. En sık cerrahi operasyonların baş/boyun cerrahisi (134 ameliyat), en sık yapılan cerrahi girişimin ise trakeotomi açılması (46 hasta) olduğu tespit edildi.

Sonuç: Geriatrik hastaların çoğunluğunun ayaktan tedavisinin yapıldığı ve sıklıkla otolojik şikayetlerle başvurdukları görülmüştür. Geriatrik hastalara çoğunlukla onkolojik rahatsızlıklar nedeniyle cerrahi operasyon yapılmıştır.

Anahtar kelimeler: Geriatri, Kulak burun boğaz hastalıkları, Epidemiyoloji

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Introduction

The human lifespan has increased thanks to the advancements in health services and easier access. Corresponding with the decrease in fertility rates, the rate of elderly people in the population is increasing day by day [1]. The increased rate of the geriatric population in developing countries is faster than that of all populations' and parallel to this, the ratio of the elderly population to the general population is increasing. The elderly constituted only 2% of the population in the USA a century ago. Today, this rate is over 12% and estimates indicate that 20% of all population will consist of the elderly in 2050 [2]. The average life expectancy is estimated as 78 years in the world [3]. According to the Turkish Statistical Institute data, while 7% (5,083,414) of our country's population consisted of people aged 65 years and over in 2009; this rate increased to 9,01% (7,550,727) by 2019 [2].

Epidemiological studies on the geriatric population will play an influential role in the planning and development of preventive health services. As a result of the increase in chronic diseases and drug consumption with aging, extreme use of health institutions, disabilities, and deaths occur. In numerous studies, the rate of emergency room consultations of geriatric patients was 9-19% [4,5]. Gülalp et al. [6] found this rate to be 22.68%. The factors underlying these variations are country, city, location of the health institution, and the population distribution of that region.

This study aims to analyze the demographic characteristics, diagnosis distributions, and the processes in the ear-nose-throat (ENT) diseases inpatient services (hospitalization, types of surgery, referral, death, etc.) of the elderly patients who apply to the ENT diseases department, and to obtain data that can guide the efforts to improve the quality of future services.

Materials and methods

This study was approved by KUHS Institutional Ethics Committee for Non-Invasive Researches with the date and number of 04/06/2020 and 2020/09-07.

While the United Nations defines old age as 60 years and older, the World Health Organization (WHO) has drawn a chronological border and defined old age as 65 years and older. In this study, files of patients aged 65 years and over who applied to the ENT Diseases Department of Kütahya University of Health Sciences Evliya Çelebi Training and Research Hospital from the outpatient or emergency clinics and consultations from other departments such as the intensive care unit between 01.01.2017 - 31.12.2019 were scanned. After evaluation of demographic information such as age and gender, patients were divided into three groups. The first group consisted of patients aged between 65-74 years (younger elderly), the second group, between 75-84 years (elderly) and the third group, aged 85 years and over (aged elderly). The diagnoses and laboratory, radiological and audiovestibular evaluations of the patients included in the study were analyzed. The reasons for inpatients' hospitalization, and if performed, the types of surgical operations were noted, and the data obtained were compared between the groups.

Statistical analysis

The data obtained from the study were evaluated using open source software 'Jamovi' (version 1.1.9) and $P<0.05$ was considered statistically significant [7]. In the statistical evaluation of the data obtained from the study, categorical data were presented as frequency (n) and percentage (%). Chi-square, Fisher's Exact, and Likelihood Ratio Tests were utilized as cross-table statistics for the statistical evaluation between categorical variables. In the comparison of numerical variables between the two groups, Independent Samples T-test were used.

Results

The total number of patients is 12509, among which 5792 were female (46.3%) and 6717 (53.7%) were male. The mean age of these patients was 72.92 (6.28) years.

The demographic findings of the patients are summarized in Table 1. In 2017, 2018, and 2019, the application rates of young elderly patients were statistically significantly higher than that of the elderly and aged elderly patients ($P=0.003$). No significant difference was observed between the total number of patients admitted, the number of patients admitted by age groups, the mean age, and gender rates between years (Table 1). Only laryngological disorders that are non-gastroesophageal reflux were significantly higher in men (175 patients) compared to women (61 patients) ($P=0.023$) (Table 2).

Otological complaints were the most frequent cause of outpatients consulted to ENT clinic ($P<0.001$). Distribution of patients' complaints by ENT disease sub-branches is summarized in Figure 1. The first five diseases were hearing loss is 24.89%, cerumen impaction 22.07%, tinnitus 7.24%, allergic rhinitis 6.01% and dizziness (vertigo) 5.58%. The distribution of patients according to their diagnosis is summarized in Table 2.

Table 1: Demographic findings

	2017	2018	2019	Total
Number of patients	4142	4140	4227	12509
65-74 years old	2664	2709	2770	8143
75-84 years old	1229	1164	1241	3634
>85 years old	249	267	246	762
Male/Female	2192/1950	2161/1979	2364/1863	6717/5792
Patient mean age	72.76 (6.21)	73.08 (6.36)	73.04 (6.33)	72.92 (6.28)

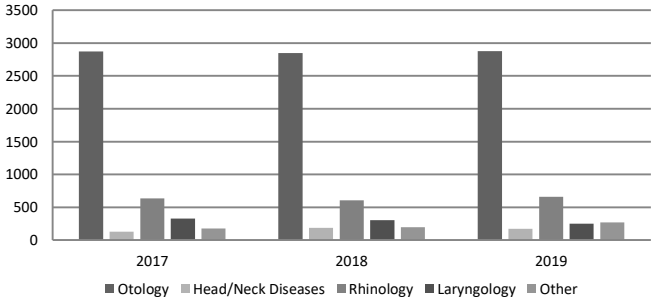

Figure 1: Distribution of consultations to ENT sub-branches by years

Distribution of the main tests used in the evaluation of patients were as follows: 5272 audiometric tests, 1585 laboratory tests (hemogram - biochemistry), 508 computed tomography (CT), 448 ultrasonography (USG), 269 magnetic resonance imaging (MRI), 217 videonistagmography (VNG), 40 auditory brainstem response (BERA) and 20 positron emission tomography - CT (PET-CT) (Table 3).

Table 2: The distribution of patients according to their diagnosis

	2017				2018				2019			
	65-74 age	75-84 age	>85 age	Total	65-74 age	75-84 age	>85 age	Total	65-74 age	75-84 age	>85 age	Total
Otology	**1772**	**902**	**196**	**2870**	**1818**	**827**	**203**	**848**	**1883**	**857**	**186**	**2876**
Chronic otitis media	60	12	2	74	62	18		80	64	15	6	85
Middle ear infections (acute otitis media, acute serous otitis media)	59	9	4	72	61	16	2	79	44	15	1	60
Sudden hearing loss	6	2		8	9	1		10	2			2
Dizziness (vertigo)	172	61	3	236	172	39	5	217	194	62	14	270
Facial nerve paralysis	14	3		17	6	1	1	8	11	3		14
Otitis externa	56	27	7	90	171	32	9	212	101	40	5	146
Meniere's disease	6			6	2	1		3	4			4
Hearing loss	587	356	91	1034	574	328	104	978	637	371	93	1101
Cerumen impaction	559	339	80	978	530	301	71	902	532	289	60	881
Tinnitus	222	82	8	312	236	80	6	322	215	52	5	272
Acoustic neuroma					1			1	2			2
Temporomandibular joint syndrome	27	9		36	13	6	2	21	23	6		29
Foreign body in the outer ear canal	4	2	1	7	9	4	3	16	4	4	2	10
Head and Neck Surgery	**83**	**38**	**8**	**129**	**126**	**51**	**10**	**187**	**115**	**52**	**7**	**174**
Benign soft tissue masses	9	12	3	24	27	11	2	40	29	10	2	41
Intraoral malignancies					3			3	1	3		4
Acute tonsilitis	32	10	1	43	44	17	2	63	42	15	2	59
Acute lymphadenitis	13	5	1	19	20	11	3	34	25	10	1	36
Tongue / lip diseases	17	6	2	25	16	8	1	25	8	5		13
Salivary gland diseases	9	5		14	11	3	2	16	7	5		12
lymphoma	2		1	4	5	1		6	3	3	3	9
Laryngology	**189**	**112**	**27**	**328**	**205**	**85**	**13**	**303**	**192**	**54**	**4**	**250**
Acute laryngitis	16	3		19	6	2		8	8	2		10
Foreign body in the larynx	1			1		1		1	1	1		2
Vocal cord paralysis	8	1		9	9	1		10	1	1		2
Laryngeal diseases	24	8		34	34	14	1	49	19	7		26
Laryngeal malignancies	2		1	3	6	3		9	4			4
Dysphagia	3	2	1	6	9	4		13	2	1		3
Voice disorder	10	3		13	2	3		5	7	2		9
Gastroesophageal reflux	125	95	23	243	139	57	12	208	150	40	4	194
Rhinology	**492**	**127**	**18**	**637**	**438**	**150**	**20**	**608**	**444**	**185**	**31**	**660**
Upper respiratory tract infection (acute pharyngitis nasopharyngitis)	107	12	3	122	118	37	7	162	102	47	8	157
Allergic rhinitis	221	57	7	285	163	68	8	239	154	64	10	228
Nasal bone fracture		2	1	3	5		1	6	22	3	3	28
Acute sinusitis	65	25	2	92	54	10	3	67	63	37	3	103
Epistaxis	55	26	4	85	43	26	1	70	43	27	4	74
Nasal polyposis	7			7	9	2		11	8	1	1	10
Nasal septum deviation	10			10	12	4		16	15	1	1	17
Sleep apnea	21	1		22	25	2		27	10			10
Lacrimal canal stenosis					2			2	1			1
Nasopharyngeal / paranasal sinus malignancies					2			2	3			3
Headache	6	4	1	11	5	1		6	23	5	1	29
Other	**118**	**50**	**10**	**178**	**122**	**51**	**21**	**194**	**156**	**93**	**18**	**267**
Total	**2664**	**1229**	**247**	**4142**	**2709**	**1164**	**267**	**4140**	**2740**	**1241**	**243**	**4227**

Table 3: The distribution of the main tests used in the evaluation of patients

	2017				2018				2019			
	65 -74 age	75-84 age	>85 age	Total	65 -74 age	75-84 age	>85 age	Total	65 -74 age	75-84 age	>85 age	Total
Audiological examination	845	487	106	1438	988	508	108	1602	1564	497	171	2232
BERA	10	1		11	1	5	2	8	8	8	5	21
Vestibular tests (Caloric test, VNG, v- HIT)	40	10		50	83	12	1	96	53	13	5	71
Ultrasonographic examination	74	28	3	105	70	30	3	103	159	68	13	240
Computed tomography (brain, neck, temporal, maxillofacial)	109	29	8	146	114	31	5	150	181	55	18	254
Magnetic resonance imaging (brain, neck, nasopharynx, internal acoustic channel)	55	18	3	76	58	28	3	89	69	29	6	104
Pet - CT	1			1	4			4	10	5		15

BERA: Auditory Brainstem Response, VNG: Videonystagmography, v-HIT: Video head impulse test, Pet-CT: Positron emission tomography- computed tomography

Various surgical interventions were performed on 332 (2.65%) of the patients included in the study. The most common surgical operations were head and neck surgery (134 surgeries), and the most common surgical intervention was tracheotomy (46 patients). The distribution of patients according to surgical interventions are summarized in Table 4.

In 2019, 31 patients were admitted to the ENT inpatient clinic for medical treatment. Twelve had attacks of vestibular neuritis, 8 had attacks of epistaxes, 4, malignant external otitis, and 3 patients, Meniere's disease. No patients who underwent medical or surgical admittance were dispatched to external health institutions. There were no death cases in geriatric patients who received treatment in our clinic within 3 years.

Table 4: The distribution of patients according to surgical interventions

	2017				2018				2019				Total
	65-74 age	75-84 age	>85 age	Total	65-74 age	75-84 age	>85 age	Total	65-74 age	75-84 age	>85 age	Total	
Head and neck surgery				**45**				**47**				**42**	134
Benign soft tissue tumor excision	9	6	1	**16**	8	1	1	**10**	7	2		**9**	35
Neck dissection	4	2	2	**8**	6	7	1	**14**	6	4		**10**	32
Tongue / Lip malignant tumor resection	6	1	1	**8**	9	3		**12**	4	2		**6**	26
Excision of malignant skin tumors	2	2		**4**	1			**1**	2	2	3	**7**	12
Salivary gland surgery (Superficial / total Parotidectomy, submandibular gland excision)	5		1	**6**	5	2		**7**	2	1		**3**	16
Thyroidectomy (total / lobectomy)	1			**1**						1		**1**	2
Intraoral malignancies excision	1			**1**	1	2		**3**	4	2		**6**	10
Tonsillectomy	1			**1**									1
Rhinology				**19**				**11**				**14**	44
Endoscopic nasal and nasopharyngeal tumor surgery	1		1	**2**						1	1	**2**	4
External nose surgery	2		1	**3**	1			**1**	2			**2**	6
Closed reduction of nasal fractures		1		**1**		1		**1**	2			**2**	4
Caldwell-Luc surgery	1			**1**									1
Functional endoscopic sinus surgery	5	1		**6**	5		1	**6**	5			**5**	17
Nasopharyngeal Biopsy	1		1	**2**									2
Oro-antral fistulas repairment	1			**1**					1			**1**	2
Septoplasty	2			**2**	3			**3**	2			**2**	7
Uvulopharyngoplasy	1			**1**									1
Otology				**21**				**17**				**25**	63
Auricular excision, scoop surgery							3	**3**	1			**1**	4
Canal Wall Down tympanoplasty	8	1		**9**	9	1		**10**	12	2		**14**	33
Outer ear canal, radical excision of malignant parts			1	**1**									1
Tympanoplasty	5			**5**	2	1		**3**	6	1		**7**	15
Facial nerve decompression	1			**1**									1
Placement of implantable bone hearing aids	1			**1**	1			**1**	2			**2**	4
Ventilation tube application	3	1		**4**					1			**1**	5
Laryngology				**32**				**34**				**25**	91
Direct laryngoscopy / cordectomy / stripping	9	3	1	**13**	2	9	1	**12**	11	2	1	**14**	39
Partial / total Laryngectomy	1			**1**	2			**2**					3
Voice prosthesis application		1		**1**	1			**1**	1			**1**	3
Tracheotomy	8	8	1	**17**	5	7	7	**19**	5	4	1	**10**	46
Total	79	27	11	**117**	61	32	14	**109**	76	24	6	**106**	332

Discussion

Turkish Statistical Institute data shows a change from 7% to 9% in the ratio of the geriatric population to the general population, which corresponds to an increase of approximately two and a half million [2]. With these data, we can estimate that geriatric patients will constitute an important portion of our clinical patients for years to come. Although there is an increase in the geriatric population rate in our country's demographics, there are quite a limited number of studies in the literature, which evaluate how this increase does and will directly affect the field of ENT diseases. The results of this study will provide an idea about the epidemiological features of elderly patients seen in the ENT practice of a tertiary hospital for a period of 3 years.

In many studies examining the geriatric population, there is a gender difference; women have been shown to apply more to hospitals. It was postulated that this is due to women having a higher life expectancy compared to men [8,9]. However, we observed almost no difference between genders; in fact, more men have consulted to the ENT Diseases Department than women.

According to the literature, while the most common head and neck malignancy in the general population is oral cavity and lip cancers, it is laryngeal cancer in our country [10,11]. The male to female ratio is 3:1 in the general population worldwide, this ratio is 4.4:1 in our country [12]. In the context of sub-branches, laryngological disorders that are non-gastroesophageal reflux were statistically significant for men and laryngological surgical interventions other than opening tracheotomy were more common in men than in women. The larynx malignancy male to female ratio is 7.4:1. However, this rate includes our surgical patients only. Patients who prefer radiotherapy/chemotherapy treatment and those who refuse treatment or want to receive treatment in other centers are not included.

Epidemiological studies have found that hearing impairment is the most common ENT morbidity [13]. According to WHO data, hearing loss is observed in 30-35% of people over 60 years of age, and in 40-45% of people over 70 years of age [14]. In this study, the most common reason for outpatient clinic application was otological complaints (68.7%). Creighton et al. [15] reported an increase in otological complaints with age, and a reduction in rhinological, head and neck surgery diseases. Okoye and Onotai [16] reported that the most common ENT applications in geriatric patients were due to otological disorders, followed by rhinology and laryngology. Among otological complaints, hearing loss is the most common. Epidemiological studies conducted in various populations are in support of the findings of this study [13,17]. Hearing loss can seriously affect the life quality of patients, increasing isolation, depression, and even suicidal tendencies [12]. Therefore, immediate treatment/rehabilitation has the utmost importance.

According to Timsit et al. [18], the most frequent geriatric patient complaints after hearing loss are epistaxis and foreign body aspirations. Özler et al. [19] ranked epistaxis, vestibular problems, and pharyngotonsillitis pathologies as the most common complaints, after ear and hearing problems. In our research, hearing impairment, cerumen impaction, tinnitus, seasonal allergic rhinitis, and dizziness were the most common complaints. We also observed that, in parallel to similar studies, ear and hearing complaints were in the foreground. In contrast, epistaxis-related applications were less common. We think this is because patients consult primarily to the emergency room, rather than the ENT clinic. In addition, our clinical experience in the study area is that allergic conditions are more common in the general population than in other regions. This suggests that seasonal allergic rhinitis occurs as the most common disorder among rhinological disorders due to regional differences.

One of the most common otological complaints in the elderly is vertigo. Although in our study, 5.8% of the patients

often complained of vertigo, studies have shown that vertigo cause restrictions in daily activities of 30% of people over the age of 70 [20]. As a result of the decrease in vestibular functions due to aging, a decrease in mobility, imbalance, and frequent falls are seen in the geriatric population, which increases morbidity/mortality.

Epidemiological studies investigating the geriatric population are quite limited in the literature. In these studies, only the diagnosis and surgery of the patients were emphasized, and no study mentioned the tests used to evaluate the patients. In our study, we examined the most frequent audiological tests for evaluating geriatric patients and found that the most common are audiological tests. It is not surprising that audiological tests are the most common, where the most frequent causes for consultation are hearing complaints. The most preferred radiological imaging method in the evaluation of patients was found to be CT.

All organs and systems are affected by the aging process. Loss of function in organs also affects surgical results. Any kind of surgical intervention in geriatric patients with more co-morbid diseases than the young population causes high mortality and morbidity [19]. For this reason, surgeons should plan surgery considering the physiological reserves of patients; otherwise, undesirable conditions such as a decrease in organ functions and organ failure due to surgical stress, unexpected complications, prolonged hospital stay, and adverse effects on morbidity/mortality may be encountered. 189 (56,9%) of 332 patients who underwent a surgical operation in our clinic did so due to suspected malignancy or malignancy. Al-Qurayshi et al. [21] reported that the most common surgical intervention in the geriatric population was due to oncological diseases, similar to our study. In our clinic, surgical intervention was performed most frequently due to diseases related to the head and neck (134 surgeries). The most common surgical operation related to laryngology is tracheotomy (46 patients). Most of the patients treated in intensive care and hospitalized in palliative treatment centers are elderly patients and these patients require tracheotomy because of prolonged intubation [22]. Therefore, it is not surprising that tracheotomy surgery is high in geriatric patients.

The geriatric population is increasing day by day and takes up more space in our daily practice. In their study evaluating 131,700 patients who were consulted to the ENT clinic for the first time in 6 years, Creighton et al. [15] found that otorhinolaryngological complaints of patients belonging to different age groups vary. In this study, the rates of pediatric and geriatric patients were 14.3 and 14.9%, respectively. While the most common reason for consultancy in patients within the pediatric age group is rhinological disorders, in the geriatric age group, it is otological disorders [16]. Although pediatric ENT is a subspecialty in the ENT practice, no geriatric ENT subspecialty exists. To better evaluate diseases related to the geriatric population, we advise special training and seminars to be given in the future and geriatric ENT to be considered as a sub-branch, just as pediatric ENT.

The rate of geriatric population in the general population is increasing day by day both in the world and in our country. This study has shown that ENT consultations are mostly related to otological complaints in outpatients. Health problems of older people cause addiction and depression; otorhinolaryngological problems -especially otological disorders- make the patient's social interaction worse. Therefore, autological treatment and rehabilitation should be given importance. Although it does not seem high in proportion, vertigo in geriatric patients is of special importance. Vertigo can accompany other otological symptoms. It can be due to central and multiple peripherical causes and shows a significant correlation with mortality/morbidity.

Limitations

The most important limitation of our study is that it is based on cross-sectional retrospective file scanning. Unfortunately, this design prevents establishing the relationship between cause and effect. With these results, mortality cannot be predicted for geriatric patients hospitalized for surgical or long-term medical treatment. In addition, this is a single-center study. Therefore, this data may not represent our country. A multi-center study will be useful in obtaining more detailed information.

Conclusion

This study is the biggest series study in the ENT field in Turkey that conducts an epidemiological evaluation of geriatric patients. Epidemiological studies on the geriatric population will guide the planning of healthcare services to be provided to patients and the development of preventive healthcare services.

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