

Why Do Geriatric Patients Attend Otolaryngology Emergency Rooms?

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ABSTRACT: **Background:** With an aging population, health care of the elderly population is becoming increasingly important; however, the principles of geriatric medicine and issues of concern specific to geriatric otolaryngologic patients have not been widely applied.

Objectives: To qualitatively analyze otolaryngological (ENT) emergencies in a geriatric population in an ENT emergency department (ED).

Methods: In this retrospective study the medical records of patients ≥ 65 years of age who attended our ENT-ED between 3 pm and 8 am and who were observed and/or treated by the on-call otorhinolaryngologist at Sheba Medical Center in 2009 were reviewed for age, gender, main complaint, and preliminary diagnosis. Allergic reactions, balance disorders, epistaxis, head/facial trauma and swallowing-related complaints were considered true emergencies.

Results: The staff in the ENT-ED examined and treated 1–10 geriatric patients daily (mean 2.35). A total of 597 subjects met the study entry criteria (median age 75 years); 16.6% were ≥ 85 years old. There was approximately equal gender representation. More elderly patients presented to the ENT-ED on the weekends (37.9% of the total) compared to weekdays (62.1%). There were 393 patients (65.8%) with true emergencies, of which epistaxis, balance disorders and head and facial trauma were the most common diagnoses (20.1%, 15.75% and 13.7%, respectively), while 46.5% of all vestibulopathy cases involved benign paroxysmal positional vertigo.

Conclusions: More than 65% of visits of the elderly presenting to ENT-ED involve true emergencies. This growing population may benefit from the presence of geriatric specialists in emergency departments.

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trend can potentially affect health care in general and otolaryngology practice in particular [4]. In Israel, life expectancy at the age of 65 years is 17.1 years for males and 19.1 years for females. The proportion of elderly people is rising steadily and is expected to reach 12% of the total population in 2020 and 13% by 2025 [5]. In the United States as well, individuals aged 65 years and older are the fastest growing segment of the population. When compared to all other age groups, their utilization of medical resources is the greatest, their duration of hospital stay the longest, and their admission rate to the emergency department the highest. Overall, older people account for 15% to 25% of all ED visits [6-8]. They present with a higher level of emergency and more serious medical illness and are also more likely to be misdiagnosed and more frequently discharged with unrecognized and untreated health problems [9]. The present study was designed to qualitatively analyze otolaryngological emergencies in an elder population in one medical center's ENT-ED during one year.

PATIENTS AND METHODS

We conducted a hospital-based retrospective study that enrolled all patients aged ≥ 65 years who attended the ED between 3 pm and 8 am and who were referred to an otolaryngologist by the ED attending physician at Sheba Medical Center in 2009. The decision for ENT consultation is made by the primary physician at the ED (general surgeon or internist), or by the triage nurse in case the main complaint is a clear non-urgent otolaryngological problem. All decisions (e.g., neurologist vs. otolaryngologist) are based on the primary physician's clinical judgment. Demographic data, the main complaint(s), preliminary diagnosis, and the time of day or night of presentation to the ED were obtained from the patients' charts. Allergic reactions, balance disorders, epistaxis, head and facial trauma and swallowing-related complaints were considered "true" emergencies, meaning that a delay in medical assistance might cause co-morbidity or could be life threatening. The present study was approved by the Sheba Medical Center Institutional Review Board.

ED = emergency department
ENT = otolaryngology

Geriatric otolaryngology is a relatively new emerging medical subspecialty that developed in response to the rise in life expectancy in developed countries [1-3]. The total number of elderly people over 65 years old and the proportion of elderly people in the population are increasing. This demographic

STATISTICAL ANALYSIS

Bivariate hypotheses involving continuous variables were tested with a *t*-test for independent groups with normal distribution and the Mann-Whitney test for groups with abnormal distribution. Normality of the study data was tested with a one-sample Kolmogorov-Smirnov test to indicate the appropriateness of parametric testing. The chi-square test was used to determine whether the distribution of categorical variables differed across study groups. The Fisher exact test was applied when appropriate.

RESULTS

In 2009, a total of 18,063 patients aged 65 or older attended our institution's ED between 3 pm and 8 am, of whom 597 (3.3%) were examined by an ENT physician. There was an almost

equal gender representation (49.2% females). Every day 1–10 geriatric patients (mean 2.35) were treated and examined in our ENT-ED. Their median age was 75 years (range 65–106), 313 patients (52.4%) were ≥ 75 years old and 99 patients (16.6%) were ≥ 85 . There were more elderly patients attending the ENT-ED over the weekends (37.9% of the total intake) compared to weekdays.

A total of 393 patients (65.8%) had true emergencies, of which epistaxis, balance disorders and head and facial trauma were the most common diagnoses (20.1%, 15.75% and 13.7%, respectively). Benign paroxysmal positional vertigo was diagnosed in 46.5% of all vestibulopathy cases. Otologic symptoms were the presenting complaint in 13.57% of the cohort; 2% of the cases were due to sudden hearing loss and tinnitus, while the others were related to inflammatory or infectious ear diseases (8.04%) or cerumen impaction (1.68%).

Analysis of the main complaints according to gender showed no significant differences, although more males had peripheral facial palsy than females (2.7% vs. 1%, $P = 0.38$) [Figure 1]. Analysis according to age also showed no significant differences, although none of the subjects > 85 years old presented with sinonasal disorders or pharyngotonsillar pathologies. Balance disorders, head or facial trauma, epistaxis, and otologic problems comprised most of the diagnoses in all age groups [Figure 2].

Figure 1. Main emergency department diagnosis according to gender. NOS = not otherwise specified

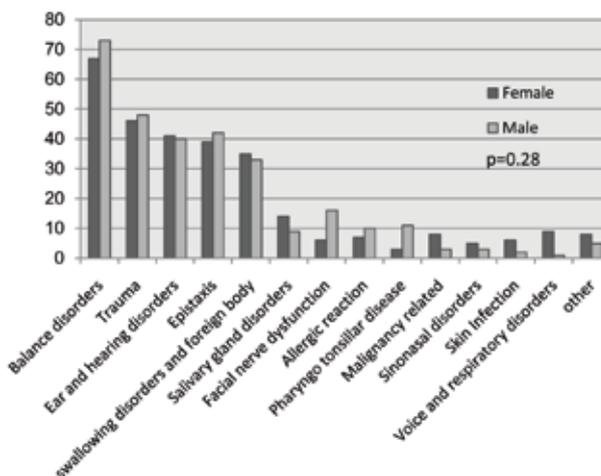
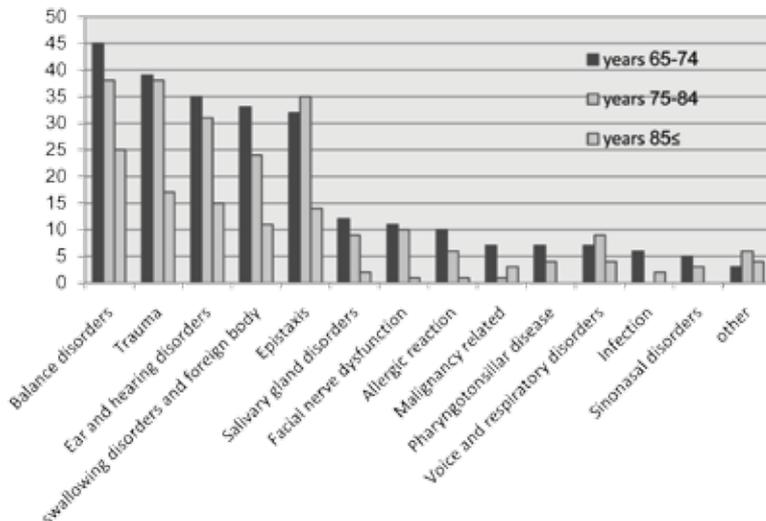


Figure 2. Main emergency department diagnosis according to age group



DISCUSSION

Increasing life expectancy dramatically affects many areas of medicine, and otolaryngology is no exception. Elderly patients attending an ED for a variety of medical complaints need special attention due to issues that are unique to this population, such as comorbidities and social and demographic backgrounds. Specifically, they are at increased risk for ED return visits, hospitalization, and death [9]. Furthermore, outcomes may be related in part to issues such as functional status, comorbidity score, age, social supports, polypharmacy, compliance, cognitive impairment, and depression [9-12]. In contrast to other studies which showed 10–40% of these cases to be true emergencies, our results showed that 65.8% of the ENT-ED visits by the elderly were medically justified true emergencies.

Balance disorders were the leading symptom in our cohort, followed by head and facial trauma, epistaxis and otologic complaints. The prevalence of disequilibrium as the reason for older people seeking help in an ED may be explained by a fear of falling or as a sign of some life-threatening illness, such as cerebrovascular disease. Although peripheral vertigo can usually be distinguished from a central cause, this distinction is not always clear when dealing with elderly patients in whom a cerebellar infarct, for example, might be presented as a peripheral vertigo [13-15]. We assume that the ED primary physician often requests an ENT consultation due to this misleading

Table 1. Presenting symptoms and emergency department diagnoses

Chief symptom and related diagnosis	No. of cases	%
	N=597	
Balance disorders	140	23.45
Vestibulopathy NOS	61	10.22
Benign paroxysmal positional vertigo	53	8.88
Dizziness	26	4.36
Trauma	94	15.75
Nasal bone fracture	55	9.21
Head/facial trauma	35	5.86
Tympanic membrane perforation	4	0.67
Ear and hearing disorders	81	13.57
Otitis externa	31	5.19
Acute otitis media	14	2.35
Foreign body in ear	11	1.84
Cerumen impaction	10	1.68
Sudden hearing loss	7	1.17
Tinnitus	5	0.84
Chronic otitis media	3	0.5
Epistaxis	81	13.57
Swallowing disorders and foreign body	68	11.39
Foreign body	43	7.2
Dysphagia/odynophagia NOS	23	3.85
Caustic ingestion	1	0.17
Food bolus	1	0.17
Salivary gland disorders	23	3.85
Parotitis	20	3.35
Submandibular gland sialoadenitis	3	0.5
Facial nerve dysfunction	22	3.69
Voice and respiratory disorders	20	3.35
Tracheostomy complication	6	1.01
Vocal cord palsy	5	0.84
Laryngitis chronic	3	0.5
Subglottic stenosis	3	0.5
Laryngitis acute	2	0.34
Tracheoesophageal fistula	1	0.17
Allergic reaction and angioedema	17	2.85
Pharyngotonsillar pathology	11	1.84
Skin/neck infection NOS	8	1.34
Sinonasal disorders	8	1.34
Acute sinusitis	7	1.17
Chronic sinusitis	1	0.17
Malignancy-related	11	1.84
Other	13	2.18

NOS = not otherwise specified

presentation, a fact that contributes to the large number of patients presenting for ENT consultation due to vestibulopathy. A close collaboration with a neurologist and the availability of advanced imaging facilities in the ED is crucial to prevent misdiagnosis. Whenever a peripheral vestibulopathy, such as BPPV, is diagnosed, it is essential that the ED physician be familiar with the primary treatment (e.g., the Epley maneuver), which can lead to a rapid improvement and prevent secondary injuries.

Timsit et al. [16] found that only 10% of all ENT consultations in the ED were real medical emergencies. In that study, the most frequent nasal sign leading to the emergency ENT consultation was epistaxis, the most frequent auditory condition was acute external/middle ear inflammation, and the most common pharyngeal condition was foreign body ingestion [16]. In contrast, true emergency cases accounted for 40% of 7930 adult subjects who attended an emergency ENT unit in Warsaw. The most common emergencies were traumatic injuries (12.8%), epistaxis (13.1%) and foreign bodies (5.1%). The most common non-emergent presentations were ear inflammation (21.3%), followed by upper respiratory tract infection (10.8%) and cerumen impaction (9%) [17]. It should be noted that the average age of the patients in that study was 42 years versus the 72.2 years in our series.

The widespread use of anticoagulant medications (e.g., warfarin, acetylsalicylic acid, low molecular weight heparin and clopidogrel) in the elderly population [18] – both as disease-prevention drugs and as therapeutic medications in accordance with accepted medical recommendations – creates difficulties when treating bleeding in elderly trauma patients. Adding essential hypertension and vasculopathies, which are often found in this population, or even minor injuries such as anterior epistaxis, can be a challenge.

Our data revealed that 11.3% of the cases were related to swallowing disorders and 7.2% to foreign body ingestion [Table 1]. The removal of a foreign body dislodged in the esophagus using rigid esophagoscopy in an elderly patient is a hazardous procedure due to the need for general anesthesia as well as to anatomic difficulties (e.g., limited neck extension). As such, we recommend that a flexible esophagoscope be available for the ED physician in order to minimize the possible complications.

CONCLUSIONS

Since more than 65% of visits by patients aged 65 and older to an ENT-ED are related to true emergencies, this population may benefit from a targeted approach. The complex interrelated acute medical and psychosocial issues of older patients call for greater knowledge in geriatric medicine that will enhance the care that emergency physicians provide to

BBBV = benign paroxysmal positional vertigo

this growing population. We are well aware that some of the older patients may attend the ED for reasons that are not solely medical, such as fear of complications and lack of close family/caregiver care and support. The presence of a geriatric specialist in an emergency department might be of considerable benefit in this setting.

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Capsule

The limits in infant immunity

Natural killer (NK) cells control viral infections swiftly, releasing lytic factors that destroy infected cells shortly after infection. But infants and neonates are susceptible to viral infections in part because they lack the mature form of these powerful immune cells. Marcoe and co-researchers have discovered a factor that limits this arsenal early in life. The authors found that during mouse infancy, transforming growth factor- β (TGF β) blocks a terminal step in NK cell maturation. TGF β blocked the generation of mature NK cells from mouse stem cell precursors in vitro. In mice that were genetically engineered to lack a functional receptor for TGF β in NK cells, the number of mature NK cells present at

10 days of age was equivalent to that in 56 day old normal mice. In addition to faster maturation, infant mice lacking NK cell TGF β receptor signaling were resistant to viral infection. Analysis of mRNA points to genes that control the cell division cycle – p21 and Cdc7 – as targets of TGF β , arresting the production of NK cells as they mature. The expression of transcription factors that push NK cells through the final stage of maturation is also limited by TGF β . The findings raise the possibility that inactivating TGF β signaling could prevent the deficit of NK cells during infancy.

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The believer is happy, the doubter is wise

Hungarian proverb