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# Epidemiologic variation in pediatric ear, nose, and throat diseases: pediatric emergency admissions in two different regions of Turkey

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## Abstract:

**Introduction:** Acute pediatric ear, nose, and throat (ENT) diseases are common, but the causes may vary in different regions. Early diagnosis and suitable management modalities can decrease morbidity and/or mortality rates. **Material and Methods:** In two different university hospitals in Turkey, pediatric ENT diseases were evaluated retrospectively and recorded. We evaluated 5473 patients at Eskisehir Osmangazi University, and 1954 patients at Malatya Inonu University, during the 3-year study period. **Results:** The study population included 3013 males (56.5%) and 2460 females (43.5%) from Eskisehir Osmangazi University and 852 males (43.6%) and 1102 females (56.4%) from Inonu University. The age range of all patients was from 1 month to 17 years; mean age was 6.3 years for patients from Eskisehir Osmangazi and 9.6 years for patients from Inonu. At Eskisehir Osmangazi, the most common causes of admittance were acute tonsillitis (2314 cases, 42.3%), upper respiratory tract infections (1763, 32.22%), acute otitis media (453, 8.28%), foreign bodies (106, 1.94%), and epistaxis (141, 2.58%). Other less common causes included maxillofacial traumas (2.74%), croup (2.76%), epiglottitis (0.09%), retropharyngeal abscess (0.03%), otitis externa (2.16%) and acute sinusitis (4.9%). At Inonu, 930 (47.6%) patients had acute otitis media, 272 (13.9%) patients had epistaxis, 265 (13.6%) patients had acute tonsillitis, and 233 (11.9%) patients had upper respiratory tract infection. Other causes included foreign bodies (10.6%), dysphagia (0.8%), and otitis externa (1.6%). Infectious diseases were more common in patients aged 1-6 months at Eskisehir and in patients aged 1 month to 2 years at Inonu. **Conclusion:** Pediatric emergency physicians successfully treated more than 90% of the ENT patients in our study population. Training for emergency room management of pediatric ENT diseases is important to prevent unnecessary hospitalizations. The etiology of pediatric emergency cases differs greatly between regions, even in the same country.

**Keywords:** Pediatric emergency, ENT diseases, emergency

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## Introduction

Otorhinolaryngological head and neck disorders are common in all communities, and thus ear, nose, and throat (ENT) patients are common in

emergency departments. Early diagnosis and early phase treatment of ENT diseases decreases morbidity and/or mortality rates.

**Table 1. The cases of Malatya**

	Case (N)	Percent(%)
UTI	233	11,9
Epistaxis	272	13,9
Foreign body	207	10,6
Acute Tonsillitis	265	13,6
Acute Otitis Media	930	47,6
Acute Otitis Externa	37	1,6
Disfagia	10	0,8
Total	1954	100

**Table 2. The cases of Eskisehir**

	Case (N)	Percent (%)
UTI	1763	32,22
Epistaxis	141	2,58
Maxillofacial trauma	150	2,74
Foreign body	106	1,94
Croup	151	2,76
Epiglottit	5	0,09
Acute Tonsillitis	2314	42,3
Retropharyngeal abscess	2	0,03
Acute Otitis Media	453	8,28
Acute Otitis Externa	118	2,16
Acute Sinusitis	270	4,9
Total	5473	100

Pediatric emergency patients are an important group of patients that need early intervention and accurate diagnoses. For this reason, emergency departments have begun preparing specific guidelines and adopting preventative measures that focus on early and immediate treatment. Pediatric patients constitute an important part of ENT emergencies. Nearly one-third of ENT emergencies are pediatric patients (1). In this patient population, the etiology and level of access to ENT emergency services can vary from country to country or even city to city, based on conditions such as climate, altitude, sociocultural/socioeconomic differences, and/or referrals from primary care clinics.

In this study, we analyzed the reasons for presentation and demographic characteristics of pediatric ENT emergency patients in two different cities, Eskisehir and Malatya, which are located in different areas of the Anatolia region

of Turkey. We compared the data of these two different regions.

## Material and Methods

We included pediatric patients who were referred to Eskisehir Osmangazi University Hospital or Malatya Inonu University Hospital with ENT emergencies during a 3-year period from January 1, 2008, until December 31, 2010. We performed a retrospective analysis of 5473 patients at Eskisehir Osmangazi University and 1954 cases at Inonu University. All were pediatric patients under 17 years old. Records of the patients were organized according to age, sex, season, and diagnosis upon admission at each hospital and then compared.

## Results

The study population included 3013 males (56.5%) and 2460 females (43.5%) from Eskisehir Osmangazi University and 852 males (43.6%) and 1102 females (56.4%) from Inonu University. The age range of all patients was from 1 month to 17 years; mean age was 6.3 years for patients from Eskisehir Osmangazi and 9.6 years for patients from Inonu.

The most common causes of emergency admissions at Osmangazi University were acute tonsillitis (2314 cases, 42.3%), upper respiratory tract infections (URTI; 1763, 32.22%), acute otitis media (453, 8.28%), foreign bodies (in the esophagus, ear canal, and nose; 106, 1.94%), and epistaxis (141, 2.58%). Other causes included maxillofacial traumas (2.74%), croup (2.76%), epiglottitis (0.09%), retropharyngeal abscess (0.03%), otitis externa (2.16%), and acute sinusitis (4.9%). (Table 1,2 Figure 1-4)The most common causes of emergency admissions at Inonu University were acute otitis media (930, 47.6%), epistaxis (272, 13.9%), acute tonsillitis (265, 13.6%), and URTI (233, 11.9%). Other causes included foreign bodies (in the esophagus, ear, and nose; 10.6%), dysphagia (0.8%), and otitis externa (1.6%).Otitis media, tonsillitis, URTI infections, croup, and epiglottitis occurred in all age groups, but they were more common in patients of 1 month to 6

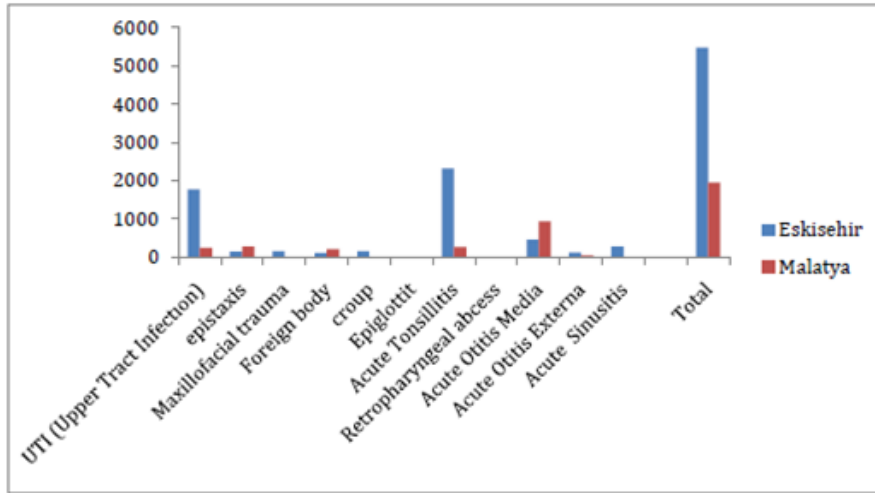


Figure 1. The comparative distribution of all patients in two cities

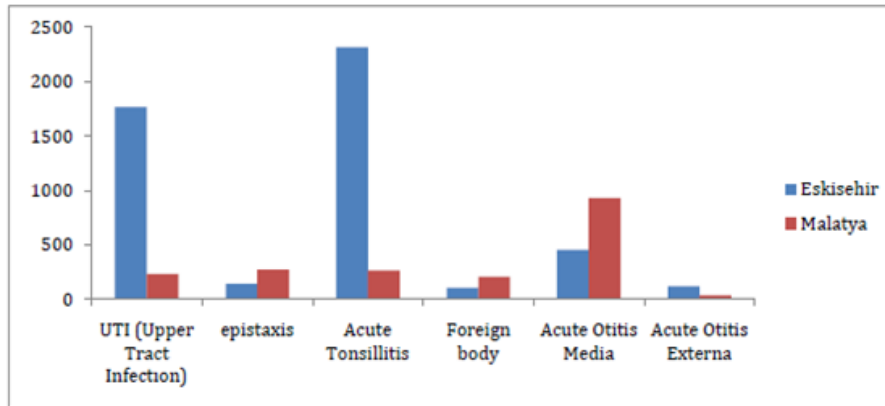


Figure 2. The comparative distribution of common causes of all cases in two cities

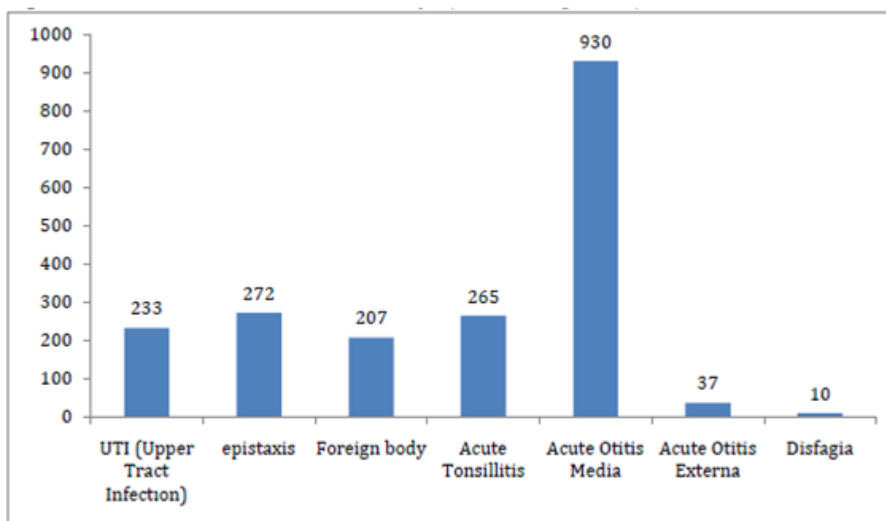


Figure 3. The distribution of cases in Malatya (Total 1954 patients)

years of age of either gender (85.6%) at Eskisehir Osmangazi University and 1 month to 9 years of age of either gender (75.8%) at Inonu University (Figure 5).

**Discussion**

ENT disorders are among the most common presentations at Eskisehir Osmangazi University

Hospital and Malatya Inonu University Hospital, which are located in two different geographical regions in the Anatolia area of Turkey and are the only tertiary units in their respective regions. The most common disorder was acute tonsillitis at Eskisehir Osmangazi University Hospital and otitis media at Malatya Inonu University Hospital.

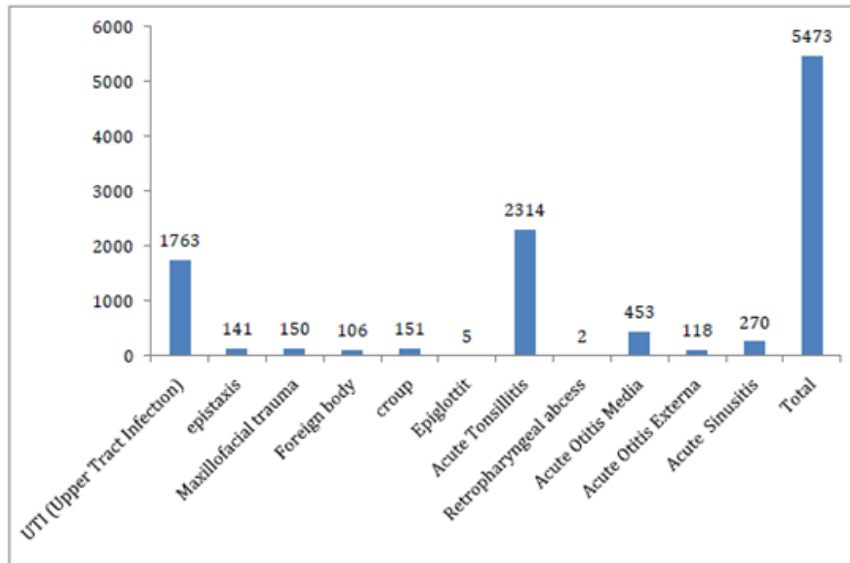


Figure 4. The distribution of cases in Eskisehir (Total 5473 patients)

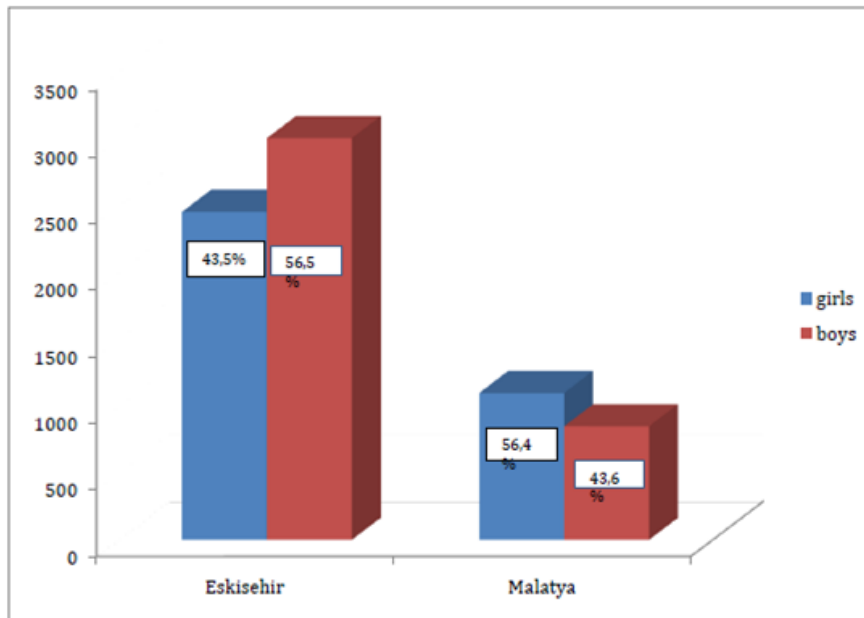


Figure 5. The distribution of boys and girls in two cities

Kitchner et al. (2) reported that foreign bodies in the esophagus, epistaxis, throat infections, and stridor are the most common causes of ENT emergencies. In contrast, Timsit et al. (3) found

that epistaxis, peritonsillar abscess, and sudden hearing loss were the most common causes of emergency room visits, whereas Perez et al. (4) reported that epistaxis, otitis media, and otitis

externa were the most common causes. The ENT pathologies most frequently documented in the present study (acute tonsillitis, upper respiratory tract infections, otitis media, and epistaxis) are similar to the results of Perez et al. (4) and another study (5). In the present study, the most common causes of ENT emergencies were similar but not identical between the two cities, being acute tonsillitis (42.3%), upper tract infections (32.22%), and acute otitis media (8.28%) at Eskisehir University Hospital, and acute otitis media (47.6%), epistaxis (13.9%), and acute tonsillitis (13.6%) at Malatya University Hospital. However, there were also

large differences, especially in three diagnoses: foreign bodies (10.6% of patients at Malatya vs. 1.94% of patients at Eskisehir), epistaxis (13.9% vs. 2.58%), and URTI (11.9% vs. 32.22%). These differences may reflect variation in the socioeconomic and cultural environment between these two cities and geographical regions. In Eskisehir, the socioeconomic and sociocultural environment is more advanced than in Malatya.

Foreign bodies (in the esophagus, ear, and nose) were diagnosed and managed in 207 (10.6%) patients in Malatya and 106 (1.94%) patients in Eskisehir were. Of these, 129 (62.3%) in Malatya and 74 (69.8%) in Eskisehir were male, and most were under 3 years of age. In this age group, children are more active and exploratory. The higher incidence for males is consistent with previous studies (6,7). Lopez et al. (8) reported that the most common cause of admission was foreign bodies in a retrospective epidemiological study at a tertiary center. The extremely different ratios of foreign body diagnoses at Eskisehir (1.94%) and Malatya (10.6%) may also be associated with variation in socioeconomic and sociocultural environments. Indeed, a previous study found that this diagnosis was more common in areas of lower socioeconomic status (9). Eskisehir is one of the biggest cities in Turkey, whereas Malatya is smaller. Moreover, the literacy rate is much higher in Eskisehir than in Malatya.

Epistaxis is one the most common diagnoses in emergency departments. The most important cause of epistaxis is trauma, especially that caused by nose picking. Moreover, there are several predisposing factors to epistaxis such as cold weather, dry climates, septal deviations and perforations, foreign bodies, nasal mucosal irritation, systemic causes, and bleeding disorders (10, 11). In the present study, epistaxis was seen in 13.9% of patients at Malatya and in 2.58% of patients at Eskisehir. These patients were managed using different protocols at each institution. A higher rate of epistaxis may be associated with the drier weather conditions and/or lack of education about nose picking in Malatya.

URTIs were found in 11.9 % of patients in Malatya, and in 32.2% of patients in Eskisehir. This difference may be associated with the education available to families with better capabilities in the care and early recognition of severe disease than in families who lack this education.

In general, infectious diseases were the leading reason for the referral of pediatric patients to emergency units in both cities, consistent with previous studies (5).

Wheatley et al. (12) reported that 75% of patients who were referred for ENT consultation at emergency departments could have waited until the next day, and Gallo et al. (13) found that 87.5% of emergencies accepted at an open-access ENT emergency clinic were not actual emergencies. Both of these reports exhibit the setbacks that open-access ENT emergency clinics face. In the present study, we did not classify the appropriateness of emergency consultations, because in most of the cases both a general physician and a pediatric emergency physician saw the patient before referral. The ENT emergency density can be reduced using preventative measures, such as training primary health care providers about the proper diagnosis and management of the most common otorhinolaryngological head and neck disorders (14).



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