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Epidemiology of ENT emergencies

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Abstract. *Epidemiology of ENT emergencies*. *Objective*: To give an overview of ear, nose, and throat (ENT) pathologies encountered in the emergency room (ER).
Methods: Retrospective analysis of 1296 files of patients visiting the ER between January 2008 and December 2012. Diagnosis, treatment, hospitalisation, referral, and demographic parameters were evaluated.
Results: Epistaxis is the most frequent ENT condition seen in the ER. One third of epistaxis patients are on anticoagulant therapy. The second most frequent conditions observed were infections of the pharynx and tonsils. Nasal fractures and vertigo were also frequently observed.
Conclusion: Epistaxis and its treatment were the most frequent ENT diagnosis and therapy seen in the ER. Infections are the main cause of hospitalisation. Referral to other disciplines and revisits seldom occurred.

Introduction

An overview of ear, nose, and throat (ENT) pathologies presenting at the emergency department is rarely reported in the literature. The goal of this study is to present the work of our Ear, Nose and Throat and Head and Neck Surgery department in the emergency room (ER). Our hospital is a secondary care centre that includes all disciplines. The hospital is a reference centre for different specialties and has 811 beds. In the past five years, an average of 42,500 patients per year have visited the ER, of whom 574 (5 year average) required a consultation with an ENT physician.

Roughly, ENT patients consist of two groups; those referred to the ENT doctor by a generalist, and those without a referral for which an ENT specialist's advice is requested by the emergency physician. Children with ENT conditions but not referred by a generalist are generally seen by paediatricians. Trauma to the face is referred to stomatologists and plastic surgeons with the exception of trauma to the ear and/or nose.

Patients and methods

We retrospectively analysed the data of 1296 patients visiting the emergency department of our hospital. In total, there were 1320 patient contacts during the period from January 2008 to December 2012. We documented the demographic characteristics (age and gender) of our patients. Diagnosis and treatments were analysed. We also evaluated the percentage of patients who required hospitalisation and which cases required referral. Only half of the patients' data could be evaluated as only electronic health records were included.

Results

Each year, the most frequent diagnosis was epistaxis followed by infectious conditions such as angina and pharyngitis. Vertigo was another common finding in our patient population. An overview of the most frequent diagnoses and treatments during each year is shown in Table 1. Trauma to the nose was in the top five. Anterior nasal bleeding was two to three times more frequent than a posterior one. This was also reflected in the therapy, which was mostly cauterisation with silver nitrate or, in more severe cases, unipolar coagulation. In case of vigorous bleeding without a clear focus, nasal packing with merocels was applied. Balloon tamponade, embolization, or surgical exploration was performed in only a small number of cases. Thirty percent of these patients were on some form of anticoagulation therapy (mostly vitamin K inhibitors, acetylsalicylic acid, and/or clopidogrel; some were on factor Xa inhibitors or low molecular weight heparins).

Table 1

Diagnoses and treatments by year

		Diagnoses	Percentage (%)	Treatments
2008	1	Epistaxis	22.3	AgNO3
	2	Angina	7.0	Nasal packing
	3	Pharyngitis	5.1	Antibiotics p.o.
	4	Nose #	5.1	
	5	Vertigo	4.3	
2009	1	Epistaxis	26.7	AgNO3
	2	Nose #	7.0	Nasal packing
	3	Normal	6.0	Ear drops
	4	Otitis externa	5.6	
	5	Pharyngitis	4.9	
2010	1	Epistaxis	27.1	AgNO3
	2	Vertigo	7.1	Nasal packing
	3	Nose #	5.8	Antibiotics i.v.
	4	Angina	5.4	
	5	Pharyngitis	4.5	
2011	1	Epistaxis	23.6	AgNO3
	2	Vertigo	6.9	Nasal packing
	3	Otitis externa	3.8	Corticoids p.o.
	4	Trauma nose, no #	3.8	
	5	Nose #	3.5	
2012	1	Epistaxis	27.9	AgNO3
	2	Vertigo	8.0	Nasal packing
	3	Angina	7.6	Vestibular training
	4	Nose #	6.0	
	5	Otitis externa	2.8	

#: fracture, p.o.: per os, i.v.: intravenous, AgNO3: silver nitrate caustic.

Every year, the hospitalisation rate was about 8% (mean ± standard deviation: 8.25 ± 1.6%). The reasons for hospitalisation were diverse, but in most cases an infectious condition was the reason for admission. Angina (31.5%) and peritonsillar abscess (22.5%) were the two most frequent reasons for a hospital stay. An overview of the conditions leading to admission can be seen in Figure 1.

Postoperative problems were not frequently encountered, and included postoperative pain, bleeding, hypocalcaemia after thyroid surgery, and post-operative nausea and vomiting. Referrals to another speciality were rare and included the departments of neurology (vertigo and headaches), gastroenterology (ingested foreign bodies), internal medicine, or cardiology (hypertension and anticoagulant therapy in epistaxis patients), stomatology (tooth problems), interventional radiology (embolization of severe nasal bleedings), and paediatrics (joint follow-up of children who were hospitalised). Occasionally, patients were referred to psychiatry (tinnitus) and oncology. Demographic parameters are shown in Figures 2 and 3. A majority of our patients were males (56.9%). Patients were of all ages. Specific age distributions according to diagnosis were observed. Otitis media, bleeding after tonsillectomy, foreign objects in the nose, and postoperative complications were most frequently represented in the youngest patient groups, whereas vertigo, epistaxis, and tracheostomy complications were observed in the older age groups. As for time of day, 70% visited the ER during the day (Figure 4), whereas 30% visited at night, mostly before midnight. The distribution was similar during the week (70%) and on the weekend (30%).

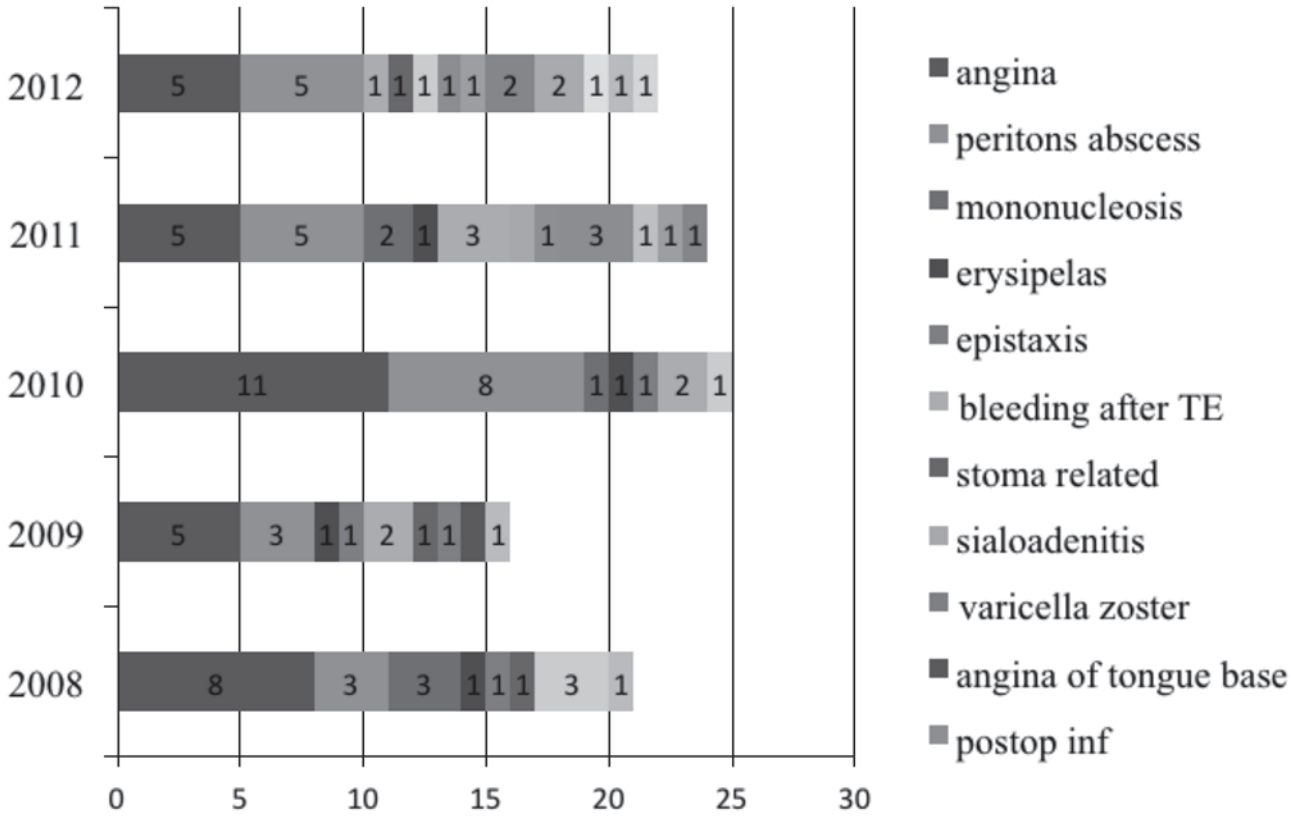
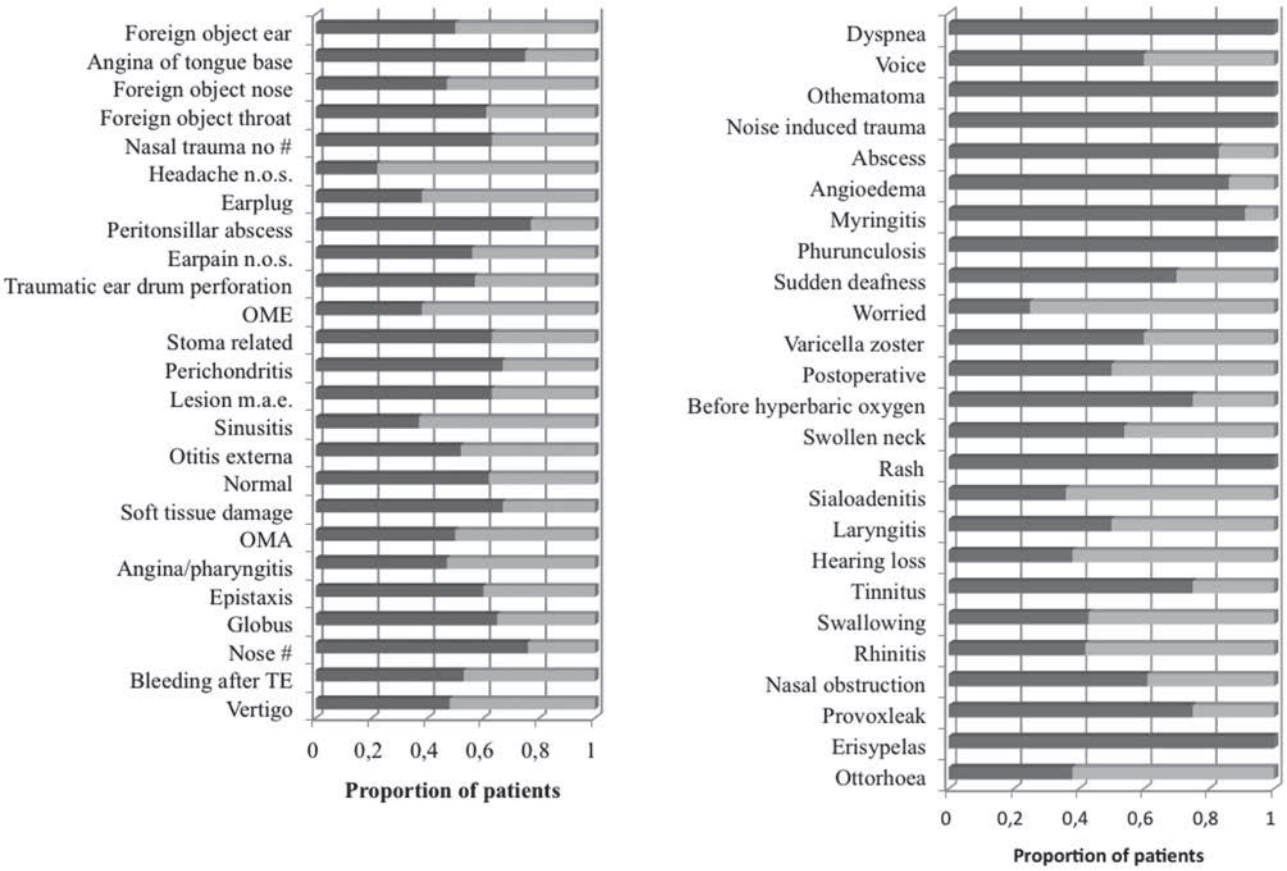


Figure 1
Reasons for hospitalisation by year: x-axis number of patients, y-axis: year

Discussion

Extensive reviews of ENT emergencies have been sporadically described. In a recent report, van Bremen *et al*.[1] gave a brief overview of the most frequent ENT emergencies at a tertiary referral centre, but only during a 3-month period because the focus of their article was the validation of the Manchester triage system for ENT pathologies.

A 5-year retrospective analysis of our department at a large secondary centre provides a spectrum of pathologies. Epistaxis was the most frequent emergency in all studies. Our top ten diagnoses are comparable to those reported in a large Spanish study by Pino Rivero *et al*.,[2] but remarkably, the finding of epistaxis was twice as frequent compared with this report. In both studies, epistaxis accounted for about 10% of the cases seen in the ER. Having daily slots available for (semi-)urgent cases, people with acute problems tend to come via the regular out-patient visits. With epistaxis, however, people are more alarmed, judge it as more urgent, and do not call ahead to make an appointment, but rather come to the ER instead. Because the ER in our hospital is managed by anaesthesiologists, pathologies requiring only minimal intervention can be dealt with without an ENT physician. On the contrary, more complex problems like epistaxis require specialised interventions. This selection might be in contrast with the strategy at tertiary centres, where every specific problem is referred to the ENT resident and supervised by an ENT specialist. In the series by van Bremen, people with other less urgent problems (e.g. earplugs, hearing loss, etc) visit the ER because of possible long waiting lists for consultations and limited other options to receive treatment. This scenario may be more common at tertiary referral centres with full out-patient schemes for major pathologies, leaving less room for simpler problems. On the other hand, by dealing with tertiary pathologic conditions such as oncologic problems, they also tend to attract more severe ER conditions, e.g. obstructive airway, tracheostomy problems, post-laryngectomy fistulae, etc, that are usually not often seen at other hospitals. In our opinion, our easily accessible outpatient clinic accounts for less trivial pathologies in the ER, also favouring the incidence of more



#: fracture, n.o.s.: not otherwise specified, OME: serous otitis media, m.a.e.: external ear canal, OMA: acute otitis media.

Figure 2
Patient demographic parameters and the distribution of males and females by diagnosis. Dark shades represent males and light shades represent females.

alarming pathologies (epistaxis, vertigo). The triage protocol at our centre, as described in the introduction, also has some differences. Children are first seen and treated by paediatricians, limiting the number of children presenting with otitis media.

About one third of the epistaxis patients are on anticoagulation therapy, which not only increases the risk of nose bleeds, but also makes the episodes more severe. Especially patients on vitamin K inhibitors, usually prescribed for atrial fibrillation, are at risk due to the constant need to balance the international normalized ratio, which is easily influenced by simultaneous intake of other medications, alcohol, acute illness, or hepatic disease.[3] It also implies more drastic treatments for these patients, such as nasal packing and, in selected cases, embolizations. The intake of acetylsalicylic acid also promotes epistaxis, and a similar risk rate is reported for clopidogrel.[4,5]

Because the majority of surgical ENT procedures can be performed on an ambulatory basis,[6,7] another important function of the ER is the readmission of patients with postoperative problems. Due to the short hospital stays, patients experiencing complications within the first few days after surgery require urgent examinations by the ENT physician for which the ER department is the most accessible point.

Patients rarely visited the emergency department more than once in a 10-day period for the same pathology. Only 24 of the 1296 patients presented twice. A third visit never occurred. The most frequent pathologies for revisiting were epistaxis and otitis externa, which was also confirmed by Fishpool *et al*.[8] The problem solving success within one visit is mostly due to the adequate therapy plans that were implemented, good patient counselling, and the ability to schedule a follow-up visit within 24 to 48 hours in the out-patient clinic.

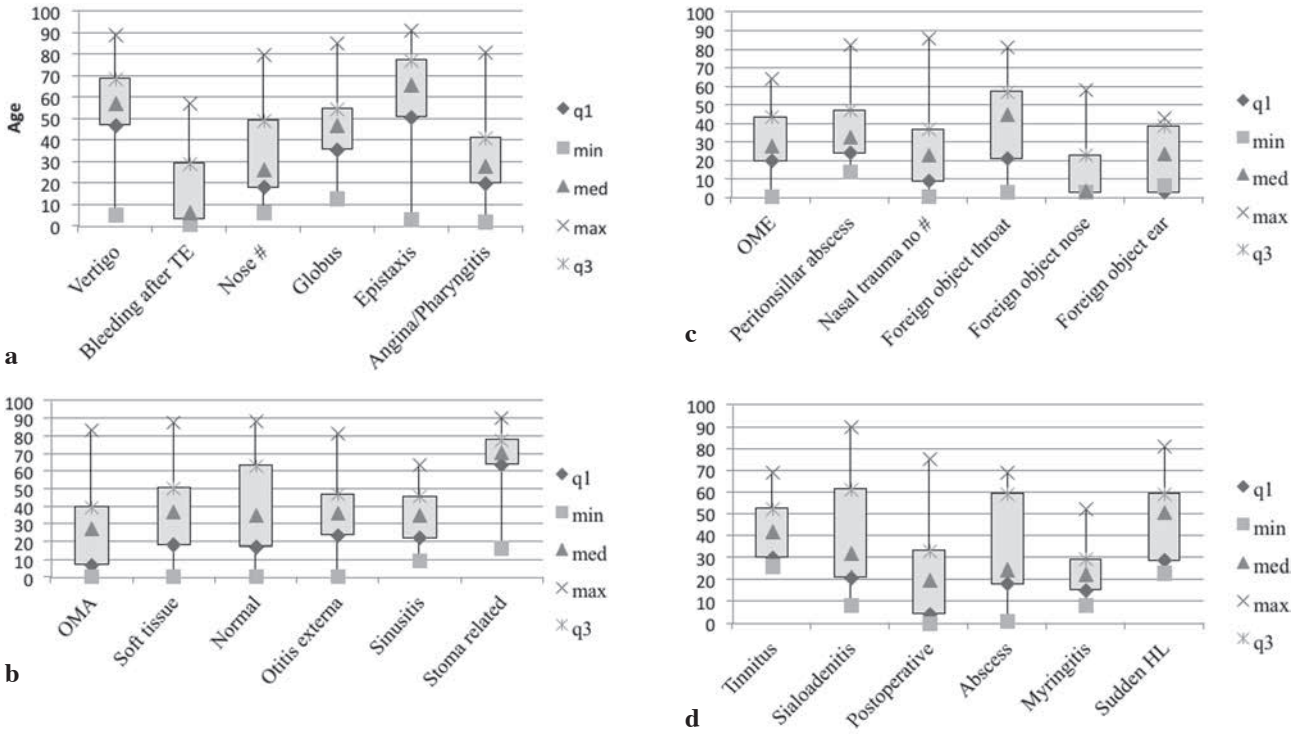


Figure 3
Boxplots showing age distribution for the most important diagnoses. Min: minimum value, q1: first quartile, med: median, q3: third quartile, max: maximum value.

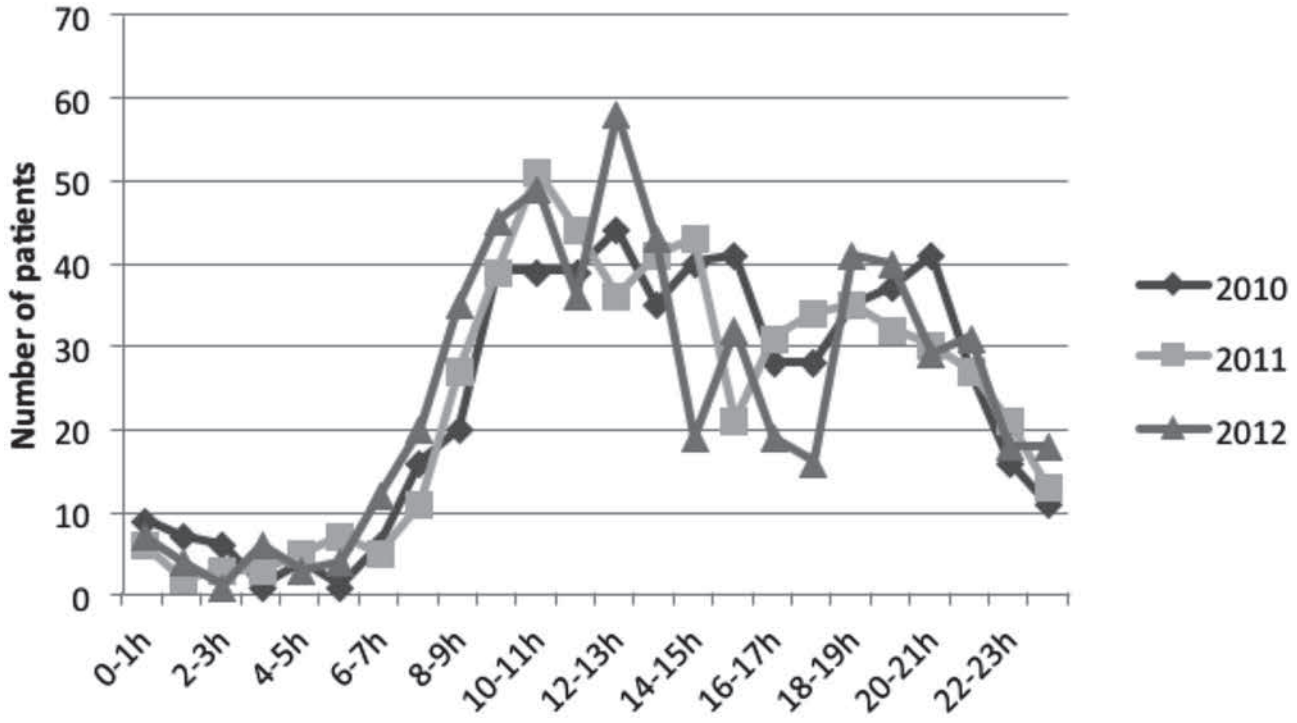


Figure 4
Time of admission to the ER for patients with an ENT condition during 2010 to 2012

Admission to the hospital was necessary in only 8.25%. The most frequent reasons for hospitalisation were infectious conditions necessitating intravenous treatment not only for improved drug delivery, but sometimes because of problems with swallowing due to an extremely sore throat or extensive swelling of the neck. Other pathologies occasionally involving patient admission were nasal bleeding, vertigo, and sudden deafness. Nasal packing for epistaxis was usually not a reason for hospital admission[9] unless a balloon tamponade was performed, patients were hemodynamically unstable, or had a severe concomitant disease. Referral to other disciplines was necessary in fewer than 3% of admissions and mainly concerned neurology, pneumology, and stomatology because brain, lungs, and teeth are in close proximity to the ears, nose, and throat. Septic dissemination towards the brain or a compromised airway can be severe life threatening conditions, which fortunately are rare, but the latter can enhance the risk for non-recognition.[10]

The slightly higher prevalence of male (56%) compared to female patients can be explained by more frequent trauma to the nose and ears in a young male population because this group is more active in sports and more often involved in traffic accidents. Another important factor is that cardiovascular diseases involving the use of anticoagulation therapy occur more frequently in men, putting them at higher risk of developing epistaxis.

During the past decade the British literature, has paid more attention to ENT emergencies because they occur frequently, but are unfamiliar to a large number of doctors. Evaluating the knowledge and skills of those who are responsible for first line interventions showed that there is a need for more ENT teaching in the undergraduate curricula.[11,12]

Conclusion

Epistaxis is the most frequently occurring ENT problem in the ER. Coagulation or nasal packing was the most frequently administered therapy for this condition. Infectious conditions, including angina, pharyngitis, and otitis, were seen less often, but were the most frequent reasons for hospitalisation. Most problems are adequately dealt with by an ENT doctor, and there was a low referral rate to other medical disciplines and second visits to the ER were infrequent.

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