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ORIGINAL ARTICLE

# Epidemiological study of emergency services at a tertiary care center

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**KEYWORDS**
ENT emergencies;
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**Abstract**
*Introduction and objective:* The number of patients attended in emergency rooms has gone up considerably in recent years. Immigration and an increase in life-expectancy have probably influenced this increase. A lot of patients come looking for immediate attention in order to avoid long waiting lists for specialist care at primary health-care facilities. The main objective is to know what pathologies in ear, nose and throat require urgent medical assistance.
*Material and methods:* This is a retrospective descriptive study of 8872 patients seen in a year. The variables analyzed were age, gender, day of the week, time of arrival, final result. In addition, a category distribution was made, depending on the pathology suffered: otological, rhinological, pharyngeal, laryngeal, cervical, and others.
*Results:* The daily mean was about 25 patients per day. There were no differences in distribution by gender. Monday was the day of the week when more patients were seen. Otological pathologies represented the most frequent reason for attending (32%), followed by pharyngeal emergencies. However, epistaxis (9.2%) was the most common entity. The final outcome for about 85% of the patients was discharge to home on the same day.
*Conclusions:* The rising demand for emergency attention in hospitals must be meticulously analyzed because it might become even worse, taking epidemiological trends into account. Different foci and new policies regarding emergency centres should be proposed.

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**PALABRAS CLAVE**
Urgencias otorrinolaringológicas;
Epistaxis;
Otitis externa

**Estudio epidemiológico de las urgencias en un hospital de tercer nivel**

**Resumen**
*Introducción y objetivo:* La actividad asistencial en urgencias ha crecido de forma considerable en los últimos años. Probablemente, la inmigración y un incremento de la esperanza de vida han influido en este crecimiento. Muchos pacientes acuden buscando atención inmediata con tal de evitar listas de espera de especialidad en los centros de salud básicos. El principal objetivo es saber qué enfermedades en otorrinolaringología requieren asistencia médica urgente.
*Material y métodos:* Es un estudio retrospectivo y descriptivo de 8.872 pacientes visitados en un año. Se analizaron algunas variables: edad, sexo, día de la semana, hora de llegada, destino final. Además, se hizo una distribución por categorías, dependiendo de la enfermedad presentada: otológica, rinológica, de faringe, laringe, cervical y otros.
*Resultados:* La media diaria fue de alrededor de 25 pacientes por día. No hubo diferencias en cuanto al sexo. El lunes fue el día de la semana en el que se visitó a más pacientes. La enfermedad de oído fue la más atendida (32%), seguida por la de faringe. De todas formas, la epistaxis (9,2%) fue la entidad más común. El destino final en alrededor del 85% fue el alta domiciliaria el mismo día.
*Conclusiones:* El aumento de demanda de la atención urgente en los hospitales debe analizarse de forma concienzuda porque puede ser aún peor, teniendo en cuenta las tendencias epidemiológicas. Deben proponerse diferentes focos y nuevas políticas en cuanto a las urgencias.

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## Introduction

We present a descriptive study of emergency cases treated at our otolaryngology department of a specialist reference hospital over 12 months. There are few studies in the literature which have described this activity in our environment, in which there are similarities and differences in various aspects.

In recent years, the workload in the emergency department has increased, but, in turn, there has also been a more than likely relative increase in diseases not considered urgent, ie, which did not require immediate action.

The route by which patients often arrive is by their own initiative, prompted by the wish to avoid waiting lists for specialities through the out-patient clinics, or else referred directly from their basic health-care area, but for a non-urgent otolaryngology disease.

Another consideration is the fact that in our hospital the referring doctor is usually a junior resident or a first-year GP, which means that on many occasions our specialists on duty are asked to treat diseases not corresponding to the otorhinolaryngology area.

With the growth in population, particularly as a result of immigration, ER cases dealt with at large hospitals are expected to continue to increase on a global scale over the years to come.

## Material and methods

This was a descriptive, observational, and retrospective study, lasting from July 1, 2003 to July 1, 2004 (a total of 12 months).

All patients visiting our ER otolaryngology department were logged on a register with their corresponding personal details (name, age, gender, case history number, and type of financing) as well as arrival time, diagnosis, and procedure.

The variables studied were: reason for consultation, time of arrival at the ER department, month and day of week, diagnosis, and admission to the hospital ward.

We used the Microsoft® Access programme to create the database and the statistical analysis was carried out using the SPSS 11.3 statistical package.

## Results

A total of 8872 emergencies were seen in the year, an average of 740.33 emergencies per month and 24.33 per day.

With regard to gender, almost no differences were seen: 4525 men (51%) and 4359 women (49%).

As for age distribution, we observed an average age of 43.98 years and a median of 41 years, with a standard deviation of 18.88; the maximum value was 103 and the minimum 2 years (although our hospital only accepts patients over 16 years, sometimes we have to attend otorhinolaryngological emergencies from the mother and child area).

There were no clear differences by months, although there was a larger number of patients in the months of July and August (10.2% and 11.7%), which more than doubled those seen in January (4.2%).

By days of the week, the day with the highest number of emergencies was Monday (15.81% of the total), but with little difference with regard to Tuesday, Wednesday,

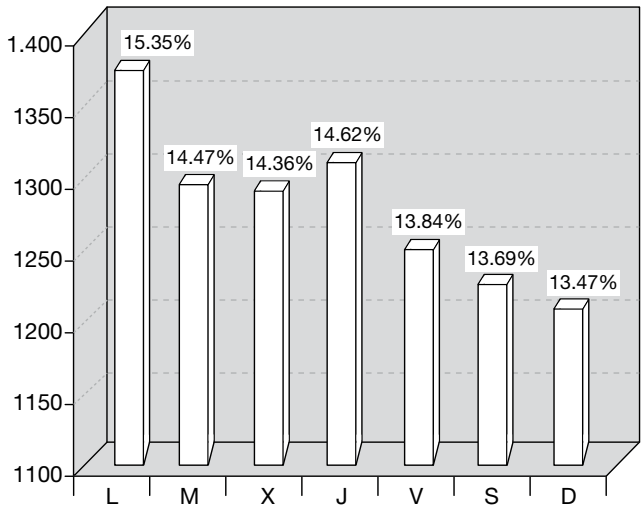


**Figure 1** Distribution of emergencies seen by day of week. D indicates Sunday; J, Thursday; L, Monday; M, Tuesday; S, Saturday; V, Friday; X, Wednesday.

**Table 1** Comparison of patients referred from the emergency room versus total patients and surgical interventions. Period from July 1, 2003 to July 1, 2004

| | | |
|---|---|---|
| Beds in department | 21 | |
| Admissions | 1560 | |
| Admissions from emergency room | 637 | 40.8% |
| Surgical interventions | 923 | 59.16% |
| Total emergencies | 8872 | |

**Table 2** Diseases by categories

| | Number | Percentage |
|---|---|---|
| Otic | 2867 | 32.31 |
| Pharyngeal | 2007 | 22.62 |
| Sinonasal | 1331 | 15.01 |
| Otoneurologic | 985 | 11.10 |
| Laryngotracheal | 417 | 4.70 |
| Cervical oesophageal | 285 | 3.21 |
| Others | 980 | 11.05 |

and Thursday, although a decline in attendance is seen on Friday, Saturday, and Sunday (about 2%) (Figure 1).

As for time of arrival, we observed 2 peaks: one from 10-14 h, and another one from 17-21 h, with a decrease at night and early morning.

Our department has 21 beds. A total of 923 surgical procedures are performed every year. The number of admissions during the study period was 1560. Of all the emergencies (8872), 637 were admitted, representing 7% of all patients seen at the emergency service, but 40% of the total patients in our department (Table 1). The vast majority of the patients were treated and sent home (93%).

**Table 3** Classification by symptoms

| Symptoms | Number | Percentage |
|---|---|---|
| Earache | 1680 | 16.93 |
| Otorrhea | 1148 | 12.94 |
| Odynophagia | 1091 | 12.29 |
| Epistaxis | 857 | 9.65 |
| Hypoacusis | 752 | 8.47 |
| Vertigo | 601 | 6.77 |
| Otic pruritus | 329 | 3.71 |
| Pharyngeal paresthesias | 246 | 2.77 |
| Nasal obstruction | 243 | 2.73 |
| Dysphonia | 241 | 2.71 |
| Cervical inflammation | 227 | 2.55 |
| Dysphagia | 219 | 2.46 |
| Facial pain | 172 | 1.93 |
| Weakness in facial mobility | 164 | 1.84 |
| Tinnitus | 136 | 1.53 |
| Instability | 109 | 1.22 |
| Dizziness | 97 | 1.09 |
| Haemoptysis | 82 | 0.92 |
| Dyspnoea | 45 | 0.50 |

The patients were divided into 7 categories, according to the condition presented (Table 2): otic, otoneurologic, sinonasal, pharyngeal, laryngotracheal, cervical oesophageal, and finally other diseases, mostly not otorhinolaryngological, including temporomandibular joint dysfunction, dizziness and instabilities, and haemoptysis. At our centre, by protocol, an otolaryngologist has to review these cases to rule out any condition in our field that might explain the bleeding.

Furthermore, in our review of the symptoms (Table 3), earache is the most frequent (1680), followed by otorrhea. Epistaxis, the number one entity observed at emergency services, ranks fourth in this classification, behind 2 otic symptoms (earache and otorrhea) and odynophagia.

The category of "otic conditions" was the one presenting the highest demand for health care services, and the most frequent diagnoses were diffuse otitis externa, acute otitis media, earwax plugs, and otomycosis, representing 65% of ear-related visits to the emergency department (Figure 2).

The second most frequent are pharyngeal emergencies, including diseases at the level of the oral cavity, oropharynx, tonsils, soft palate, and uvula. Tonsillitis (350 cases) and pharyngitis (268 cases) were the most frequent (30.79%). Thirdly, foreign bodies represent 12.25% of all pharyngeal diseases while abscesses and peritonsillar phlegmons represent 11.45%. The foreign bodies (190 cases, 9.40%) were generally fishbones. We believe that 66% of the diseases associated with this sub-group did not require urgent action.

Sinonasal emergencies occupied third place in the demand for emergency assistance. The most common by far was epistaxis (817, approximately 60% of sinonasal conditions), which is also the most common global disorder (8.42%). This is followed by acute sinusitis (9.4%) and nasal fractures and injuries (6.3%). Accident-related trauma in the context of other possible fractures are seen, generally speaking, at the A&E department. Acute rhinitis (5.1%) ranked fourth.

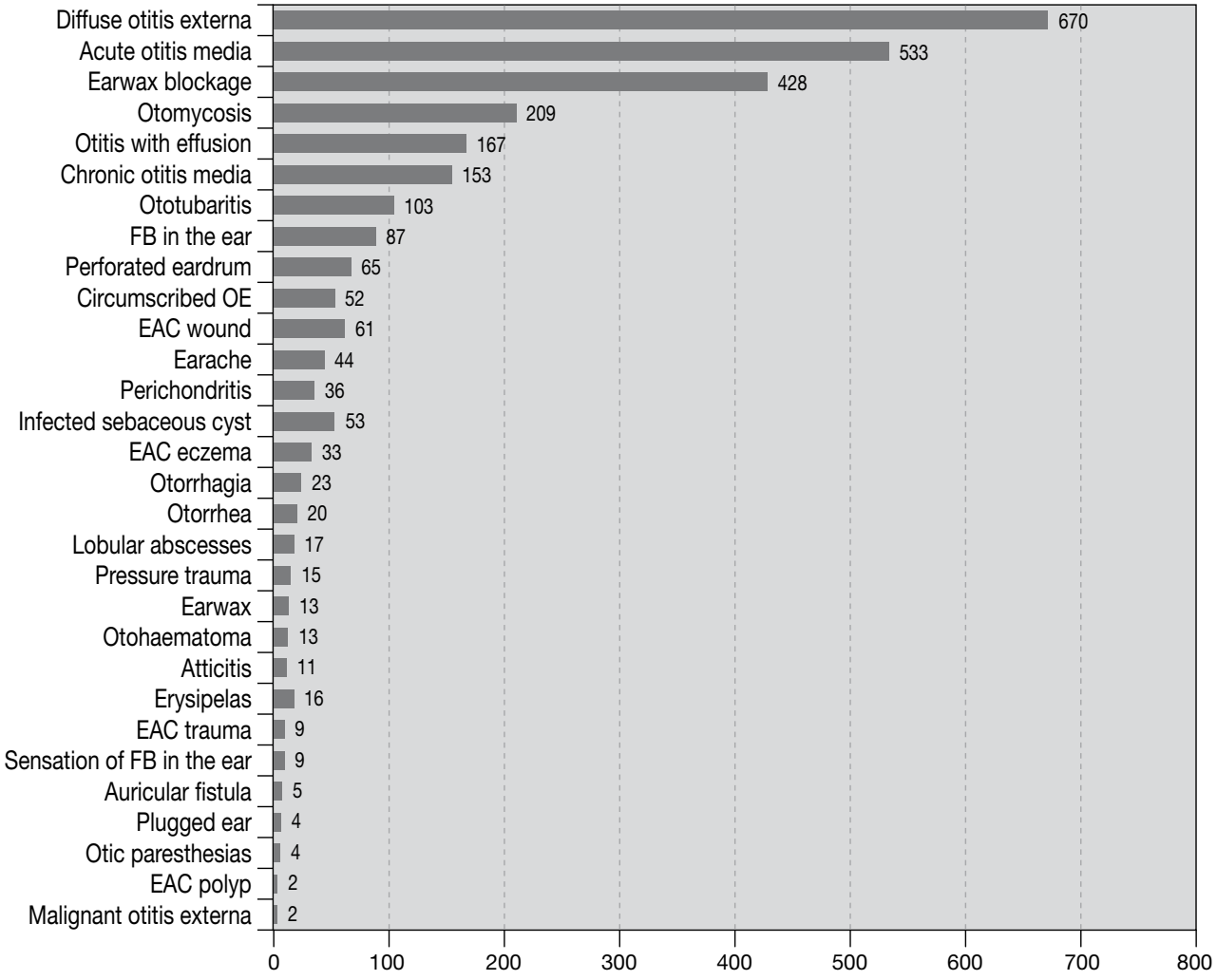


**Figure 2** Distribution of the emergencies in the "Otic conditions" category (number of cases in decreasing order). EAC indicates external auditory canal; EO, otitis externa; FB, foreign body; O, otitis.

Among the otoneurologic diseases, vertigo syndromes, representing 60%, stand out along with peripheral facial palsy (16%). Tinnitus appears in third place (11%). Sudden onset hearing loss represents 5% and, if it has lasted less than 48 hours, the protocol requires admission of the patient to receive intravenous treatment.

In the category for laryngotracheal disease, acute laryngitis ranks first (21.82%), followed by dysphonia (13.09%). Laryngeal neoformations including benign and malignant tumours represented 11%, numbering 47 in total. There were 5% of patients with dyspnoea and a total of 25 tracheotomies (5.5%) were carried out, of which 17 patients had a tumour obstructing the airway; 4 had recurrent paralysis; 3 prolonged intubation and 1, epiglottitis.

Cervical oesophageal disease was the least frequent, with 285 cases: 135 (48%) were cervical tumours, 52 cases (20%) had foreign bodies in the oesophagus, mostly food boluses, which were resolved with flexible oesophagoscopy, and a single case underwent rigid oesophagoscopy (it was a case of an impacted valve). This was followed by salivary gland disease: fourty-nine cases of sub-maxillitis (17.19%) and 28 parotiditis (approximately 10%).

Finally, 990 patients, representing 11.15% of total cases, were seen without any presenting ENT condition. Their main complaints were dysfunction of the temporomandibular joint (with 414 cases, ie, 4.71% of overall diseases seen at our department as emergencies), dizziness and instability (196), haemoptysis (82), as well as other cases of banal diseases that we often evaluate: cephalalgia, cough, cervicalgia, cases of common cold, and even people suffering from anxiety and depression.

In summary, otic, pharyngeal, and sinonasal diseases accounted for 70% of all the patients seen by our emergency department. If we compare the symptoms, we note that earache is the most common one afflicting the patients at the emergency room, followed by otorrhea (almost 30%). Pharyngeal discomfort is in second place, followed by epistaxis.

On an individual basis, the 10 most common illnesses observed were those set out in Table 2, which together account for 50% of all disorders observed (Table 4).

**Table 4** Classification by frequency of the most frequent specific diseases

| | Number | Percentage |
|---|---|---|
| Epistaxis | 817 | 9.19 |
| Diffuse otitis externa | 670 | 7.54 |
| Vertigo syndrome | 598 | 6.73 |
| Acute otitis media | 533 | 5.99 |
| Earwax plug | 428 | 4.82 |
| TMJ dysfunction | 414 | 4.66 |
| Acute amygdalitis | 350 | 3.94 |
| Pharyngitis | 258 | 2.90 |
| Sensation of FB in pharynx | 246 | 2.77 |
| Periamygdaline abscesses/ phlegmons | 230 | 2.58 |

FB indicates foreign body; TMJ, temporomandibular joint.

## Discussion

Some studies have been published on otorhinolaryngological emergencies handled in the hospital setting.[1-4] In these, there is a unanimous observation of the growing trend to seek the services of large hospitals for specialist care, possibly to avoid delays in waiting lists at clinics in the basic health area. This implies an effort to resolve this problem, which can reach significant magnitudes with implications for practitioners, health-care managers and primarily end users, ie, patients, and may result in the saturation of emergency care, thus affecting the quality of care provision. Logically, the solution can be found at different levels: education and information for patients, improvement in the means and resources available, in both the hospital and the basic areas. Factors that could help, and that are in fact taking place in other countries, might include the creation of a speciality for emergency consultation, clinics for general practitioners in the emergency department, and specific screening programmes.[5,6]

In our series, we observed that the cases seen which warranted emergency otolaryngological treatment did not exceed 20%, which concurs with the observations of different authors; Granick and Obeiter[7] report that two thirds of patients present trivial symptoms; other papers describe between 60% and 75% of cases as non-urgent[1,4,5] (the result closest to our own) and even as high as 90%.[8,9] This contrasts greatly and paradoxically with what happens in underdeveloped countries, where about 60% of patients attending emergency services present real emergencies and there is a 2.7% level of mortality.[10]

Of our patients, 7% required admission to hospital, a finding quite consistent with most studies.[8,11]

As for clinical entities, most publications coincide in pointing out epistaxis, nasal traumas and fractures and otitis externa as the most frequent diseases, of which epistaxis is the most common cause of urgent otolaryngology admissions.[3,4,8,12,13] This is consistent with our own results, but taking into account that in our study vertigo syndromes occupy third place, as is the case for other authors.[3,11,12]

There is an outstandingly high percentage of patients not presenting any ENT disease as such (11%), but this is far from being the most frequent diagnosis.[3]

As a curiosity, it is observed that 2 of the categories with the smallest number of cases treated, those corresponding to laryngotracheal and cervical oesophageal diseases (7.9%), contrast with the most commonly found disease in hospitals of developing countries: 41% of foreign bodies in the airways and digestive tract.[10]

By months, there is a coincidence in pointing to the month of August as one of the busiest.[1,3,11]

Most consultations were during normal working hours, a fact which is also quite coincident.[4,7]

## Conclusions

It has been seen that improper use is made of emergency specialities, perhaps in order to shorten the (sometimes lengthy) waiting times for specialist consultations in the basic health-care area centres.

Epistaxis is the condition most commonly observed in otolaryngology emergency rooms, followed by diffuse otitis externa. Laryngotracheal and cervical oesophageal emergencies are the least frequent, but in relative terms these present the highest numbers of urgent actions.

Most patients attend on their own initiative and most of these are ultimately discharged (93%).

Consensus should be sought on solutions to try and curb a growing problem, going hand in hand with the growing numbers of the population, as well as with the increased life expectancy.

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