

Epidemiology of ocular emergencies in Cluj ophthalmology clinic

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Abstract

Objective. This study focused on the epidemiology of ocular diseases in the Eye Emergency Room.

Methods. A cross-section retrospective study was performed in the Ophthalmology Clinic in Cluj-Napoca and included 11786 patients who presented to the Eye Emergency Room throughout the whole year, from January to December.

Results. Every month, between 782 to 1189 patients with an average age of 39.54 years (± 21.14) presented to the Eye Emergency Room. 250 were infants, under 1 year old. Six disease categories were followed: inflammation, trauma, vascular, tumor, glaucoma, and retinal-vitreous. Conjunctivitis and corneal foreign bodies accounted for almost half of the cases. Most of the conjunctival cultures revealed negative results.

Conclusions. Consistent with the large number of patients included in this study, we considered the epidemiological data representative for our region. Male gender and youth represented the main risk factor for eye injury, while children remained the main group with conjunctivitis.

Keywords: eye emergency, trauma, conjunctivitis, conjunctival culture

Introduction

An emergency is defined as an accident or an acute illness that needs qualified first aid or emergency medical assistance, at one or more levels of competence. These can be vital or non-vital, if life itself is not threatened. The non-vital characteristic of eye emergency is somehow relative, considering that the eye itself has its own environment and the ultimate consequence of a non-treated eye condition is cecity. Eye-related complaints represent approximately 1–6% of the patients referring to the general emergency room around the world [1], the number of patients with eye casualties being rapidly increasing [2].

Materials and Methods

The main objective of this study was to examine the epidemiology of ocular diseases in the Eye Emergency Room (ER). This was a cross-section retrospective study performed in the Ophthalmology Clinic in Cluj-Napoca, considering the patients presented to the ER throughout the whole year, from January to December. From 12300 total patients, 11786 were enrolled, with full medical records. Demographic and occupational parameters and the etiology of the eye disease were followed.

Statistical analysis was performed in SPSS for Windows 14.0, while tabular output and graphics were done in Excel.

Results

The distribution throughout the year is illustrated in **Fig. 1**. Number of cases per month varied from 782 in January to 1189 in August.

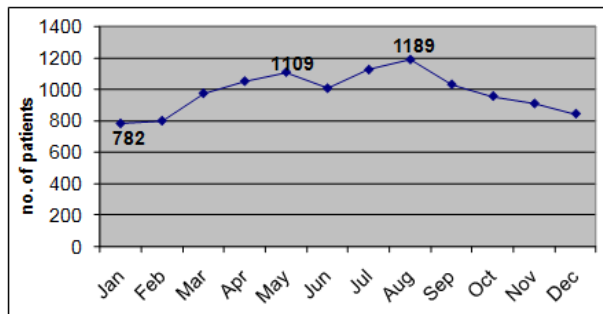


Fig. 1 Monthly distribution of cases

Demographics are shown in **Table 1**. The average age was 39.54 years (± 21.14). 255 were infants under 1 year old. 10720 patients (90.96%) were residents of Cluj County. The others came from neighboring counties: Bistrița Năsăud – 182 (1.54%), Alba – 157 (1.33%), Sălaj – 137 (1.16%), Maramureș – 111 (0.94%), Mureș – 98 (0.83%) and with less than 0.5% Sibiu,

Bihor, Brașov, Harghita, Covasna, Hunedoara; less than 0.1% came from the other counties of Romania. 14 patients were foreigners.

Table 1. Sex, age, and origin

Sex	8488 male (72%)	3293 female (28%)
Age	<i>Age intervals</i>	<i>No.</i>
	<1	255
	<15	1048
	15-29	2943
	30-44	3113
	45-59	2856
	60-75	1211
	>75	360
Origin	8418 urban (81%)	3368 rural (19%)

42% had right eye, 43% left eye and 15% binocular involvement. Six disease categories were followed: inflammation, trauma, vascular, tumor, glaucoma, and retinal-vitreous. Age distribution is shown for each category, in **Table 2**. **Table 3** shows the diagnosis at the presentation to the ER.

Table 2. Age distribution for every disease category, per age group

Disease category	New-borns	Pre-schools	Scholars	Adults	Elders
Inflammatory	54%	80%	57%	36%	39%
Trauma	3%	16%	35%	57%	28%
Vascular	2%	3%	4%	4%	19%
Tumoral	<1%		1%	0,40%	1%
Glaucoma	1%	0,30%	1%	1%	5%

In the inflammation category, conjunctivitis recorded 2806 cases. The distribution of conjunctivitis throughout the year and the relation with age is shown in **Fig. 2** and **3**. Allergic etiology was suspected in 3% of the cases, the rest of 97% being considered infectious. 92 patients had conjunctival culture performed, with negative results in 72% (66 patients) and positive in 28% (26 patients). The bacteria found were staphylococcus aureus (14

cases), white staphylococcus (11 cases), and streptococcus viridans (1 case). The antibiogram (**Fig. 4** and **5**) tested the antibiotic resistance for Chloramphenicol, Oxacillin, Gentamicin, Ampicillin, Penicillin, Tetracycline, Erythromycin, Doxycycline, and Cotrimoxazole for white and gold staphylococcus.

Table 3. Etiology of the emergency

Diagnosis:									
Inflammation		Vascular		Trauma		Tumor		Glaucoma, retinal-vitreous, Others	
4854		752		5687		53		440	
Conjunctivitis	2806	Subconjunctival hemorrhage	497	Corneal FB	2828	Eyelid Cyst	20	Glaucoma	
Blepharoconjunctivitis	123	Vitreous hemorrhage	109	Corneal erosion	1121	Eyelid epithelioma	20	Acute glaucoma	139
Keratoconjunctivitis	74	Retinal hemorrhage	13	Eyelid FB	478	Eyelid lipoma	2	Buftalmia	1
Hordeolum	517	Macular hemorrhage	8	Conjunctival FB	74	Eyelid hemangioma	1	Retinal-vitreous	
Chalazion	48	Diabetic retinopathy	57	Corneo conjunctival burn	150	Orbital tumor	5	Retinal detachment	45
Hordeolosis	9	Diabetic maculopathy	4	Eyelid burn	100	Retinal tumor	2	Acute vitreous detach.	1
Blepharitis	55	AION	17	Eye Contusion	359	Conjunctival tumor	2	Others>	
Meibomitis	9	CRVO	14	Photo trauma	148	Xanthelasma	1	Exophthalmia	5
Keratitis		BRVO	3	Hematoma	179			Ptosis	3
- Ulcer	168	CRAO	10	Non-penetrating corneal wound	107			Lacrimal canal stenosis	53
- Herpetic	35	BRAO	4	Conjunctival wound	36			Lagophthalmia	4
- PSK	31	Angiosclerosis	8	Penetrating corneal wound	71			Hemianopsia	3
Corneal abscess	1	Amaurosis	3	Intraocular FB	19			Trichiasis	16
Uveitis	154	ROP	3	Eyelid laceration	11			Cataract	44
Pars planitis	28	Retinal vasculitis	2	Subluxated lens	7			Floaters	30
Eyelid edema	123			Luxated lens	5			Pseudophakia	19
Episcleritis	69			Orbital fracture	4			Corneal leucoma	15
Optic Neuritis	59							Refraction error	12
Eyelid abscess	46							ARMD	11
Dacryocystitis	39							Pinguecula	11
Eyelid herpes	17							Dry eye	11
Chorioretinitis	19							Pterygium	7
Orbital cellulitis	13							Diplopia	7
Dacryoadenitis	7							Amblyopia	2
Scleritis	3							Strabismus	1
Corneal edema	2								
Endophthalmitis	2								
Myositis	1								
								Normal	396

*PSK - punctate superficial keratitis, AION - Anterior ischemic optic neuropathy, CRVO- Central retinal vein occlusion, BRVO – branch retinal vein occlusion, CRAO – central retinal arterial occlusion, BRAO – branch retinal arterial occlusion, ROP – retinopathy of prematurity, FB - foreign body, ARMD – Age related macular degeneration

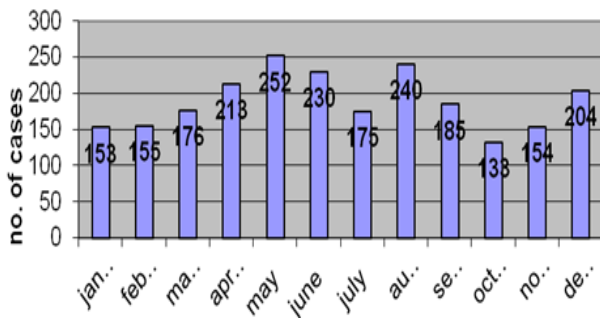


Fig. 2 Conjunctivitis distribution throughout the year

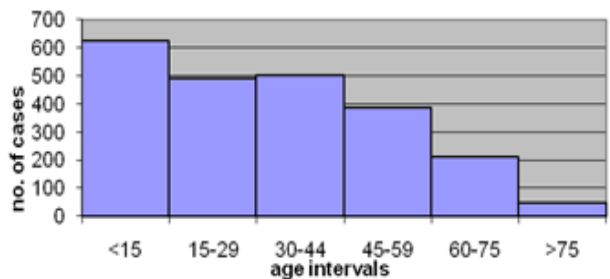


Fig. 3 Age distribution for conjunctivitis

Antibiogram for Staph. aureus

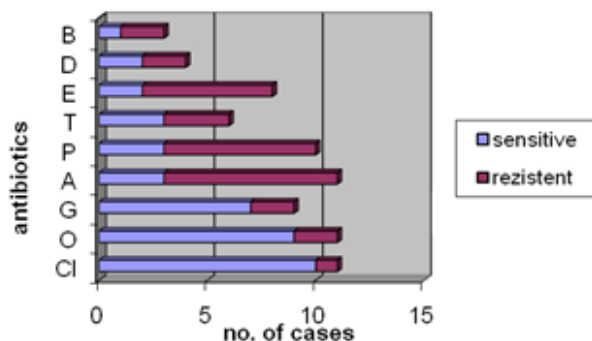


Fig. 4 Antibiogram for Staphylococcus aureus (Cl - Chloramphenicol, O - Oxacillin, G -Gentamicin, A - Ampicillin, P - Penicillin, T - Tetracycline, E - Erythromycin, D - Doxycycline and B - Cotrimoxazole)

Antibiogram for white Staph.

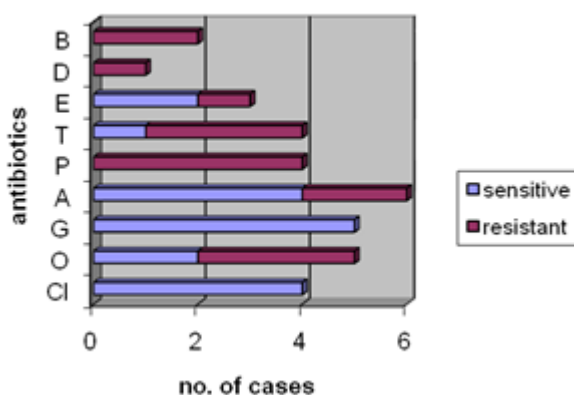


Fig. 5 Antibiogram for white Staphylococcus (Cl - Chloramphenicol, O - Oxacillin, G -Gentamicin, A - Ampicillin, P - Penicillin, T - Tetracycline, E - Erythromycin, D - Doxycycline and B - Cotrimoxazole)

Corneal foreign bodies represented 50% of all traumatic pathology and about 25% of all the emergencies throughout the year. In the trauma group, 88% were male, 12% female. The mean age was 35 (min-max: 15-59).

In the acute glaucoma group, 54% were female and half of the cases were found in 60-75 age group (minimum age was 45).

764 patients (6,48%) were hospitalized, 450 men and 314 women. On average, 64

patients were hospitalized per month, without a significant monthly fluctuation (min 43 in December - the exception, max 71 in February). The main diagnostics in these cases were uveitis, optic neuropathy, keratitis, penetrating trauma, acute glaucoma, retinal detachment, and vitreous hemorrhage. On the other hand, 7% from the total number of patients were considered non-emergencies, including patients with pterygium, cataract, corneal leucoma, amblyopia, xanthelasma or refraction errors; no pathology was found in 396 patients.

Among 174 newborns, 94 (54%) were diagnosed with conjunctivitis, 47 (27%) with lacrimal duct stenosis, 17 (10%) dacryocystitis, 5 (3%) subconjunctival hemorrhage and 3 (2%) retinopathy of prematurity. The rest of 4% were diagnosed with congenital cataract, hordeolum, lipoma, or glaucoma.

Discussions

Emergencies in ophthalmology reflect the degree of addressability and accessibility to the medical facilities and also, considering the wide spectrum of possible etiologies, the degree of socio-economic development of a society. The Eye Emergency Room in Cluj functions with one specialist doctor, covering 24 hours of duty, one or more trainees (resident doctors), and a nurse. The medical team also covers the hospitalized patients. The amount of noncomplex cases suggests a better implication of the resident doctors. The infrastructure covers the basic needs of the Emergency Room, with biomicroscope, indirect ophthalmoscope, eye ecography, and Imaging Department (Radiology and Tomography) available 24 hours.

In developed countries, traumatic injuries are the main reason to visit the emergency room, especially corneal foreign bodies [3-6], while in undeveloped countries the first place is taken by the various eye infections, including parasitic infestation. According to a comparative study [7], covering 8 years (1997-2005), significant changes were witnessed lately: an increase in the number of eye emergencies, increasing numbers of corneal foreign bodies, decrease in conjunctivitis diagnosis, increase in evening presentation to ER (18-21 hour) and decrease in

morning presentation (9-12 hour), increase in male and thirties age group.

Corneal foreign bodies and conjunctivitis represented almost half of the cases considered for this study, the two being equally distributed. The more complex cases represented roughly 3500 cases (about 10 per day, including orbital cellulitis, complicated trauma, keratitis, uveitis, acute glaucoma, optic neuropathy or retinal detachment) while those needing hospitalization represented 6.48% from the total (about 2 patients per day). Surgical data was not available for this research.

In our study, inflammatory disease had its peak in infancy, trauma in adulthood, while vascular, tumoral, and acute glaucoma was present in elders. Acute glaucoma had a dramatic increase after 60 years old, with a slight female prevalence (54%). In newborns, most of the cases consisted in conjunctivitis (54%) or lacrimal related pathology (27%).

The total number of cases showed a steady increase from winter to summer, with the peak in August, with 1189 cases and the low in January, 782 cases. The same trend was seen in conjunctivitis cases, with late spring and late summer (May, August) seeing twice the cases presented in October. This type of distribution could have two explanations, the real increase in the incidence of the disease, on one hand, and the concentration of cases in the only clinic remaining open during Holidays, on the other hand. It is possible that both explanations are correct. Other studies have also shown a constant increase of conjunctivitis cases during summer, an increased incidence of corneal ulcer in spring or an increase of acute glaucoma in winter [8].

For the conjunctivitis patients, the 92 conjunctival cultures with antibiogram showed a resistance to Penicillin, Tetracyclines, Cotrimoxazole, and Erythromycin, both for white and gold Staphylococcus. White Staphylococcus showed resistance to Oxacillin, too. 100% of white Staphylococcus was sensitive to Gentamicin and notably, Chloramphenicol. Staphylococcus aureus was sensitive to Gentamicin in 80% of the cases (7 out of 9 cases) and to Chloramphenicol in 90% of the cases (10 out of 11). Tobramycin was not routinely tested, but the results showed that even weaker, sometimes disconsidered antibiotics should be used as first line, at least in mild forms of conjunctivitis. In this regard, it should be emphasized that most of the conjunctivitis cases

were proven nonbacterial in conjunctival culture (72%), so stronger antibiotics should have no place in uncomplicated cases. A study from 2010 [9], evaluating children of 6 months to 17 years old with conjunctival congestion, identified four clinical factors independently associated with negative conjunctival cultures: age 6 years and older, April to November presentation, absent secretion and the absence of "glued eyes" in the morning. 92% of the patients with all four clinical factors revealed negative cultures. Identifying patients with low risk for bacterial conjunctivitis could reduce the routine administration of antibiotics.

Consistent with the large number of patients included in this study we consider the epidemiological data representative for our region.

Disclosures

None

References

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