

Ophthalmic emergencies in a district general hospital casualty department

R S EDWARDS

From the Department of Ophthalmology, Kent and Canterbury Hospital, Canterbury CT1 3NG

SUMMARY A survey of ophthalmic emergencies attending the casualty department of a district general hospital over a 12-month period is presented. The total number of new casualty attendances was 30 649 of which 1870 (6.1%) presented with an ophthalmic problem. There was a 3 to 1 male to female preponderance and a peak age of presentation between 20 and 30 years. The main aetiological factors were trauma 65.6% and inflammation 21.7%. Of the trauma patients 80% had sustained minor trauma (abrasions or foreign material to the cornea or conjunctiva) and of the patients with inflammation 71% had either conjunctivitis or blepharitis. There was a trend towards increased numbers in the summer months. The percentage of patients with inflammatory disease was higher in the early summer and the winter months. Nine of the 11 patients with acute angle closure glaucoma presented between November and February. All patients were initially seen by the accident and emergency medical staff, who were able to treat 69% without further consultation. No serious pathology was overlooked. It is suggested that, in the district general hospital setting, co-operation between the eye and the accident and emergency departments can be to their mutual benefit.

The problem of ophthalmic emergencies and their management has been the subject of three recent papers,¹⁻³ all of which have been based on data collected from specialist eye emergency units. Opinion as to the role of the doctor and the nurse has varied. This study aims to assess the ophthalmic workload of an accident and emergency (A and E) department in a district general hospital (DGH) where all patients attending are seen in the first instance by A and E medical staff with basic ophthalmic training and then referred where necessary to the ophthalmic resident or to the eye clinic.

The results are presented to give an insight into the handling of eye emergencies in the A and E department, the variety and frequency of the presenting conditions, and their seasonal variation. The benefits and pitfalls of an ophthalmic emergency service run in conjunction with a general emergency service are discussed.

Material and methods

The Accident and Emergency department of the Kent and Canterbury Hospital provides a 24-hour

Correspondence to R S Edwards, FRCS.

service for all specialties in the Canterbury and Thanet Health District (population 288 100)⁴ though many casualties from the Thanet towns (population approximately 130 000) can attend a casualty department at Margate between 8 am and 12 pm, and some casualties from Deal, Dover, and Folkestone travel to Canterbury rather than to Ashford (the only other hospital with a 24-hour casualty service in East Kent). The Kent and Canterbury Hospital is, however, the only hospital in East Kent (Canterbury and Thanet and South East Kent Health Districts (population 546 600)⁴ which provides a specialist ophthalmic emergency service, one room in the A and E department containing a slit-lamp, vision testing chart, and the equipment necessary for basic eye examination and treatment. All patients undergo an examination by A and E medical staff trained in basic eye examination and the use of the slit-lamp by one of the ophthalmic consultants. The patient is then treated by that doctor or referred to the on-call ophthalmic resident, who will then either complete the initial treatment and arrange follow-up if necessary or refer to the on-call consultant. Except in a few cases of minor trauma, follow-up is generally completed in the general ophthalmic clinic, but fresh

instruction of A and E medical staff by the ophthalmic staff and feedback of information are a continuing process.

The attendance of eye casualties at the A & E department over the 12 month period May 1983 to April 1984 inclusive was studied. Eye emergencies referred directly by the general practitioner to the general ophthalmic clinics were not included in the study. The numbers of patients attending with an eye problem were collected prospectively. At the end of that period casualty and inpatient records were analysed retrospectively. Detailed information about each patient was recorded, including date of attendance, place of residence, method of referral, principal diagnosis, designation of doctor seeing the patient, and disposal.

A diagnostic index of all expected diagnoses was drawn up. Diagnoses were then broadly grouped into

traumatic (the injured eye), inflammatory (the red eye), degenerative (mainly vascular and vitreoretinal problems), and miscellaneous. A detailed breakdown of these groups was then made.

When a patient had more than one diagnosis, only the most serious diagnosis was listed.

Results

A total of 1957 visits were made for eye complaints. Of these, 1870 were for new complaints or new episodes of illness. They composed 6.1% of the 30 649 total of new patients for all specialties visiting the department during this time (Table 1).

Trauma (1228 patients) accounted for almost two-thirds (65.6%) of the total caseload (Table 2), and 985 cases (80.2% of this group) fell into the category of minor trauma (abrasions and foreign bodies to the

Table 1 Numbers and ages of patients attending

Age in years	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Total numbers
0-9	3	4	4	13	15	23	11	13	13	7	5	8	119 (6.4%)
10-19	20	27	19	25	23	26	36	20	20	29	28	19	292 (15.6%)
20-29	48	26	34	28	41	37	47	48	37	46	50	27	469 (25.1%)
30-39	29	30	40	38	33	32	45	35	32	33	26	26	399 (21.3%)
40-49	24	21	16	27	19	19	17	20	30	27	20	19	259 (13.9%)
50-59	18	8	14	13	12	16	14	10	13	10	14	14	156 (8.3%)
60-69	6	5	2	7	9	8	6	7	5	14	4	6	79 (4.2%)
70-79	5	5	6	4	10	2	6	4	5	5	3	5	60 (3.2%)
80-89	2	—	—	4	—	2	—	—	2	—	2	3	15 (0.8%)
90-99	—	—	—	—	—	—	—	—	—	—	1	—	1 (<0.1%)
Not known	—	—	2	3	2	1	5	4	1	1	1	1	21 (1.1%)
Total	155	126	137	162	164	166	187	161	158	172	154	128	1870

Table 2 Main diagnostic categories

	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Total
Trauma	95 (61.3)	87 (69)	101 (73)	110 (67.9)	98 (59.7)	98 (59)	120 (64.4)	115 (71.4)	99 (62.7)	121 (70.3)	105 (68.2)	79 (61.7)	1228 (65.6)
Inflammation	40 (25.8)	24 (19.0)	22 (16.1)	33 (20.3)	42 (25.6)	50 (30.1)	48 (25.7)	24 (14.9)	31 (19.6)	28 (16.2)	34 (22)	30 (23.4)	405 (21.6)
Degenerative	6 (3.9)	4 (3.2)	2 (1.5)	4 (2.5)	11 (6.7)	7 (4.2)	7 (3.7)	5 (3.1)	8 (5.1)	11 (6.4)	5 (3.2)	5 (3.9)	75 (4.0)
Miscellaneous	14 (9)	11 (8.7)	12 (8.8)	15 (9.25)	13 (7.9)	11 (6.6)	12 (6.4)	17 (10.6)	20 (12.7)	12 (7.0)	10 (6.5)	14 (10.9)	162 (8.7)
Total	155	126	137	162	164	166	187	161	158	172	154	128	1870

Percentages in parentheses.

Table 3 Analysis of trauma cases (1228 cases)

Diagnosis	Number	Percent	Diagnosis	Number	Percent
Corneal foreign body	405	33.0	Hyphaema	28	2.2
Corneal abrasion or non-penetrating laceration	229	24.3	Lid laceration	26	2.1
Conjunctival or sub tarsal foreign body	162	13.2	Traumatic uveitis/mydriasis	16	1.3
Chemicals in eye	89	7.2	Thermal burns	12	1.0
Radiational (mainly welding flash)	64	5.2	Perforating injury	11	0.9
Contusion (black eye)	59	4.8	Traumatic vitreous haemorrhage	2	<0.1
Minor trauma to conjunctiva	55	4.5			

Table 4 Seasonal variations for certain diagnoses

Condition	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
<i>Trauma</i>												
Corneal foreign body	33	32	32	32	34	33	39	39	32	46	43	18
Corneal abrasion	25	19	29	25	26	17	42	23	23	21	27	22
Hyphaema	6	1	2	6	2	1	1	5	1	—	1	2
<i>Inflammations</i>												
Conjunctivitis	18	15	14	10	19	16	15	6	14	18	16	14
Allergy	3	—	3	2	9	18	10	7	7	3	—	1
Iritis	5	2	—	5	3	7	11	4	2	—	4	1
Acute glaucoma	2	1	—	1	—	—	1	—	—	—	1	5

Table 5 Analysis of inflammation cases (406 cases)

Diagnosis	Number	Percent
Conjunctivitis	175	43.2
Allergy	63	15.5
Lid inflammation	51	12.6
Keratitis	47	11.6
Iritis	44	10.9
Acute glaucoma	11	2.7
Scleritis/episcleritis	6	1.5
Orbital cellulitis	5	1.2
Herpes zoster ophthalmicus	4	1.0

cornea or conjunctiva) (Table 3). The commonest serious problem was hyphaema (28 patients), accounting for 2.2% of the total. Eighty seven patients (7.2%) attended with chemical spillage into the eye, but the majority were relatively innocuous (most commonly shampoo or hair spray), and only four patients in this group required hospital admission. Thirty six patients had problems associated with contact lens wear.

None of the main categories of trauma showed any seasonal variation (Table 4), and although the number rose in the summer months proportions in relation to other diagnoses did not.

Inflammatory conditions (406 patients) accounted for 21.7% of the total caseload (Table 5). Conjunctivitis, blepharitis, and allergy were the diagnoses for 287 (70.7%) patients.

The percentage of patients with inflammatory conditions (Table 2) was higher in November to January and May to July but lower in February to April and August to October. Allergic conditions were most frequent during the summer months (Table 5), reaching a peak of 18 cases in June compared with none in February. Twenty six (59%)

cases of iritis occurred between the months of April and July, and nine of the 11 patients with acute glaucoma presented between November and February.

Of patients with 'miscellaneous conditions' (8.7% total) 51% attended without symptoms or signs of eye disease but to seek reassurance following minor trauma.

One hundred and twenty-four patients (6.6%) required admission to hospital (Table 6), the two commonest diagnoses being hyphaema and retinal tear/detachment. Inspection of inpatient records showed that any cases admitted had seen the ophthalmic resident or been referred straight to the eye clinic immediately prior to admission. No patient requiring admission had been discharged from the A and E department.

Of the 1870 new cases 1667 (89.7%) were self referrals; 1715 (91.7%) resided in East Kent. The numbers from outside the catchment area were greater in the summer months but none the less small (15 in August compared with four in February), indicating that in East Kent at least the impact of holiday visitors on the ophthalmic emergency service was slight. There was a 3 to 1 male to female preponderance—1410 males (75%) to 470 females (25%). The peak age for attendance was 20–29 years. The numbers of patients attending showed an increase in the summer months, but the only age group to show a marked seasonal change was the 0–9 age range where numbers varied from three in January to 23 in June, the commonest diagnosis in this group being allergic oedema of the lids and conjunctiva.

Follow-up visits to the A and E department were made by 87 patients; 65 (75%) were arranged by the

Table 6 Diagnosis for 124 patients requiring admission

Hyphaema	28 (22.5%)	Deep corneal foreign body	9 (7.3%)
Retinal tear/detachment	13 (10.5%)	Other blunt injury	7 (5.6%)
Acute glaucoma	11 (8.9%)	Non-penetrating corneal laceration	5 (4%)
Perforating injury	11 (8.9%)	Herpes zoster ophthalmicus	4 (3.2%)
Vitreous haemorrhage	10 (8.1%)	Chemical burn	4 (3.2%)
Keratitis	9 (7.3%)	Others (including uveitis, cellulitis, orbital fractures)	13 (10.5%)

Table 7 Disposal of 1870 new cases seen by Accident and Emergency medical staff

Disposal	Number	Percent
Discharged	1289	68.9
Direct referral to ophthalmic resident	314	16.8
Follow-up appointment in general ophthalmic clinic	202	10.8
Follow-up appointment in A and E Department	65	3.5

A and E medical staff and 22 (25%) were patients referring themselves back. Of the patients booked for follow-up 86% had minor trauma, but 41% of the self referrals were for unresolved minor inflammatory problems. Two cases of conjunctivitis later found to be iritis had been referred back by the A and E medical staff for follow up.

Much of the ophthalmic emergency work was done by the A and E medical staff (Table 7) who made the initial assessment of all the new cases. Of these patients, 1556 (83%) were assessed, the initial decisions were made, and management was undertaken by the A and E medical staff without calling ophthalmic staff to the department. However, 224 of these 1556 were referred to the Eye Clinic either immediately after the initial consultation or following a return visit. Thus a total of 1332 cases (71.2% of the 1870 new attenders) were managed solely by the A and E department and 538 cases (28.8%) required review by the Eye Department either immediately (314 cases) or at outpatient follow-up (224 cases).

Discussion

This study is the first of its kind from a district general hospital. The population was from small towns and rural areas with no inner city catchment area. The studies from Bristol, Southampton, and Leicester were from specialist eye departments based on teaching hospitals in large cities. However, a number of common factors emerge. All studies show a male preponderance of between 2:1 and 3:1, and where the age of the patient is noted the commonest age of presentation is the 3rd decade.

Of the patients presenting with trauma, minor conjunctival and corneal trauma including foreign bodies accounted for between 82 and 93% of patients, and minor conjunctival and lid inflammation for between 67 and 80% of patients, presenting with inflammatory disorders.

In this study almost 90% of patients were self-referred, a similar experience to that of Bristol and Southampton, whereas the number was only 56% from Leicester (30% were referred via general practitioners). This difference may be due to their

casualty department being located in the general eye clinic.

This probably explains why 65.6% of our patients presented with minor trauma and only 21.7% with inflammatory disorders compared with between 43 and 52% for trauma and 29 and 45% for inflammatory disorders in the other centres: an episode of inflammatory disease was more likely to become recurrent or chronic and demand repeated attendances than a single incident of minor trauma.

Other differences in results may be related to the extent to which the casualty departments provide a comprehensive eye service. In East Kent patients with chronic or recurrent problems are usually referred by their general practitioner straight to the general eye clinic in a separate location from the A and E Department.

Although the case load in this study is predominantly minor trauma and inflammatory conditions, there is in common with other studies a large spread of diagnoses, many of which require careful evaluation. The one diagnosis missing from this study taken after the passing of the seat belt laws is perforating injury caused by a car windscreen.

This study attempted to evaluate seasonal factors in the presentation of ophthalmic emergencies. Although there is a trend towards higher numbers in the summer, it does not reach statistical significance. The numbers of patients with all types of trauma showed little fluctuation with the seasons. This may be due to their being mainly related to year-round activities, such as work occupation, house repairs, and car repairs, though no detailed study of the circumstances of the injury was made.

Inflammatory eye disease in general made up a greater percentage of the case load in the early summer months and the winter months, with higher percentages in November to January and May to July. The summer peak may be reflected in the high incidence of allergies and iritis during these months, and the winter peak may be due to the higher incidence of upper respiratory tract infections and associated conjunctivitis. The incidence of acute angle closure glaucoma was also higher in the winter months (a well known association).

A further aim of this study was to contribute towards the debate about who sees an ophthalmic emergency. It is generally agreed that this is a primary care function, and yet the majority of patients constituting ophthalmic emergencies refer themselves to hospitals rather than their general practitioner, a pattern which seems unlikely to change unless individual general practitioners in group practice develop a special interest in ophthalmology. Morell² states that only 1.6% of his consultations were for ophthalmic problems. Yet patients

with ophthalmic problems accounted for 6.1% of the patients attending this A and E Department. While the A and E case load and the general practitioners' caseload are not identical, it seems likely that the proportion of ophthalmic consultations in general practice may be higher away from the large cities with dedicated ophthalmic emergency departments.

The studies so far show that most ophthalmic emergencies are minor in nature and treatable by personnel without extensive specialist training in ophthalmology. In Southampton 57.1% of patients first saw an ophthalmic trained nurse.

Not all hospitals with ophthalmic departments have the numbers of staff and the facilities to run a separate emergency service dedicated to ophthalmology, but where there is an A and E department a useful ophthalmic service can be provided.

In this study all the patients were initially seen by the A and E medical staff, and 69% were discharged from the department after only one consultation with the A and E doctor. Although few patients were seen again in the department, the majority of those brought back for follow-up were also discharged. In no case was serious pathology missed and in no case was hospital admission unduly delayed.

However, this system needs safeguards to be efficient and safe. It requires the provision of equipment, including a slit-lamp necessary for eye examination. It requires that an ophthalmology opinion be

quickly available and it requires initial training of A and E medical staff in the use of the slit-lamp and removal of foreign material from the eye. There should also be co-operation and feedback between the ophthalmology and the A and E departments. This system can then be mutually beneficial to both departments, sparing the ophthalmic department the work of assessing and treating many minor problems and providing ophthalmic experience likely to be encountered in general practice for the A and E residents, many of whom may later enter this field.

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References

- 1 Vernon SA. Analysis of all new cases seen in a busy regional centre ophthalmic casualty department during 24 week period. *J R Soc Med* 1983; **76**: 279-82.
- 2 Chaipella AP, Rosenthal AR. One year in an eye casualty clinic. *Br J Ophthalmol* 1985; **67**: 865-70.
- 3 Jones NP, Hayward JM, Khaw PT, Claoué CMP, Elkinton AR. Function of an ophthalmic accident and emergency department. Results of a six month survey. *Br Med J* 1986; **292**: 188-90.
- 4 *South East Thames Regional Health Authority Statistical Year Book 1986*. Mid Year Estimate of Population Figures in 1983.
- 5 Morrell DC. Expressions of morbidity in general practice. *Br Med J* 1971; **ii**: 454-8.

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