

Ophthalmology Inpatient Consultation: Does it Make a Difference to Inpatient Management?

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SUMMARY

Ophthalmology consultation is one of the commonest requested services for inpatients in a tertiary hospital. A total of 290 ophthalmology consultation requests were received over a period of six months (average 12 consultation requests per week) and from these, 222 patients were examined. The patient demographics, the hospitalization data, type of consultations (screening, new problem, pre-existing problem), reasons for consultations and the ophthalmology diagnosis were determined. Out of 290 consultation requests, internal medicine services requested the highest number (95, 32.8%); the commonest type of consultation was screening for eye diseases (161, 55.5%) and the most common reason for consultation was to rule out diabetic retinopathy (125, 43.1%). The top five ophthalmology diagnoses after examination were diabetic retinopathy (45, 20.3%), diabetic retinopathy ruled out (37, 16.6%), conjunctivitis (12, 5.4%), refractive error (11, 4.8%) and normal ocular examination (11, 4.9%). Inpatient ophthalmologic procedures were performed in 146 patients, the commonest of which was retinal laser photocoagulation. A total of 133 (59.9%) inpatients had a change in their management as a result of the ophthalmology consultation.

KEY WORDS:

Ophthalmology consultation, Diabetic retinopathy, Red eyes, Decreased vision, Eye evaluation

INTRODUCTION

Ophthalmology consultation requests are common referrals for opinion/advice in a teaching hospital¹ and they are considered important because vision threatening situations can be detected and managed in time². Inpatients in large hospitals can be more difficult to examine than outpatients attending the eye clinics. Inpatients may be less mobile due to indwelling vascular access lines, catheters or orthopedic casts. They may have debilitating diseases making them weak and unable to walk, or they may be in pain due to their current ailments. Some patients are not medically fit to be transported to the ophthalmology clinic and some are on a ventilator or have altered mental status (comatose or semi-comatose). For these patients it is only possible to perform a limited ophthalmic examination by the bedside. The nature and severity of systemic disease encountered in the inpatient population is different from that encountered in the outpatient setting, making inpatient consultations more time-consuming³.

A few studies have looked at the utilization of eye-care services in teaching hospitals in Britain and Australia^{1,3}. A search of the literature showed that there is only one paper published from Malaysia on the utilization of eye care services by foreign nationals in Johor⁴. The objectives of this study are to identify the pattern and frequency of inpatient ophthalmology consultations, ophthalmology diagnosis after examination of patients, the eye treatment needed for them in a large tertiary care hospital and to determine whether they make a difference to patient management.

MATERIALS AND METHODS

A retrospective study was done on inpatient consultation requests received by the team of ophthalmologists in the eye clinic of UMMC over a period of six months from 1st January 2005 to 30th June 2005. Information regarding patient demographics, the referring unit, length of hospitalization, interval from admission to consultation, reason for referral, number of consultation visits for each patient, type of consultation (screening examination, new eye problem or preexisting eye problem) and the diagnosis of eye conditions detected after examination in the eye clinic of UMMC were recorded. Any intervention done by the ophthalmology doctors as well as changes in the patients' management attributed to the referral, were also noted.

The patient's name, hospital registration number, the referring department/unit, bed number and ward number indicated on the referral form and the diagnosis were recorded by the nurses in charge of the ophthalmology clinic. The patients would be assessed by the ophthalmology on-call team (registrar and specialist) for that day. All the patients were examined within 24 hours of the request for consultation. If the patients were discharged from their wards before the eye assessment, they were given the earliest appointment to come to the eye outpatient clinic.

Inclusion and exclusion criteria: All the referral patients who were examined by ophthalmologists were included in this study. The patients who defaulted the appointment in the eye clinic at a later date and thus were not examined, were excluded from the analysis of primary ophthalmology diagnosis and ophthalmology procedures performed after consultation. Patients assessed in the Accident and Emergency (A&E) Department for ocular trauma (after receiving referral from A & E Department) were excluded from this study. However, if these patients were admitted into other departments/units which later requested another

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eye assessment, then these consultation requests were included in this study. Thus, they do not come under new ocular symptoms.

The types of consultations were classified into three groups: *Ocular screening* -- examining inpatients without any ocular symptoms with systemic diseases known to potentially involve the eye, such as diabetes mellitus; paediatric inpatients for ocular signs to establish the diagnosis of metabolic disorders and congenital infections; reassessment of inpatients admitted in other departments/units following trauma.

New ocular symptoms -- examining inpatients who developed new ocular symptoms during the course of their hospitalization. Examples include patients developing symptoms such as blurred vision or red eyes or exposure keratitis during hospitalization.

Preexisting eye problem -- examining inpatients with previously diagnosed ocular disease requiring review and continuing care of their ocular condition. Examples include a known glaucoma patient who had discontinued the use of topical antiglaucoma therapy or patients already operated for cataract but admitted due to systemic problem and had follow up appointment in the eye clinic.

The information obtained from the medical records of patients was gathered into a computerized database and descriptive analysis was done using the SPSS version 12.0 statistical programme.

RESULTS

Consultation requests

During the six-month period of this retrospective study, a total of 290 inpatient ophthalmology consultations were received (average 12 consultation requests per week). Females (153, 52.8%) outnumbered those for males (137, 47.2%) in this study. The mean age of patients was 43.2 years (range 1 day to 93 years). The majority of the patients were Malay (121, 41.7%), followed by Indians (84, 29%), Chinese (79, 27.3%) and foreigners (6, 2.1%; 2 Bangladeshis/ 3 Indonesians/ 1 Nepalese). The problem for which consultation was requested affected both eyes in 243 (83.8%), right eye in 31 (10.7%) and left eye in 16 (5.5%) patients.

The mean duration of hospitalization of patients referred in this study was 2.2 days (range 1 day to 190 days). The average interval between hospital admission and ophthalmology consultation being requested was 5.5 days (range 1-60 days).

The ophthalmology consultations were requested by all the inpatient wards/units, with the majority of consultation requests coming from the Internal Medicine (95, 32.8%), and an additional 24 (8.3%) consultations requested by the Neurology Unit (Figure 1).

The general purpose of the ophthalmology consultations requested was screening for eye diseases (161, 55%), to treat a new problem that patient developed during the period of hospitalization (107, 37%) and to manage a pre-existing eye

problem that patient already had prior to hospitalization (22, 8%). The most common specific reason for ophthalmology consultation was to rule out diabetic retinopathy, followed by decreased vision (Table I). Diabetic retinopathy assessment was the most common screening requested (118, 40.7%) while decreased vision was the most common new problem (40, 13.8%).

Patients seen

A total of 187 (64.5%) patients were seen during the period of their hospitalization. Another 103 patients (35.5%) were given appointments to come as outpatients to the eye clinic because they were being discharged from the ward on the day of receiving the referral form. Out of these 103 patients, only 35 patients came to the eye clinic as per their appointments; two-thirds of them (68) defaulted. Therefore, only 222 patients were seen out of the 290 consultation requests. The percentage of ophthalmology diagnoses is based on these 222 patients only. In 11 patients (4.9%), the eye examination did not reveal any abnormality. The most common diagnosis was diabetic retinopathy (45, 20.3%) followed by diabetic retinopathy ruled out (Table II).

A total of 146 ophthalmology procedures were carried out in 222 patients who had ophthalmology consultations. Argon laser photocoagulation was the most common procedure performed (29, 19.9%), followed by Humphrey automated perimetry (visual field testing) (Table III).

As a result of the ophthalmology consultation, 133 out of 222 patients (59.9%) had a change in their overall management. These patients included 64 (28.8%) who were referred for new problems, 13 (5.8%) with pre-existing problems, and 56 (25.2%) for screening eye diseases. The changes in overall better management included strict diabetic control through dietary and oral hypoglycemic/insulin dosage adjustment, correction of their refractive errors, treatment for their cataract, dry eyes and detection and management of diseases such as Wilson's disease.

Patients who defaulted

Out of 103 patients who were given an appointment (because they were being discharged from the ward on the day of receiving the referral form) to be seen as outpatient in the eye clinic, two-thirds of them (68) defaulted their appointment. Out of the 68 patients who defaulted, 52 were requests for diabetic retinopathy screening, 10 were for assessment of vision, four had discomfort in the eyes and two were for headache evaluation.

DISCUSSION

The large number of requests for ophthalmology consultations among the inpatients indicate that the eye problems are common among patients admitted in different wards with other systemic problems. In our study, there were 12 consultation requests per week over a six month period and this figure is higher than an Australian audit (5 consultation requests per week)¹. So far, there is a lack of data in Malaysia regarding the reasons for inpatients ophthalmology consultation and the contribution made by ophthalmologists in the overall inpatient management.

Table I: Reasons for Ophthalmology consultation as mentioned in the request form (n=290)

Reason	New problem n=107	Pre-existing problem n=22	Screening for eye disease n=161	Total (%) n=290
To rule out diabetic retinopathy	3	4	118	125 (43.1%)
Decreased vision	40	7	0	47 (16.2%)
General eye evaluation	13	3	12	28 (9.7%)
Red eyes	22	1	0	23 (7.9%)
Assessment of visual field	9	0	0	9 (3.1%)
For Kayser-Fleischer ring in the cornea	0	0	7	7 (2.4%)
To rule out retinal haemorrhages	0	0	6	6 (2.1%)
Discharge/conjunctivitis	5	1	0	6 (2.1%)
Reassessment of ocular/orbital trauma	0	0	5	5 (1.7%)
Diplopia	5	0	0	5 (1.7%)
To rule out congenital intraocular infection	0	0	4	4 (1.4%)
To rule out developmental syndrome	0	0	3	3 (1.0%)
Exposure keratitis	2	1	0	3 (1.0%)
Glaucoma	0	2	0	2 (0.7%)
Proptosis	2	0	0	2 (0.7%)
Headaches	2	0	0	2 (0.7%)
Adjust drug dosage	0	1	0	1 (0.3%)
Conjunctival swelling	1	0	0	1 (0.3%)
Floater	1	0	0	1 (0.3%)
To rule out Hypertensive retinopathy	0	0	1	1 (0.3%)
Lid swelling	1	0	0	1 (0.3%)
Nystagmus	1	0	0	1 (0.3%)
Retinopathy of prematurity	0	0	1	1 (0.3%)
Strabismus	0	1	0	1 (0.3%)
To rule out Papilloedema	0	0	1	1 (0.3%)
To rule out Retinal detachment	0	1	0	1 (0.3%)
To rule out Storage Disease	0	0	1	1 (0.3%)
To rule out drug toxicity	0	0	1	1 (0.3%)
To rule out Uveitis	0	0	1	1 (0.3%)

Table II: Primary Ophthalmology diagnosis (n=222)

Diagnosis	Number (%)
Diabetic retinopathy	45 (20.3%)
Diabetic retinopathy ruled out	37 (16.6%)
Conjunctivitis	12 (5.4%)
Refractive error	11 (4.9%)
Normal eye examination	11 (4.9%)
Cataract	9 (4.0%)
Optic neuropathy/atrophy	8 (3.6%)
Subconjunctival haemorrhage	7 (3.1%)
Cranial nerve palsy III, IV or VI	6 (2.7%)
Soft tissue injury	6 (2.7%)
Orbital cellulitis	6 (2.7%)
Glaucoma	5 (2.2%)
Exposure keratitis	5 (2.2%)
Dry eyes	5 (2.2%)
Retinal haemorrhages	5 (2.2%)
Cortical blindness	4 (1.8%)
Intraocular infection ruled out	4 (1.8%)
Visual field defect	4 (1.8%)
Developmental disorder	4 (1.8%)
Kayser-Fleischer rings ruled out	3 (1.3%)
Vitreous haemorrhage	3 (1.3%)
Corneal ulcer	3 (1.3%)
Papilloedema	3 (1.3%)
Episcleritis	2 (0.9%)
Allergic conjunctivitis	2 (0.9%)
Macular degeneration	2 (0.9%)
Blepharitis	1 (0.4%)
Band keratopathy	1 (0.4%)
Bullous keratopathy	1 (0.4%)
Choroidal metastasis	1 (0.4%)
CMV retinitis	1 (0.4%)
Congenital nystagmus	1 (0.4%)
Retinal haemorrhages ruled out	1 (0.4%)
Kayser-Fleischer ring present	1 (0.4%)
Hypertensive retinopathy	1 (0.4%)
Uveitis ruled out	1 (0.4%)

Table III: The Ophthalmology procedures performed after consultation during patient's hospitalization. (n=146)

Procedure	Number (%)
Laser photocoagulation (Focal/Grid/Panretinal)	29 (19.9%)
Visual Fields (Humphrey automated perimetry)	24 (16.4%)
Refraction	20 (13.7%)
CT Scanning of Brain/orbit	15 (10.3%)
Fundus photography	14 (9.6%)
Schirmer's test	13 (8.9%)
Tarsorrhaphy	7 (4.8%)
Eye toilet/dressing	6 (4.1%)
Hess chart	6 (4.1%)
Conjunctival pseudomembrane peeling	5 (3.4%)
Corneal scrapping	5 (3.4%)
Intravitreal injections	1 (0.7%)
B-scan ultrasonography	1 (0.7%)

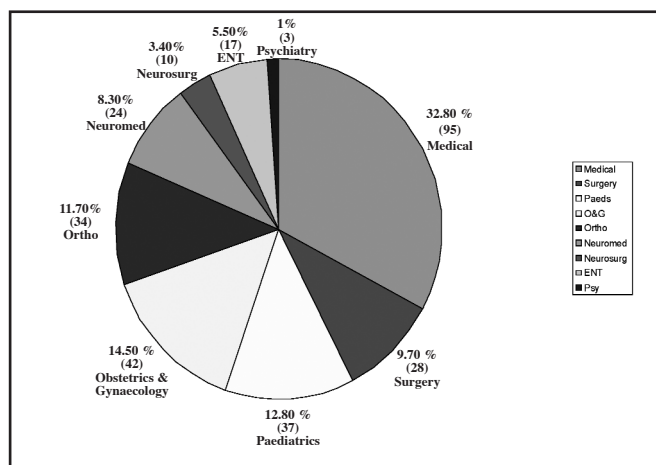


Fig. 1: Ophthalmology consultation referrals from various wards/departments/units (n=290)

Therefore, this study is deemed important considering the high frequency of consultations in our center.

In our study, Internal Medicine and Obstetrics and Gynaecology departments requested the most number of ophthalmology consultations. The majority of the consultations were to rule out diabetic retinopathy in diabetic patients admitted with systemic complications and in pregnant women with gestational diabetes. An Australian study¹ reported Neurosurgery and Neurology as their two main subscribers for Ophthalmology services while a USA based study⁵ listed the Internal Medicine and Surgery departments as the main subscribers. General eye evaluations were commonly requested for patients who were admitted with recent strokes, cranial nerve palsies and for patients who were on long term corticosteroids or for basic eye assessment before starting anti-tuberculous drugs which have potentially sight threatening side effects.

It is interesting to note that 55.5% of all the consultations requested in our center were for screening of eye diseases particularly for diabetic retinopathy. This is a good indication that more non-ophthalmologic units are becoming aware of the complications of diabetes in the eye and are sending their diabetic patients for screening regularly.

Among the patients who had new eye problems, the majority of them were referred for decreased vision due to cataracts, refractive error and for exposure keratitis that developed during hospitalization. There were a number of red eyes due to conjunctivitis and subconjunctival hemorrhage following trauma. A few patients were referred for diplopia and visual field defects that were common in patients with neurological illness. Out of 101 patients seen with new ocular problems, 64 of them (63.4%) had a change in their subsequent management as a result of the consultation. This indicates the importance of the ophthalmic consultation in the overall management of patients.

In a small number of patients, the ophthalmologist was able to help other disciplines in the diagnosis of systemic illness. For example, detection of a Kayser-Fleischer ring helps in the diagnosis of Wilson disease, detection of CMV retinitis is pathognomonic of advanced HIV infection and presence of papilloedema indicates raised intracranial pressure. The supportive clinical findings contributed by the ophthalmologist helps the referring doctor in overall management of the patient^{6,7}.

It is worrying to note that a high proportion of patients (68, 23.4%) who did not get an ophthalmic evaluation during their period of hospitalization subsequently did not turn up for their appointments in the eye clinic. Out of these 68 patients, 52 of them were referred for evaluation of diabetic retinopathy and may turn up with diabetic eye complications at a later date. To minimize the default rate, all diabetic patients should perhaps undergo an eye examination before discharge.

CONCLUSION

Besides providing outpatient eye care, managing acute eye conditions, performing emergency and elective ophthalmic surgery, ophthalmologists also provide a valuable inpatient consultation service in the assessment and management of vision threatening diseases and also contribute to the diagnosis of systemic disease that makes a difference in the management of patients in other departments/units within the hospital. This study affirms the positive contributions made by the ophthalmologists to the management of a diverse range of hospital inpatients. It is advisable to get routine ophthalmology consultation for all the inpatients with systemic diseases like diabetes, hypertension, multiple sclerosis etc, or for any patient admitted in different wards of the hospital (other than eye ward) who has eye problem so that the inpatients will benefit from timely eye care.

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