

# Frequency and Patterns of Eye Diseases in Retina Clinic of a Tertiary Care Hospital in Karachi

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**Purpose:** To evaluate the Frequency and Pattern of Eye Diseases in Retina Clinic of a Tertiary Care Hospital in Karachi

**Material and Methods:** A total number of 27,000 new patients were seen at the Al Ibrahim Eye Hospital (AIEH), retina clinic between July 2009 and June 2010, their data was obtained from the ophthalmic outpatient attendance register. Their records were analyzed for data according to age, sex and clinical diagnoses made after detailed fundus evaluation with binocular indirect ophthalmoscope and slit lamp using 20 D and 90 D lenses respectively. Data was entered and analyzed for simple frequency using SPSS version 14.0. Tests for significant inter group differences were performed using the chi square test with a  $p < 0.001$  considered statistically significant.

**Results:** Out of 27,000, 3615 patients were registered in retina clinic. Diabetic related retinal conditions were the most common cause (39.8%) for registration in the retina clinic. 648 (45% of total DR) patients had clinically significant macular edema (CSME) and 102 (7%) eyes had advanced diabetic eye disease (ADED).

**Conclusion:** There is a tremendous impact of increasing retinal blindness secondary to retinal diseases especially diabetic retinopathy in Pakistan. The impression based on hospital practice is that the problem is on the rise. This entails the necessity for accessible comprehensive eye care services, establishment of human resources, screening and awareness of the disease and affordable eye health policy.

Retinal disease has had a low priority in prevention of blindness programmes in developing countries mainly because retinal diseases were considered an uncommon cause of blindness in the developing world<sup>1</sup>. In spite of the effort and expense involved in acquiring costly equipment and developing skilled human resource for retinal sub specialty, failure in justifying the treatment results of retinal disease has also contributed to the development and strengthening of this assumption<sup>2</sup>.

In developing countries including Pakistan cataract and corneal scarring were the most common cause of blindness. Recently there has been a significant increase in the burden of vitreo-retinal

disorders globally. With increased longevity and increased uptake of cataract surgical services, retinal diseases especially those due to diabetes and AMD are coming up as important causes of blindness and visual impairment. Previous reports from hospital based studies and general population surveys of causes of low vision have implicated vitreo-retinal diseases as the major public eye health burden. Population-based surveys reported vitreo-retinal disorders to be responsible for 8.56% and 12.7% in Iran<sup>3</sup> and India<sup>4</sup> respectively. The age and sex-adjusted prevalence of vitreo-retinal diseases in Korean adults 50 years of age and older was 9.9%<sup>5</sup>. According to the Pakistan National Survey for blindness and visual impairment done in year 2002-03, posterior segment diseases

accounted for 3.4% of total blindness and visual impairment. However the break up is not available.

Retinal diseases vary widely ranging from common but easily treatable to rare and untreatable. The purpose of our study is to generate data on frequency and pattern of retinal disease in patients aged above 16 years presenting at AIEH.

## MATERIAL AND METHODS

Al Ibrahim Eye Hospital provides tertiary level care to Karachi and its suburbs as well as rural population of far-flung areas of Sind. All services are provided free of charge except for cataract and vitreo-retinal surgery, which are done at nominal charges (to bear the cost of consumables). In addition to Karachi and its suburbs, the Hospital provides services to the rural population of districts of Dadu, Thatta in particular, as well as far-flung areas of Sindh in general.

A total number of 27,000 new patients were seen at the AIEH retina clinic between July 2009 and June 2010 as shown by the ophthalmic out patient attendance register. Their records were analyzed for data on age, sex and clinical diagnoses made after detailed fundus evaluation with binocular indirect ophthalmoscope and slit lamp using 20 D and 90 D lenses respectively.

Data was entered and analyzed for simple frequency using SPSS version 14.0. Tests for significant inter group differences were performed using the chi square test with a  $p < 0.001$  considered statistically significant.

The study was conducted with adherence to institutional policy. Ethical clearance from the ethics committee (institutional review board) of AIEH was obtained prior to commencement of the study and patients' privacy was maintained by excluding identification names and hospital numbers of patients from data analysis and manuscript preparation.

## RESULT

A total of 27,000 new patients visited Al-Ibrahim Eye Hospital, Karachi, from June 2009 to June 2010, of which 3615 (13.4%) were registered in the retina clinic.

Out of these 3615 patients of the retina clinic, 2271 (62.8%) were males while 1344 (37%) were females. The mean age of the patients registered in the retina clinic was 46.57 years (SD=16.7). The minimum age of the patient registered in retina clinic was 7 years while

the maximum age was 90 years. Among males the average age was 47.2 years ((SD= 16.9) while in females it was 48.27 years (SD= 16.3). It appeared that the conditions are more common in 45 to 60 years age group.

Out of these 3615 patients 2304 were from Karachi, 69 were from rural areas of Balochistan province, 72 patients were from the urban areas of Balochistan province, 24 were from Punjab province, 5 from Khyber Pakhtoon khwa province while the rest of the patients belonged to rural areas of Sindh province. Out of 3615 patients 1736 (48%) had monocular involvement while rest of the 1879 (52%) patients had bilateral involvement.

Diabetic related retinal conditions were the most common cause (39.8%) for registration in the retina clinic followed by retinal detachment in 20.6% patients. Distribution of different diseases that led to registration in the retina clinic is shown in (Table 1).

Out of 1440 (39.8%) patients having diabetic retinopathy 648 (45% of total DR) patients had clinically significant macular edema (CSME) and 102 (7%) eyes had advanced diabetic eye disease (ADED). Table 2 gives the relative frequency of different types of diabetic retinopathy according to the eye/s involved.

Of the total 648 patients with CSME, 264 (18.3 %) patients had bilateral clinically significant edema while 384 (26.6%) had unilateral clinically significant edema. The following diagram shows the pattern of diabetic retinopathy.

## DISCUSSION

The retinal disease pattern noted at AIEH is comparable to those noted at other institutions of the developing world. Vitreo-retinal disorders constituted a significant reason for presentation to eye clinics and tertiary eye department, ranging from 3.9% in South-Eastern Nigeria<sup>7</sup> to 12.5% in Ethiopia<sup>8</sup> In Nigeria vitreo-retinal disorders constituted a significant cause of ocular morbidity and vision loss with reported hospital prevalence rate of 13.0%<sup>9</sup> A study from Malaysia has also reported retinal diseases to be responsible for 12% of patients presenting to outpatient department of eye units<sup>10</sup>.

The male to female ratio was 1.7:1. This is again similar to the study done in Ethiopia<sup>8</sup>. The higher male attendance of hospitals for healthcare in developing countries contributes to the male preponderance.

However greater uptake of cataract surgical service by males may be another reason for increased number of males with retinal diseases. Since the study was aimed to find out the age, sex and diagnostic varieties in order to assess pattern of posterior segment disease in patients presenting at the AIEH, other demographic and therapeutic details were not included.

**Table1:** Frequency of different types of retinal diseases

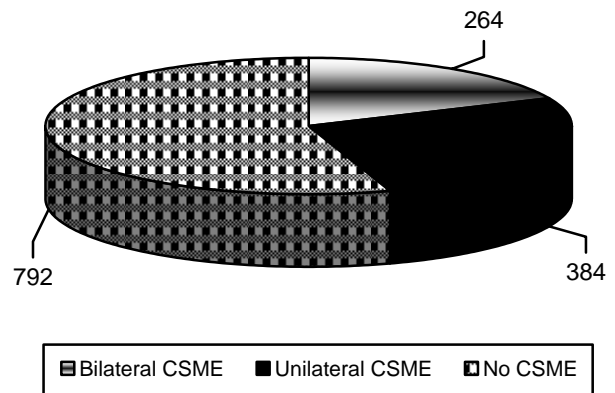
Retinal Disease	No. of Patients n (%)	Unilateral n (%)	Bilateral n (%)
Diabetic Retionopathy	1440 (39.8)	384 (22.1)	687 (36.6)
Retinal Detachment	744 (20.6)	649 (37.4)	158 (8.4)
High Myopia	336 (9.3)	22 (1.3)	341 (18.1)
ARMD	335 (9.3)	168 (9.7)	438 (23.3)
Vitreous Hemorrhage	192 (5.3)	192 (11.1)	0 (0)
CRVO	96 (2.7)	95 (5.5)	3 (0..2)
BRVO	95 (2.6)	71 (4.1)	1 (0.1)
Macular Hole	48 (1.3)	21 (1.2)	68 (3.6)
Vasculitis	47 (1.3)	5 (0.3)	42 (2.2)
Fundus Dystrophies	47 (1.3)	27 (1.6)	57 (3.0)
Cystoid Macular Edema	24 (0.7)	20 (1.2)	8 (0.4)
Neovascular Glaucoma	23 (0.6)	29 (1.7)	5 (0.3)
Endophthalmitis	14 (0.4)	15 (0.9)	0 (0)
Others	174 (4.8)	38 (2.2)	71 (3.8)
Total	3615(100)	1736(100)	1879 (100)

**Table 2:** Frequency of different types of diabetic retinopathy

Type of Retinopathy	No of patients	Percentage n =3615	Percentage n=1440
Bilateral NPDR	624	17.3%	43.3%
NPDR + PDR	216	5.97%	15%
Bilateral PDR	192	5.3%	13.3%
NPDR + ADED	192	5.3%	13.3%
Bilateral ADED	96	2.6%	6.6%
PDR + ADED	120	3.3%	8.3%

NPDR = Non-proliferative diabetic retinopathy  
PDR= Proliferative diabetic retinopathy  
ADED= Advanced diabetic eye disease

**FREQUENCY OF CSME AMONG PATIENTS HAVING DIABETIC RETINOPATHY**



**Fig. 1:** Bilateral clinically significant edema (CSME) =264 (18.3 %)  
Unilateral clinically significant edema (CSME) =384 (26.6%)  
No clinically significant edema (CSME) = 792 (55%)

The mean age group in our study was 47 years in males while in females it was 48.6 years. It appeared that the conditions are more common in 45 to 60 years age group. This is similar to the findings from Nigeria<sup>9</sup>and can be compared to the study done in Malaysia where majority (61.9%) patients were above the age of 50 years.

Diabetic retinopathy was the most common cause for attendance in the retina clinic showing that

diabetic eye disease is emerging as a challenge. This is similar to the results from Nepal eye hospital where diabetic related conditions were most common cause for visiting the retina OPD<sup>11</sup>. In Malaysia<sup>10</sup> and Nigeria<sup>9</sup> diabetic retinopathy accounted for 9.7% and 9.6% retinal diseases respectively. This warrants timely screening, evaluation, treatment, follow up and education for diabetic related conditions.

Retinal detachment represented 20.6% of retinal diseases in this study as opposed to only 7% in Nepal and 12% in Malaysia.<sup>10</sup> However this is close to the findings from Ethiopia where retinal detachment accounted for the second largest group (24.5%) of diseases. Retinal detachment surgeries with restoration of useful vision are reported to be successful in developing communities<sup>1</sup>. Improvements in the capacity to detect and manage retinal detachment will prevent blindness in these economically viable age groups.

ARMD accounted for 9.3% of retinal diseases. This is in contrast to the prevalence of 2.7% AMD from Ethiopia. The age adjusted prevalence of ARMD was 4.72 % in Sri Lanka<sup>12</sup>. In the second national blindness survey of Pakistan (2002-2004) macular degeneration accounted for 2.8%<sup>1</sup>. This difference may be due to the fact that the current study was a hospital based study where patients have manifest retinal conditions.

It appears that inspite of proliferation of various levels of posterior segment service facilities within the country and even the city the number of attendance in retina clinic at AIEH is on rise. This on one hand stresses and justifies additional investments needed to tackle all kinds of posterior segment eye problems including the ones needing complex vitreo-retinal surgical procedures while on the other recommends general community awareness in order to reduce undue blindness and visual impairment due to avoidable causes.

The results of this study gave an insight into the pattern of retinal eye diseases seen in a tertiary center in Karachi. However in order to generalize the results it is necessary to conduct a larger multi center study or a population based study.

## CONCLUSION

There is a tremendous impact of increasing retinal blindness secondary to retinal diseases especially DR in Pakistan. The impression based on hospital practice is that the problem is on rise. The set up for their evaluation and management especially surgical is

expensive and for average Pakistani population the treatment is not affordable unless subsidized by the hospital. This entails the necessity for accessible comprehensive eye care services, establishment of human resources, screening and awareness of the disease and affordable eye health policy.

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