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Original Research Article

The pattern of eye disease in a provincial ophthalmic hospital of Viet Nam

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ABSTRACT

Objective: To describe the pattern of eye disease in a provincial ophthalmic hospital in Viet Nam.
Materials and Methods: We retrospectively analyzed records of 1735 patients with disorders of the eye and adnexa admitted to the Nghe an Eye Hospital, Nghe an province, Vietnam between January 2022 and May 2023.
Results: The mean age of patients was 60.4± 16.6 years old and 54.7% were females. The most common cause of hospitalizations were disorders of sclera, cornea, iris, and ciliary body (55.0% of cases) followed by glaucoma (29.2%) and disorders of the eyelid, lacrimal system, and orbit (15.8%). Keratitis was the most common ocular morbidity (40.1%), followed by glaucoma (29.20%), and iridocyclitis (13.5%). The average highest age was in patients with disorders of the eyelid, lacrimal system, and orbit (67.3 ± 13.4 years) followed by those with glaucoma (62.2 ± 13.8 years) and lesions on the sclera, cornea, iris, and ciliary body (57.5 ± 17.9 years). The female/male rate among those with disorders of eyelid, lacrimal system and orbit was higher than among cases with the other disorders (1.6/1 vs 1.1/1, p = 0.008). The mean length of hospital stay was 8.6 days and patients with disorders of sclera and cornea had the most extended average length of hospital stay (more than 10 days).
Conclusions: Keratitis, glaucoma, and iridocyclitis were the major ocular conditions seen in this study. Prevention of keratitis should decrease both morbidity and health expenditure for eye disease.

1. Introduction

Ocular diseases are among the most common conditions.[1] According to the World Health Organization (WHO), at least 2.2 billion people around the world have a vision impairment and almost everyone will experience an eye condition and require eye care services during their lifetime.[2] The pattern of eye disease is influenced by a number of factors such as age, gender, and natural as well as socioeconomic factors so it may be varied.[3–5] Therefore, updated information on the pattern of ocular conditions in different regions is necessary for planning the intervention programs in the community as well as for the provisioning of effective eye care services.

Vietnam is a country located in a region with the largest disease burden due to eye diseases - the Southeast Asia region.[6] In addition, Vietnam is a developing country, so eye care utilization is lower compared to developed countries.[7] Nghe An is a central province of Vietnam where most people living there are farmers[8] who are at an elevated risk of eye damage because of the increased occupational exposure in combination with the lack of eye protection.[8,9] All these facts may affect the pattern of eye disease in the community as well as among hospitalized patients, however

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epidemiological data of the eye conditions in Vietnam has rarely been documented. The present study aims to report the pattern of eye diseases among in-patients in Nghe An Eye Hospital, focusing on the lesion of the globe and its surrounding tissues - ocular adnexa.

2. Materials and Methods

2.1. Ethical consideration

This retrospective study is part of thesis work for the fulfilment of Doctor of Philosophy in Health Studies at the Vietnam National Institute of Malariology, Parasitology and Entomology. This study was conducted in accordance with the principles of the Declaration of Helsinki and obtained clearance from the ethics committee of the institute. Informed consent was waived by the ethics committee due to the retrospective nature of the analysis using information contained in medical charts and records, which were anonymize.

The sample size for this study is determined by the standard formula for estimating a population proportion. With an anticipated proportion (p) of 50% patients being males, at a 95 per cent confidence interval, relative precision (e) of 5% the desired sample size was 1537.[10] Data of all new subjects with diseases of the eye and adnexa admitted to the Nghe an Eye Hospital, Nghe An province, Vietnam between January 2022 and May 2023 was retrieved. The patients underwent a thorough routine eye examination and were diagnosed with diseases belonging to category VII (Diseases of the eye and adnexa) of the International Statistical Classification of Diseases (ICD-10 Version: 2015).[11] All the patients received standard care for eye diseases as instructed by the Vietnam Ministry of Health and their length of stay was recorded.

Data analysis was performed using SPSS version 23.0 (IBM Corporation, Armonk, NY, USA). Categorical variables were expressed as case number (n) and percentages, while numerical variables were expressed as mean and standard deviation (±SD). The comparison between numeric variables was done by student T-test and chi-square for categorical variables. For all statistical tests, the decision was significant if the p-value is < 0.05.

3. Results

We evaluated 1735 patients in the eye hospital during the study period. The age of the participants ranged from 9 to 98 years with a mean age of 60.4± 16.6 years. Most patients were aged > 50 years (1241 participants representing 78.6% of all sample). The female-to-male ratio was 1.2:1 (Table 1).

Table 2 shows the distribution of different eye diseases among the studied groups. The most common cause of hospitalizations for diseases of the eye and adnexa were disorders of sclera, cornea, iris, andciliary body (55.0% of cases) followed by glaucoma and disorders of eyelid, lacrimal system and orbit. Keratitis was the most common ocular morbidity (40.1%), followed by glaucoma (29.20%), and iridocyclitis (13.5%). Among these anterior segment disorders the commonest condition was corneal ulcer (H16.0, 455 patients, 26.2%) followed by keratoconjunctivitis (H16.2, 106 cases, 6.1%). There were 128 cases (7.4%) having keratoconjunctivitis (H16.2, H19.1, H19.2, H19.3). The commonest ocular condition among cases with glaucoma was primary angle-closure glaucoma (H40.2, 12.1%) followed by glaucoma secondary to other eye disorders (H40.5, 5.8%), and glaucoma secondary to eye inflammation (H40.4, 4.0%).

Table 1: Democratic characteristics of the patients (n= 1735)

		n (%) or mean ± SD	
Age group (year)	2-10	25	1.4
	11-20	33	1.9
	21-30	37	2.1
	31-40	121	7.0
	41-50	156	9.0
	51-60	372	21.4
	61-70	503	29.0
	81-90	366	21.1
	91-99	106	6.1
	91-98	16	0.9
Mean (years)		60.4 ± 16.6	
Gender	Male	786	45.3
	Female	949	54.7

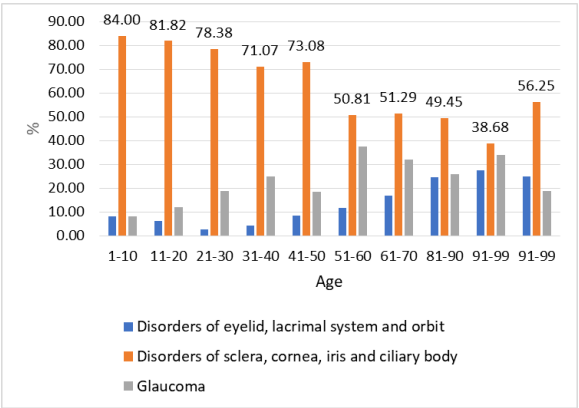

Figure 1: Ocular disease pattern among different age group

Table 3 shows that the average age significantly differed among separate groups. The highest age was in patients with disorders of the eyelid, lacrimal system, and orbit (67.3 ± 13.4 years) followed by those with glaucoma and lesions on the sclera, cornea, iris, andciliary body. Additionally, the rate of disorders of the eyelid, lacrimal system and orbit was more than 70% among patients aged 50 or less, compared to about 50% among those aged 51 years or more. The rate of patients with glaucoma or corneal and conjunctival lesions increases with age (Figure 1).

Table 2: Distribution of the studied cases according to disease (n= 1735)

Group	Disease	Code	Disease		Group	
			n	%	n	%
1 (H00–H06)	Hordeolum and chalazion	H00	1	0.1	274	15.8
	Other inflammation of eyelid	H01	28	1.6		
	Other disorders of eyelid	H02	212	12.2		
	Disorders of lacrimal system	H04	32	1.8		
	Disorders of orbit	H05	1	0.1		
2 (H15-H22)	Keratitis	H16	695	40.1	955	55.0
	Disorders of sclera and cornea in diseases classified elsewhere	H19	22	1.3		
	Iridocyclitis	H20	235	13.5		
	Disorders of iris and ciliary body in diseases classified elsewhere	H22	3	0.2		
3 (H40-H42)	Glaucoma	H40	506	29.2	506	29.2

Table 3: The average age of patients in different groups

Group	n	Mean (years)	p
Disorders of eyelid, lacrimal system and orbit (1)	274	67.3 ± 13.4	1-2<0.001
Disorders of sclera, cornea, iris and ciliary body (2)	955	57.5 ± 17.9	1-3<0.001
Glaucoma (3)	506	62.2 ± 13.8	2-3<0.001

Table 4: Length of hospital stay (days) of top common eye diseases

Disease	Code	n	Days (Mean ± SD)
Other inflammation of eyelid	H01	28	5.6 ± 3.5
Other disorders of eyelid	H02	212	3.7 ± 3.1
Disorders of lacrimal system	H04	32	3.2 ± 3.2
Keratitis	H16	695	10.5 ± 6.8
Disorders of sclera and cornea in diseases classified elsewhere	H19	22	10.0 ± 4.5
Iridocyclitis	H20	235	9.1 ± 4.3
Glaucoma	H40	506	8.2 ± 3.7
Total		1735	8.6 ± 5.7

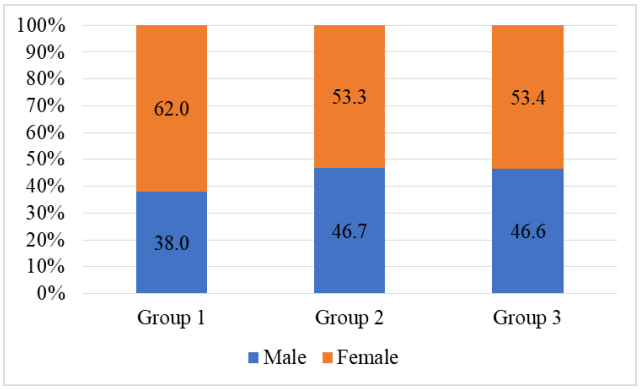

Figure 2: Ocular disease distribution among different gender
Group 1: Disorders of eyelid, lacrimal system and orbit.
Group 2: Disorders of sclera, cornea, iris and ciliary body.
Group 3: Glaucoma.

The hospital admission rates due to ocular diseases were higher among females compared to males. Females are more affected by the disease of Group 1 compared to those of Groups 2 and 3 (the female/male rate in Group 1 = 1.6/1 vs 1.1/1 in Groups 2 and 3, p = 0.008). The female/male rate of patients with Group 2 or Group 3 was similar to each other and to the rate in the whole sample (Figure 2).

The mean length of hospital stay was 8.6 days and patients with disorders of sclera and cornea (including keratitis) had the longest average length of hospital stay (more than 10 days) (Table 4).

4. Discussion

4.1. Pattern of eye disease

The majority (955, 55.0%) of our sample came for treatment of disorders of sclera, cornea, iris, and ciliary body (Table 2) and keratitis was the commonest ocular morbidity (40.1%). The dominance of corneal lesions in the present study follows the trend of more prevalent of keratitis in low-

income countries.[12,13] It is important to note that corneal lesion is the fifth most common cause of blindness and infectious keratitis is the leading cause of corneal blindness worldwide.[12] For the limited resources in a provincial eye hospital, the specific agents causing corneal ulcers could not be identified. However, about 80% of local people are farmers so they are at a considerable risk of infection keratitis of traumatic aetiology, especially fungal keratitis.[12] A previous study conducted at Vietnam National Eye Hospital showed that fungi (n=1092, 64.0%) and bacteria (n=1107, 64.9%) were the two most commonly identified pathogens causing infectious keratitis.[14]

The second most common cause of eye disease among hospital patients is glaucoma (29.2%) which agrees with observations in Ghana,[5] Bangladesh.[15] In the present study, disorders of the eyelid, lacrimal system and orbit were less frequent in comparison to the other disorders. In the Thai population, this disorder is the second most common among out-patient eye conditions (13.8%), however, contribute to only 3.3% among in-patient eye conditions.[3] In England and Wales, the disorders of the eyelid, lacrimal system, and orbit (11.5%) is still the frequent cause of hospitalization for diseases of the eye and adnexa, however, in a decreasing trend.[4] These results may suggest the difference in the pattern of eye disease among different populations. Some disorders were not included in the analysis due to their rarity such as disorders of vitreous body and globe (H46-H48), of optic nerve and visual pathways (H49-H52) and disorders of ocular muscles, binocular movement, accommodation, and refraction (H53-H54). Disorders of the conjunctiva are common in out-patients, however, they are usually rare among in-patients.[3] In the present study, all patients with the disorder of conjunctiva also had lesions of the cornea so they were diagnosed with keratoconjunctivitis and analyzed as keratitis.

4.2. Age differences

In our sample, more than three-quarters of patients (78.6%) are those aged > 50 years old and the average age was 60.4± 16.5 years (Table 1). The predominance of aged participants in the current study replicates those from other studies. Click or tap here to enter text.[16,17] In Poland, more than 80% of people in the age group above 50 years suffer from eye diseases.[18]

Considering age group variations, our results are consistent with many previous studies. The preponderance of younger patients with sclera, cornea, iris, and ciliary body disorders in the current study (Figure 1 and Table 3) was in line with other reports in Vietnam,[14] and elsewhere.[19,20] In general, corneal lesion is more prevalent among persons of working age.[12] Conversely, disorders of the eyelid, lacrimal system and orbit and glaucoma seem to be more common among older persons (Figure 1). This can be attributed to the ageing population, who are more susceptible to senile ptosis, lacrimal, and orbital disorders.[4] Glaucoma is a disease characterized by a degeneration of retinal ganglion cells and retinal nerve fiber layers and the relationship between the disease with age has been confirmed in many studies.[21,22]

4.3. Gender differences

Regarding gender variations, data in Table 1 shows that females (54.7%) were more in attendance than males at our hospital. This agrees with some previous studies in Ghana,[5] Sudan,[16] and Nigeria.[17] The significant disproportion of ocular disease among women has been affirmed in many clinically based studies, however, the knowledge of this disparity is limited.[23]

Concerning the difference in gender among different type of disease, results in Figure 2 show that male/female differences in groups 2 and 3 were similar to all sample, but in group 1, the proportion of women was significantly higher. Our finding was consistent with results of a study done in England and Wales which found a higher rate of admission due to disorders of eyelid, lacrimal system, and orbit among women.[4]

4.4. Length of stay

Results in Table 4 show that most patients were at the hospital for three or four days and keratitis had the longest average length of hospital stay. This finding agrees with a previous studies performed among the Thai population which shows that the longest hospital stay is among patients with keratitis.[3] With the highest prevalence and longest hospital stay of keratitis, measures to prevent this disorder may have great significance in reducing both morbidity and health expenditures for eye disease among the local population.

There are some limitations of our study. This is a hospital-based study, so it is unable to accurately assess the pattern of eye diseases in the general population. In addition, due to the retrospective nature of the study, other factors that may predict the length of hospital stay can not be identified.

5. Conclusion

The present study found that disorders of sclera, cornea, iris, and ciliary body, especially keratitis, are the leading causes of eye disease among in-patients. There was a preponderance of females than males, especially among those with disorders of eyelid, lacrimal system, and orbit. Most patients are aged persons but the lesions on the cornea are more prevalent in younger patients. Prevention of keratitis should be strengthened to decrease both morbidity and health expenditure for eye disease.

6. Source of Funding

None.

7. Conflict of Interest

Nil.

8. Data Availability Statement

The datasets generated during and/or analyzed during the current study are available from the corresponding author on reasonable request.

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