

Characteristics Of Patients Treated In The Emergency Department Of Cicendo Eye Hospital Bandung

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ABSTRACT

The Eye Hospital Emergency Department in Cicendo, Indonesia, is experiencing an increase in patients seeking treatment due to eye trauma cases, a prevalent issue in Western countries and Asia, including Indonesia. This study aims to determine the characteristics of patients seeking treatment in the emergency room from June-July 2024. The analytic observational method with a cross-sectional approach was used. The results showed that the largest age group of patients was adult males, with an average age of 43 years. The most common complaint was eye pain, with 40% of patients reporting it. The most common eye condition was foreign bodies in the cornea, followed by mechanical trauma, with 12% of patients experiencing corneal abrasion and lacerated eyelid, and 6% of patients experiencing corneal abrasion and lacerated eyelid. Most patients had a history of previous eye disease, which was the same as the diagnosis of a foreign body in the cornea, specifically the eye affected by grams. This study highlights the need for improved emergency care services in the eye hospital.

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INTRODUCTION

The emergency department (ED) is one of the emergency service facilities in the hospital. Patients in the emergency room get emergency services from various health fields, regardless of economic status, and this emergency room service is 24 hours. In addition, the rapidly developing science related to emergency services makes patients feel that the emergency room is one of the sources of comprehensive and rapid health services⁽¹⁾. There is an increase in the number of patients coming to the emergency room from year to year, one of which is from the results of research in Germany which states that the emergency room plays a role as a contributor to 19 million patients each year and 8.7 million patients are hospitalized after diagnosis and initial treatment in the emergency room⁽²⁾. The number of patients who came to the emergency room of Cicendo Eye Hospital in 2019 also showed a total of 8,397 patients came for treatment, where new patients showed more than old patients, namely 6,401 new patients and 1,996 old patients of various ages, regional origins, domiciles, and payment

methods when completing services in the emergency room (Recapitulation of emergency room patient visits PMN MATA CICENDO Hospital by dr. Syumarti, Sp.M (K), M.Sc, CEH).

Eye trauma cases in western countries are 14.4 - 21.1% while in Asian countries, namely in Singapore, it is 4.4%⁽³⁾. The COVID-19 pandemic in 2020 also played a role in the number of eye patients who came to the emergency room for treatment, one study conducted in the UK stated that there was a 68% decrease in the number of patients who came in April 2020 when compared to April 2019⁽⁴⁾. This is due to the anxiety that patients feel about being infected with COVID-19 and various other factors, including patients from low socioeconomic groups who feel that eye emergencies do not have to be treated immediately⁽⁴⁾.

The number of patients who come with eye trauma to the Emergency Room of the Eye Hospital has increased, as seen from one study conducted at Dr. Soetomo Hospital which stated that there were 953 patients with eye trauma from 2014 - 2018 with an average total of 190 patients in one year, where the majority of patients who came were men with an age range of 21 - 30 years and closed eye trauma was still the most common cause⁽⁵⁾. Eye trauma is the reason most patients are referred to ophthalmologists, so early diagnosis and rapid treatment are needed to treat patients with eye injuries so that there are no more dangerous risks for patients, especially for the patient's vision⁽⁵⁾. Based on data obtained from the Basic Health Research (RISKESDAS) in 2018, it was found that of all injury cases, eye trauma cases were among the six most common trauma cases, totaling 46,488 eye trauma cases per year in Indonesia, with the number of eye trauma cases in West Java as much as 0.51%⁽⁶⁾.

Cicendo Eye Hospital is a national eye center that often receives patients with eyelid trauma both to get first aid and to get referrals to hospitals for other trauma treatments. This study is an initial study to determine the characteristics of patients who come to the emergency room of Cicendo Eye Hospital so that it can be used as a basis for further research.

Health services in the eye hospital emergency department

Eye health care in the Emergency Department (ED) is an important aspect, especially in Eye Center Hospitals. In several studies, it was mentioned that many patients with eye complaints chose to seek treatment at the emergency room of an eye hospital because of complaints that were felt to need immediate treatment. One of them in the United States was mentioned in the National Ambulatory Hospital, precisely in 2002, as many as 56.5% of patients came with emergency cases or needed immediate treatment⁽⁷⁾. Other statistical data published by the Nationwide Emergency Department Sample (NEDS) states that in 2008 patient visits to the emergency department were 636,000 patients with eye complaints⁽⁸⁾.

As mentioned earlier, because many patients come to the emergency room with eye complaints, most often come to the hospital emergency room. Among them, from 2006 - 2011 it was found that in the United States, there were 11,929,955 patients presenting with eye complaints with an average patient age of 21 years and the majority of patients who came were male. Of all these patients, the following are some of the most common patient diagnoses, including emergency cases, namely corneal abrasion, foreign bodies in the cornea, and contusions to the eye and surrounding tissues. For non-emergency cases, including conjunctivitis, external hordeolum, and subconjunctival hemorrhage⁽⁹⁾.

Ocular Emergencies

Eye emergencies can vary from trauma cases to acute, chronic, and inflammatory cases in the eye. Trauma to the eye is an important case because it can be one of the causes of vision loss and disability in the future so rapid initial management can reduce morbidity and complications in patients⁽¹⁰⁾. Eye emergencies can be divided into acute emergencies that must be treated within minutes such as chemical trauma to the cornea and conjunctiva, then there are emergency cases, namely cases that must be treated within hours, such as penetrating eyeball injuries, corneal abrasion, Foreign bodies in the cornea, hyphema, deep eyelid lacerations, and neuropathy due to optic trauma and the last is semi-emergency cases, which are cases that can be treated in a matter of 1 to 2 days, such as orbital fractures and subconjunctival hemorrhages⁽¹¹⁾. Various diagnoses that often occur include^{(10),(11)}:

- a. Chemical Trauma
- b. Ocular trauma (penetrating and non-penetrating)
- c. Corneal laceration
- d. Eyeball trauma (ruptured globe)
- e. Corneal abrasion
- f. Foreign bodies in the cornea and conjunctiva
- g. Traumatic iritis
- h. Traumatic hyphema
- i. Blow-out orbital fracture
- j. Acute conjunctivitis
- k. Acute open-angle glaucoma
- l. Dacryocystitis or inflammation of the lacrimal sac

Based on the previous explanation, ocular trauma is divided into penetrating and non-penetrating. Penetrating ocular trauma is further divided into rupture and laceration. As for non-penetration, it is divided into hyphema, corneal abrasion, subconjunctival hemorrhage, foreign body in the cornea, as well as blowout fracture and traumatic iritis.

According to the National Health Insurance⁽⁶⁾ there are general or other diseases that can be treated at the Hospital Emergency Room and can also be treated at the Eye Hospital Emergency Room because it functions for initial management first before being referred to a more adequate health facility and specialist doctors in accordance with the patient's emergency illness. Some of these diseases include heart attacks and arrests, physical injuries due to accidents, breathing difficulties, strokes, poisoning, and other conditions such as fainting, unusual and sudden headaches, seizures, active bleeding that is difficult to stop, coughing or vomiting blood, high fever, diarrhea that does not stop to suicide attempts.

Ocular Emergency Cases in Other Countries and Indonesia

Cases of eye emergencies occur in various countries from outside Indonesia with a percentage of cases that vary and vary from complaints and diagnosis of diseases of patients who come to the emergency room. One study conducted in the UK from 2004 - 2021 found that there were 287,267 cases of severe trauma of which 0.8% were cases of eye trauma. The incidence is often in the male gender, 72% with an average age of 34.5 years. Eye trauma

cases are often in the conjunctiva, which is 29.3%, while corneal injuries are less common when compared to eye trauma in the conjunctiva⁽¹²⁾.

In the case of eye emergencies that entered the emergency room in Thailand, which is also a country in Southeast Asia, it was found that 704 patients came with complaints of eye trauma, of which 60% were male patients and the total number of patients with eye complaints, 75.9% of patients experienced trauma to the eye. The most common diagnoses were foreign bodies in the cornea and conjunctiva and minor trauma to the conjunctiva where the foreign body was iron or tools used when building a house, besides that for non-traumatic eye cases, conjunctivitis and corneal ulcers were also the most common⁽¹³⁾.

METHODS

This study was conducted in the Emergency Room of Cicendo Eye Hospital Bandung within three weeks of data collection on weekdays from 08.00 - 14.00. The research method used was analytic observational, with a cross-section approach that measured the independent and dependent variables at the same time. Samples in the study were taken by sampling techniques on patients who met the inclusion criteria, namely patients who came to the emergency room of Cicendo Eye Hospital from June to July 2024. This study uses data obtained from questionnaires distributed to 50 emergency room patients with the method of patient serial numbers, namely odd serial numbers so that there are 3 - 5 people who are asked per day. Then, the data obtained from the questionnaire is analyzed univariately. The dependent variable in this study is choosing to seek treatment at Cicendo Eye Hospital while the independent variables are age and gender. Then the results are described in the form of tables and narratives.

RESULTS

The following is attached to the results of this study in tabular form

Table 1. Results of Univariate Analysis of This Research Related to Age and Gender

Variables	n = 50	%
Age (year)		
Average (SD) : 43,32 (14,24)		
Median (Min-max) : 44,5 (19-70)		
19-30 years old	13	26,0
31-40 years old	5	10,0
41-50 years old	19	38,0
51-60 years old	6	12,0
61-70 years old	7	14,0
Sex		
Men	40	80,0
Women	10	20,0

Table 2. Results of Univariate Analysis of This Study Related to Complaints and Perceived

Variables	Duration	
	n = 50	%
Complaints		
Eye pain	20	40,0
Swelling around the eye	1	2,0
Difficulty seeing	13	26,0
Difficulty moving the eye	1	2,0
Foreign body sensation in the eye	11	22,0
Other (glare, dirt, black spots, red spots etc.)	4	8,0
Complaints Started		
Today < 6 hours	11	22,0
Today > 6 hours	5	10,0
A few days ago (1-5 days ago)	29	58,0
A few weeks ago (1-2 mg ago)	2	4,0
Has been felt for a long time (1 month, 1 year)	3	6,0

Table 3. Results of Univariate Analysis of History of Eye Disease

Variables	n = 50	%
Previous history of eye disease		
No History of previous eye disease	20	40.0
History of previous eye disease	30	60.0
Type of previous eye disease history (n = 30)		
foreign body in the eye	3	10,0
eye swelling	1	3,3
retinal disorders	1	3,3
infection	3	10,0
right eye cataract	1	3,3
left eye double vision	1	3,3
eye affected by gram	7	23,3
eye pain on movement	1	3,3
blurred vision	2	6,7
presbyopia	1	3,3
inflammation of the right eye	1	3,3
history of lens implant surgery	1	3,3
history of sudden red eye	1	3,3
history of cataract surgery	2	6,7
eye surgery history	1	3,3
history of gerindra in the eye	1	3,3
history of exposure to light	1	3,3

exposed to welding	1	3,3
Control History of previous eye disease (n = 30)		
Regular	15	50,0
Irregular	15	50,0

Table 4. Univariate Analysis Results of This Research Related to Eye Diagnoses

Variables	N = 50	%
Diagnosis at referral		
Foreign body	1	2,0
Eye swelling	2	4,0
Retinal disorders	1	2,0
Infection	2	4,0
Irritation	1	2,0
Eye wounds that need stitches	2	4,0
Eye exposed to fluid	2	4,0
Retinal nerve impairment	1	2,0
Corneal ulcer	1	2,0
None Diagnosis	37	74,0
Diagnosis on admission to hospital		
Retinal detachment	2	4,0
Corneal abrasion	3	6,0
Foreign body in the cornea	15	30,0
Black ball hyphema	1	2,0
Corneal epithelial defect	2	4,0
Endoфтalmitis	1	2,0
Traumatic iritis	1	2,0
Traumatic cataract	1	2,0
Keratitis	2	4,0
Tear of the eyelid	2	4,0
Optic neuritis	2	4,0
ODS PDR	1	2,0
Hemorrhage of the blood vessels of the eye	1	2,0
Retrobylbar optic neuritis	1	2,0
History of retinal injections	1	2,0
Cellulitis of the eye	1	2,0
Subconjunctival bleeding	1	2,0
Suspected uveitis	1	2,0
Mechanical trauma	6	12,0
Thermal trauma	2	4,0
VL palpebra	3	6,0

In this study there were 50 patients who came to the Emergency Room of Cicendo Eye Hospital in the period June - July 2024 there were 50 patients who came with the inclusion criteria were all patients with odd serial numbers, while the exclusion criteria were all patients who came with even serial numbers. Based on the analysis table, it can be seen that the most patients come to the emergency room are adult patients with an average age of 43 years and the distribution of data as many as 19 patients aged 41-50 years (38%) with most of them being male patients, namely 40 people (80%). The most common patient complaint is eye pain, namely 20 people (40%) and felt since 1-5 days ago (58%). Of all patients were also asked about the history of previous eye disease and the majority answered that there was a history of eye disease, namely 30 people (60%) with the most history of eye disease was the eye affected by gram, namely 7 people (23.3%). The diagnosis of patients at Cicendo Eye Hospital is known to consist of a variety of eye diagnoses but the majority in this study were foreign bodies in the cornea, namely 15 people (30%).

Discussion

The patient presented with a chief complaint of pain accompanied by swelling in the area around the eye. The patient also experienced difficulty in seeing and moving the eye. In addition, there was a foreign body sensation in the eye. Additional symptoms reported included photophobia (sensitivity to light), discharge from the eye, and the appearance of black spots and red spots in the vision. These complaints were felt by various patients. They range from less than 6 hours to more than 6 hours. As for those who feel it in a few days, weeks, and years.

In this study, almost all patients complained of eye pain that was felt a few days before the patient came to the emergency room of Cicendo Eye Hospital with the following results, including the most complaints of eye pain (40%), followed by complaints of difficulty seeing (26%) and foreign body sensation (20%). The results of this study are in line with the results of research conducted in South China, where various complaints were found by patients who came to the eye emergency room and found complaints in the form of eye pain, namely as many as 1,010 patients (53%), then there were also complaints of difficulty seeing or blurry vision (43%) and foreign body sensation (10%)⁽¹⁴⁾. In addition, there is also research conducted in Canada found that the most common complaint was the presence of foreign bodies, namely 100,152 cases (16%) followed by conjunctivitis, corneal abrasion, and visual disturbances, namely 50,392 cases (8.1%)⁽¹⁵⁾. From these two studies, it was found that the most common complaints felt by patients when seeking treatment at the Eye Emergency Room.

In the systemic disease history check, some patients reported a history of systemic disease, while others had no such history. The most commonly reported types of systemic diseases included hypertension, diabetes mellitus (DM) with hypertension, and a combination of DM, hypertension, and heart disease. Regarding control of systemic diseases, some patients had regular control, while others did not comply with regular control.

In this case, 42 patients had no history of systemic disease (84%) while 8 other patients had a history of systemic disease which was divided into 4 patients with hypertension (50%), diabetes mellitus and hypertension as many as 3 people (37.5%) and 1 other patient had a

history of hypertension, diabetes, and heart disease. This data is in accordance with research in America which states that the link between diabetes and eye conditions is closely related, where in diabetic patients there is a condition where the corneal endothelium experiences reduced cell density, corneal epithelium has a high risk of keratitis and ulceration, reduced wound healing process, and blepharitis can occur and increased complaints of dry eyes and discomfort⁽¹⁶⁾. In another study conducted also stated that 70% of diabetic patients experience keratitis, namely superficial punctate keratitis which can also experience recurrent corneal erosion and neutrophilic ulcers⁽¹⁷⁾. Another data contained in this study is the state of hypertension where there is also research conducted in America found that patients with hypertension tended to experience visual impairment, along with a group of patients who experienced all three, namely hypertension, diabetes, and heart disease⁽¹⁸⁾. Another study also mentioned that there is an association between a person's chronic disease conditions and visual impairment, where the increased prevalence of chronic conditions can have an effect⁽¹⁹⁾.

In the total study subjects, it was found that most patients had a previous history of eye disease, while some reported no previous history of eye disease. The types of eye complaints reported in patients with a history of eye disease varied, including foreign body in the eye, eye swelling, retinal disorders, infections, cataracts in the right eye, double vision in the left eye, gram in the eye, pain when moving the eye, and blurred vision. Other conditions include presbyopia, inflammation of the right eye, and some history of surgical interventions, such as lens implant surgery, cataract surgery, and other eye surgeries. Some patients also reported a history of sudden eye redness, gerindra or light exposure, and welding. As for the control of eye disease history, some patients showed a pattern of regular control, while others reported irregular control of treatment and monitoring of their eye conditions.

In this study, 30 patients had a history of previous eye disease (60%), of which the majority had a history of eye gram (23.3%) followed by a history of foreign bodies in the eye and a history of infection which both had a percentage of 10%. Control compliance for historical eye diseases suffered by patients each had a percentage of 50%. The data in this study are following research conducted in South Korea, where it was found that out of a total of 52 patients, there were a total of 7 people who suffered eye injuries due to grinding (13.5%)⁽²⁰⁾. Another study conducted in Indonesia, precisely at Dr. Soetomo Hospital, found that out of 198 samples, most were 22-45 years old due to productive age, with a total of 152 male patients (76.8%). In addition, most of them were caused when the patient was outside the home, namely 66 samples (33.3%)⁽²¹⁾.

By the time the patient was referred, various clinical eye diagnoses had been established such as foreign body in the eye, eye swelling, retinal disorders, infection, and irritation. Some patients had more serious conditions such as eye wounds requiring stitches, eye discharge, retinal nerve disorders, and corneal ulcers. A small proportion of patients were reported to have no definite diagnosis at the time of referral. Once admitted to the hospital, the diagnosis was more detailed. Patients were diagnosed with various conditions including retinal detachment, corneal abrasion, foreign body in the cornea, and black ball hyphema. Some patients also had corneal epithelial defects, endophthalmitis, traumatic iritis, cataracts, and keratitis. Cases of eyelid laceration, optic neuritis, ocular vascular hemorrhage, and

retrobulbar optic neuritis were also found. In addition, a history of retinal injections, as well as conditions of ocular cellulitis, subconjunctival hemorrhage, and suspected uveitis were reported in some patients. Other diagnoses included mechanical trauma, thermal trauma, and palpebral VL.

From the research data, it was found that most patients came to the emergency room with a diagnosis of eye gram or with a diagnosis of mechanical trauma, which is following the review conducted by Rahman et al. One study conducted in New Zealand found that the average age was from the second to fourth decade, with the highest at the age of 15-20 years (11.5%) where men were more often exposed to eye trauma and while working⁽¹¹⁾. Another study conducted in Indonesia also stated that most cases of eye trauma were caused by sharp objects, namely 118 samples (59.6%), where this type of trauma was most common in patients who came to the emergency room⁽²¹⁾.

In this study, it can be concluded that the number of patients who came for treatment to the Emergency Room of Cicendo Eye Hospital was dominated by patients who previously had a history of eye disease and a history of systemic disease, it was also found that many patients complained of foreign objects in the eyes and were exposed to grams after work and immediately decided to come to the Emergency Room of Cicendo Eye Hospital and were immediately treated by health workers in the Emergency Room of Cicendo Eye Hospital until completion. From this study it is also concluded that many incidents of eye trauma can occur and require rapid treatment, therefore it is necessary to hold an emergency room in each district hospital that has an ophthalmologist who should provide emergency eye services in each emergency room.

CONCLUSION

Most of the complaints felt by patients at Cicendo Eye Hospital were eye pain (40.0%), which generally began to be felt since 1-5 days before (58.0%). Most patients had no history of systemic disease (84.0%), but 60.0% had a history of previous eye disease, and 37 patients (74.0%) had no diagnosis at referral. The most common diagnosis at Cicendo Eye Hospital was corneal foreign body (30.0%), followed by mechanical trauma (12%) and other diagnoses ranging from 2-6%. In addition, there was a significant association between the age of the patients and their decision to seek treatment at the emergency department of Cicendo Eye Hospital.

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