Ann Med Res 2020;27(9):2261-3

Annals of Medical Research

DOI: 10.5455/annalsmedres.2020.02.132

Original Article

Investigation of the cause, anatomical localization of perforations and demographic characteristics in patients with perforating eye injuries

Huseyin Kaya, Ugur Yilmaz

Department of Ophthalmology, Faculty of Medicine, Pamukkale University, Denizli, Turkey

Abstract

Aim: To investigate the clinical features of open globe injuries treated in our clinic.

Material and Methods: 65 eyes of 65 patients who were operated for open globe injury between 2016-2018 in Pamukkale University ophthalmology clinic were retrospectively analyzed. File records; age, sex, injury with which eye was affected, the cause and type of injury, biomicroscopic examination findings were recorded. The type of injury was classified as corneal, scleral and cornea-scleral according to localization.

Results: 65 eyes of 65 patients were included in this retrospective study. 65 of 30 eyes were right eye and 35 eyes were left eye. The mean age of the patients was 41.33 ± 23.52 years. 15 (23.0%) of the patients were under the age of 18 and 50 (67%) were adults. 23 (35.4%) women and 42 (64.6%) men were included in the study. The causes of eye trauma are shown in Table 1. 35 (53.8%) of the injuries were classified as blunt and 30 (46.2%) were classified as penetrating injuries.

Conclusion: Open globe injuries, which is one of the most important causes of preventable blindness, is an important public health problem, we think that necessary precautions should be taken and public awareness should be taken in this direction.

Keywords: Blunt trauma; open globe injuries; penetrating trauma

INTRODUCTION

Ocular traumas are unfortunately one of the most common preventable causes of low vision and visual loss. Eye traumas constitute 10-15% of eye diseases. Although serious eye traumas constitute a small part of eye traumas, they are serious and high cost-conditions that threaten vision both on individual and community basis (1-2).

Eye trauma is an important eye problem that threatens vision in developing countries. These injuries are seen less frequently with the security measures taken in developed countries (3). Eye injuries can be corneal, scleral or cornea-scleral depending on the location of the injury. Eye traumas constitute one-third of the eye emergencies. When we look at the literature, it is seen that men are more affected than eye injuries and home and work accidents are among the important reasons (4-5).

Epidemiological and clinical features of open globe injuries have been investigated in our country with various studies (1-6-7). According to these studies, the most common cause of eye injuries was cutting tool and the most common localization was corneal localization.

In this retrospective study, we aimed to investigate the clinical features of open globe injuries treated in our clinic between 2016 and 2018.

MATERIAL and METHODS

In this study, 65 eyes of 65 patients who were operated for open globe injury between 2016 and 2018 in Pamukkale University ophthalmology clinic were retrospectively analyzed. After the decision of the local ethics committee of Pamukkale University Faculty of Medicine, the file examination was completed in accordance with the Helsinki Declaration (Ethics committee decision date, number: 19.02.19-04). File records; age, sex, injury with which eye was affected, the cause and type of injury, biomicroscopic examination findings were recorded. The type of injury was classified as corneal, scleral and cornea-scleral according to localization.

Statistical analysis

Data were analyzed with SPSS 21 package program. Continuous variables were given as mean ± standard deviation and categorical variables were given as numbers and percentages. When parametric test assumptions were provided, the Significance Test of Variance between

Received: 20.02.2020 **Accepted:** 21.08.2020 **Available online:** 17.09.2020
Corresponding Author: Ugur Yilmaz, Department of Ophthalmology, Faculty of Medicine, Pamukkale University, Denizli, Turkey
E-mail: druguryilmaz1982@gmail.com

two Means and Analysis of Variance were used to compare independent group differences; when parametric test assumptions were not provided, Mann-Whitney U test and Kruskal Wallis Variance Analysis were used to compare independent group differences. In addition, the relationships between continuous variables were analyzed by Spearman or Pearson correlation analysis and differences between categorical variables were analyzed by chi-square analysis.

RESULTS

65 eyes of 65 patients were included in this retrospective study. 65 of 30 eyes were right eye and 35 eyes were left eye. The mean age of the patients was 41.33 ± 23.52 years. 15 (23.0%) of the patients were under the age of 18 and 50 (67%) were adults. 23 (35.4%) women and 42 (64.6%) men were included in the study. The causes of eye trauma are shown in Table 1. Thirty-five (53.8%) of the injuries were classified as blunt and 30 (46.2%) were classified as penetrating injuries. The localization of the injury was divided into three groups as corneal, scleral and cornea-scleral (Table 2). These injury localizations are given. The most common cause of injury in women was home accidents with 11 cases (47%). The most common cause of injury in males was wood/branch with 15 cases (35.7%). There was no difference between the genders in terms of injury localization and type of injury.

Table 1. Eye Injury causes

	Subject count	Percent (%)
Home accident	18	27.7
Occupational accidents	12	18.5
Injury in school	5	7.7
Wood/branch	21	32.3
Stone	4	6.2
Assault	2	3.1
Traffic accident	3	4.6

Table 2. Injury localizations

	Subject count	Percent (%)
Corneal	35	53.8
Scleral	9	13.8
Cornea-scleral	21	32.3

The causes of perforation in patients under 18 years of age were house accidents in 5 (33.3%), school injuries in 4 (26.7%), wood in 4 (26.7%), work accident in 1 (6.7%), traffic accident in 1(6.7%). The left eye was injured in 10 (66.7%) and the right eye was injured in 5 (33.3%) of the patients under 18 years of age. Perforation localization was corneal in 11(73.3%) case, scleral in 1(6.7%) case and cornea-scleral in 3(20%) cases. Four (26.7%) of the cases were blunt and 11(73.3%) were penetrating injuries.

DISCUSSION

Open globe injury is an important public health problem in our country and in the world. Therefore, some results were obtained based on the various features of the current cases in our clinic. For example, in our study, the rate of right eye involvement was 46.2% and 53.8% for the left eye. Although there have been studies in the literature to date that the right or left eye is affected more frequently, there are also studies that do not show a significant difference in both eyes as we have shown in our study (1-6-8).

In our study, we found that men were exposed to open globe injury more frequently. This seems to be consistent with the results of previous studies (9-10). This difference between men and women may be due to the fact that men are more likely to be involved in violent incidents or are more likely to be exposed to accidents with different equipment and objects (11-12). Moreover, another reason may be that men are more likely to work in dangerous jobs than women (13).

When the injuries were classified as blunt and penetrating, 53.8% were blunt and 46.2% were penetrating injuries. In previous studies, it was reported that penetrating-cutting injuries were seen more frequently than blunt injuries (1-7).

In this study, corneal injury (53.8%) was the most common cause of injury. The second most common was cornea-scleral injury (32.3%) in our study. Özeç et al. found that the most common localization was cornea with a rate of 56.6% similar to our study (1). The second most common localization was sclera with 29.5%. In other studies, the cornea was found to be the most common localization of injury (6-7). In this respect, our study is consistent with the literature.

In our study, the trauma of the eye with the branch/wood was examined under a separate heading because this injury has occurred in many ways. For example; some of these injuries are traumas that occur when a piece of wood comes to the eye during the breaking of the wood used for warming in the winter, and a branch or a piece of wood comes to the eyes indoors and outdoors for any reason. In this study, the most common cause of eye injury was found to be wood/branch with a rate of 32.3%. This was followed by home injuries with a rate of 27.7%. The third most common cause was occupational accidents with a rate of 18.5%. Erbağcı et al. reported that the most common cause of eye injuries was cutting tools injury in their study (6). In another study, the most common cause of open globe injury was again seen as cutting tool injury (44.64%) (7). The most common cause of injury was found to be occupational accident in the study of Ogurel et al. (14). In the study conducted by Özeç et al., wood was found to be the most common cause of blunt trauma with 71.1% (1). In our study, the most common cause of eye injuries was wood / branch. This may be because of widespread agriculture in our region and frequent usage of wood for heating in our region.

In terms of gender, wood / branch is the most common cause of perforation in males, while it is the most common cause of home accidents in females. This may be due to the fact that women spend more time at home than men do. Similar results were obtained in terms of injury localization and blunt-penetrating injuries.

When we look at patients under 18 years of age, we see different results than our total population. For example, in our study, there was no significant difference between the right and left eyes, whereas this was more common in the left eye (66.7%) under 18 years of age. The most common cause of open globe injury was home accidents (33.3%). Another difference is that penetrating injuries (73.3%) are more frequent than blunt injuries. Injury localization and gender distribution were consistent with our general population. These results are consistent with previous studies (15-16). On the other hand, in Eliaçık et al.'s study, it was found that boys were more likely to experience trauma than girls and that the most common cause was toy (17).

Our study had some limitations. Since the study is a single-center study, the number of patients is limited. In addition, the fact that our study was a single-center study may have affected by regional differences. For this reason, we think that it may be more beneficial to do the multi-center studies from now on.

CONCLUSION

In conclusion, the results of our study are consistent with previous studies. Considering that open globe injuries, which is one of the most important causes of preventable blindness, is an important public health problem, we think that necessary precautions should be taken and public awareness should be taken in this direction.

Competing interests: The authors declare that they have no competing interest.

Financial Disclosure: There are no financial supports.

Ethical approval: This study was approved by Pamukkale University Medical school by scientific research project unit. Project number is 2018KKP080.

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