INTRODUCTION

Eye injuries per Birmingham classification (Birmingham Eye Trauma Terminology) BETT are divided into closed and open eye injuries (1). They cover a wide range from injuries of adnex and eyelids, orbit, the bones of the head and face, eyeball and nerve, and can pose serious complications to the front, and the rear segment of the eye, and the outcome of treatment are varies from complete recovery with good visual function to blindness. To estimate the final visual acuity of the closed eye injuries is an important type of violation, the degree of visual acuity, presence or absence of relative afferent pupillary defect, and the zone of violation eyeball (2). Zone of violations eyeballs are divided into Zone I (superficial injuries of bulbar conjunctiva, sclera and cornea), Zone II (violation of lens and anterior segment) and Zone III (violation of the retina, vitreous, rear uvea and optic nerve) (Table 1) (2). Closed eye injuries per BETT divided into contusions, lamellar lacerations, surface foreign body and combined injuries. Poor presentation vision (grade) and presence of an ACD in the injured eye were the most prognostic factors associated with poor visual outcomes in these patients (3). The aim of this study was to show the socioeconomic and demographic profile, as well as the most common mechanism in ophthalmic injuries, so to determine the final visual acuity and assessment and evaluation of sensitivity and specificity of ocular trauma score (OTS), and most importantly to determine the prognostic value final visual acuity after eye injuries.

MATERIAL AND METHOD

We conducted a clinical-epidemiological, retrospective-prospective study at the Department of Ophthalmology, Clinical Centre University in Sarajevo in the period 2009-2011. A sample of 124 patients with diagnosed closed eye injuries were recruited. We applied Classifying Closed Globe Injury, performed Calculating the OTS and convert of total raw points into % chance of vision outcomes.

RESULTS

Comparison of age groups by gender shows that there is no statistically significant (x² = 5.155; p = 0.2718). Of the total number of closed eye injuries (N = 124) at the admission from groups D and E with the worst vision were 29 patients (23.38%), in group C had low visual acuity of 20 (16.12%), in group B the mean visual acuity 33 (26.61%), and in group A well-preserved visual acuity 42 (33.87%) patients. On the demission patients with well-preserved visual function was 84 (67.74%), with a medium of visual function 10 (80.64%), while the poorer visual function was 4 (3.225%) and 7 (5.645%) patients had a sense of light and projections (26.61%), and in group D well-preserved visual acuity 42 (33.87%) patients. We compared with the values of visual acuity of injury and thus get an accurate model for determining the prognostic value of the final visual acuity before treatment of the patient. This model is a reliable test for both the ophthalmologist and the patient.

CONCLUSION

Data on each patient are based on the possibility of such characteristics of the mechanism of injuries presentation of vision at the beginning of disease, injury and zones relative afferent pupillary defect possibility assumptions what will be with the vision postoperatively.

KEY WORDS: close eye injury, OTS, visual acuity.


doi: 10.5455/aim.2015.23.81-85

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2. METHODS

We conducted a clinical-epidemiological, retrospective-prospective study at the Department of Ophthalmology, Clinical Centre University in Sarajevo in the period 2009-2011. A sample of 124 patients with diagnosed closed eye injuries were recruited. The inclusion criteria for patients in the study were be closed eye injuries. The exclusion criteria for patients from the study were open eye injuries, as well as chemical and thermal injury of the eyes.

Clinical examinations of the patients are exercised in the Cabinet for an eye injury are included: history of injury, biomicroscope examination of the eye, ophthalmological examination, determination of visual acuity, tonometry and, if necessary X-ray of the orbit and ultrasound of the eye.

In processing the data evaluated: gender, age, occupation, anatomic localization of the complications and course of treatment.

2. RESULTS

The analysis of patients by gender shows that there is a statistically significant difference from the expected distribution with a high number of males 82.26% then females 17.74% (chi-square = 27.382, p <0.05). Comparison of age groups by gender shows that there is no statistically significant (x² = 5.155; p = 0.2718). The largest number of subjects in the age group 40-59 years (34.67%). The youngest patient was 3 and the oldest 85 years, with a range of 82 years. Analysis of the average age of the total sample shows that was 37.19 ± 20.12; 1.8 ± SEM. The average age for men was 35.45 ± 19.89; for women 45.27 ± 19.64. Statistical analysis by Student’s t-Test shows that there is no statistically significant deviation (p >0.05) from the expected distribution in our sample. Representation of patients by occupation: child 4.83%, student 22.57%, clerk 9.67%, employee 26.61%, retired 20.16%, unemployed 16.12% (x² = 20.799; p = 1933-3), statistical analysis by chi-square test shows that there is a significant difference in favor of workers (p <0.05). The cause of injuries and their frequency among the subjects is shown in Table 4. Analysis of the data showed that there is a statistically significant difference in favor of wooden items as the most common cause of injury (p <0.05).

Kolmogorov-Smirnov test normal distribution. All the results of statistical tests with P <0.05 were considered significant.

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4. DISCUSSION

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Determining the frequency: complications of adnexa ($X^2 = 43.544, p = 4.467^{-5}$), the representation of edema palpebrarum was 25.00%, 16.12% palpebrarum hematoma, prosthesis 1.61%, without the hassle of the adnexa was 57.25 % of subjects; complications on the conjunctiva ($X^2 = 64.453, p = 1.100^{-4}$), representation for hiperemia was 58.06%, for suffusio 11.28%, corpus alienum 2.41%, without the hassle of the conjunctiva was 28.22% of subjects; corneal complications ($X^2 = 24.105, p = 2.327^{-4}$), representation erosion was 25.8%, edema 24.19%, 4.83% corpus alienum, without the hassle of the cornea was 45.16% of the respondents; complications in the anterior chamber ($X^2 = 0.062; p = 0.799^{-4}$) has not recorded a statistically significant difference between the presence and absence of hyphaema ($p > 0.05$). There was a statistically significant difference in the prevalence of iridocyclitis, but excluded patients who did not make themselves known complications to the iris and ciliary body ($p < 0.05$). Also, it was observed a statistically significant difference in favor of the absence of traumatic mydriasis ($p < 0.05$). Statistical analysis shows a significant difference in favor nonprogressive radiation burning, or are disabled patients who are not themselves known complications ($p < 0.05$).

Statistically significant difference was observed in favor hemophthalmos but excluded patients who had not occurred in the vitreous complications ($p < 0.05$). If we exclude patients who do not make themselves known complications in the retina and choroid, statistical analysis shows that there is a significant presence of commotion retina ($p < 0.05$). There is a statistically significant difference in favor of the absence of complications in the retrobulbar space for the benefit of the absence of fractures in the orbit, in favor of the absence of strabismus, the benefit of the greatest number of patients without astigmatism, in favor of the anterior segment of the eye, the greater the benefit of the application of medical therapy ($p < 0.05$). If we exclude patients who are not measured vizes, then recorded a statistically significant difference in favor of most of the patients with visual acuity 0.9-1.0 at demission ($p < 0.05$).

There was a statistically significant difference in favor of patients with improved intraocular pressure at demission <21, compared to patients in whom the pressure is not measured ($p < 0.05$). Statistical analysis by chi-square test shows that there is a significant difference in favor of length of hospital stay 0-7 days ($p < 0.05$). The average hospital stay was 8.5 ± 5.61 days, with a minimum duration of one day and a maximum of 31 days. Analysis of data ($X^2 = 6.642; p = 9.96^{-3}$) shows that no significant difference was observed in favor of a number of cured patients ($p < 0.05$).

<table>
<thead>
<tr>
<th>VARIABLE</th>
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<tr>
<td>Initial vision</td>
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<tr>
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<td>Total</td>
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results of many studies (13, 15). In the study sample before to hospitalization only 19.35% of patients had vizus 0.9-1.0. Results of Onakpoya et al. (14) show that only 22.4% of subject at the admission in hospital, with a diagnosis of closed eye injuries, had normal vizus. After hospitalization previously mentioned visual acuity was found in 47.85% patients. In one patient identified the amaurosis. The result of this study is consistent with results of Mason et al. (15). Examining the value of IOP before and after hospitalization, 8.87% had increased eye pressure. Using the BETT (Birmingham Eye Trauma Terminology-classification of injury) we confirmed that contusio bulbi is the most common on hospital admission. On the eyelid as the most common complication is edema. Results of the study Qiu Huai-Yu et al. (16) coincide with this, in which the eyelid affected in 40.49%. The study complications from blunt injury cornea, we have obtained that the erosion or abrasion present in 25.8% of patients. In the camera bulbi anterior only complication is hyphaema, which occurred in a high percentage of 52.41%. In the study of Jovanovic et al. injuries caused in football in all subjects occurred hyphaema (100%) (17). Other studies indicate that hyphaema occurs most often in violation of the sport. In the study sample, until recently, we have the result that the iridocyclitis occurred in 47.58% of respondents, and iridodialysis in 4.03 %. In accordance with our results in one study was spotted iridodialysis in 4.4% patients with a concussion (17). Traumatic mydriasis occurred in 25% of cases closed injuries. Jovanovic et al. identify traumatic mydriasis which is surgically processed (17). The investigation of complications in the vitreous at 8.87% patient has hemophthalmos. Idential data were given some of the authors (17). Given the ocular bulb as a whole the most common complications occurred in the front segment of the eye, as well as in other research (18).

5. CONCLUSION

Of the total number of closed eye injuries (N = 124) at the admission from groups D and E with the worst vision, there were 29 patients (23.38%), while in group C had low visual acuity of 20 (16.12%), in group B the mean visual acuity 33 (26.61%), and in group A well-preserved visual acuity 42 (33.87%) patients. On the demission patients with well-preserved visual function was 84 (67.74%), with a medium of visual function 10 (80.64%), while the poorer visual function was 4 (3.225%), and 7 (5.645%) patients had a sense of light and projections, and 1 (0.8%) patient had lost visual acuity-amaurosis. 18 (14.51%) patients did not take their eyesight due to a fresh post-operative recovery. Data on each patient are based on the possibility of such characteristics of the mechanism of injuries presentation of vision at the beginning of disease, injury and zones relative afferent pupillary defect possibility assumptions what will be the vision postoperatively. Can be determined by high sensitivity OTS test showing for closed eye injuries in group A high sensitivity and accuracy.

CONFLICT OF INTEREST: NONE DECLARED

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The Ocular Trauma Score as a Method for the Prognostic Assessment of Visual Acuity in Patients with Close Eye Injuries