

## EPIDEMIOLOGICAL STUDY OF EYE INJURY IN PLEVEN, BULGARIA

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### SUMMARY:

**Aim:** To determine some of the epidemiological characteristics of eye injuries in the region of Pleven, Bulgaria.

**Materials and Methods:** We studied the medical records of Eye Clinic – Pleven covering a period of 3 years (2004 – 2006).

**Results:** Out of 318 eyes with trauma, the distribution of causes was as follows: 154 lacerations (both of eyeball and apparatus accessories), 63 contusions, 43 foreign bodies, 40 eye burns (23 chemical and 17 thermal) and 18 penetrating injuries.

**Keywords:** eye injury, ocular trauma, visual acuity

### INTRODUCTION:

Eye injury is a major cause for monocular visual impairment and blindness throughout the world. Scientific reports suggest that there are at least half a million people monocularly blind because of ocular trauma worldwide [1]. Blindness and visual impairment as an outcome of the injury depend on the severity of the trauma and the timely applied treatment.

### AIM:

To determine some of the epidemiological characteristics of eye injuries in the region of Pleven, Bulgaria.

### MATERIALS AND METHODS:

We studied the medical records of Eye Clinic – Pleven covering a period of 3 years (2004 – 2006). A total of 4901 cases of patients admitted during that period were reviewed and in 304 cases (6.2 % of all admitted patients) an eye injury was found. In these cases information for gender, age, residence, type of injury and visual outcome was gathered. For visual impairment and blindness we used the definitions of

World Health Organization (blindness – vision < 3/60 in the better eye, visual impairment – vision < 6/18 in the better eye). In all cases a full ophthalmological examination was performed. The visual acuity of the patients was measured on admission and on discharge with Monoyer vision chart and in the cases where that was not possible perception and projection of light was tested. Most patients with ocular traumata had surgery – light injuries with subconjunctival hemorrhage only were revised for scleral rupture while severe injuries were processed as quickly as possible with reconstructive surgery techniques.

### RESULTS:

Out of 304 patients, 242 were men and 62 were women (Figure 1). According to place of residence there were 197 urban and 107 rural residents (Figure 2).

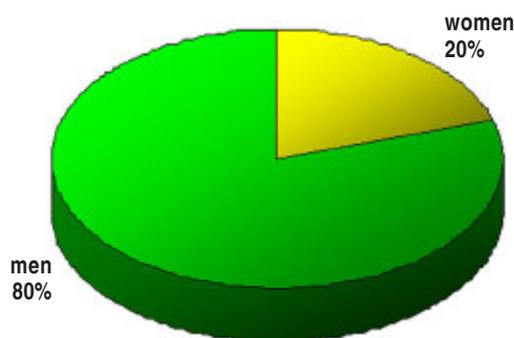
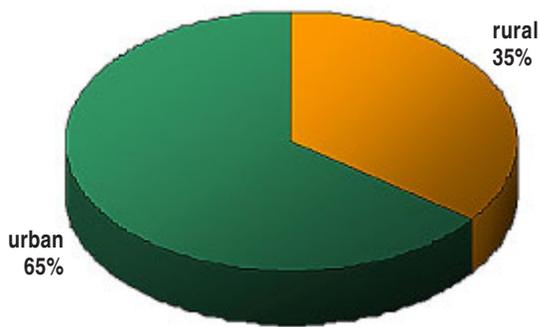
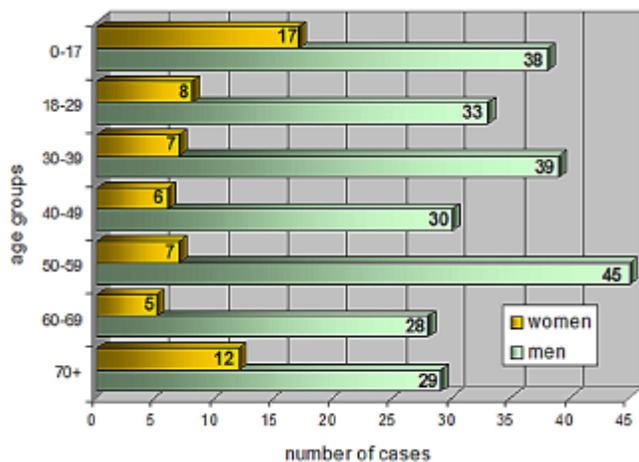


Fig. 1. Distribution of cases by sex



**Fig. 2.** Distribution of cases by place of residence

The distribution of cases by age and gender is shown on Figure 3.

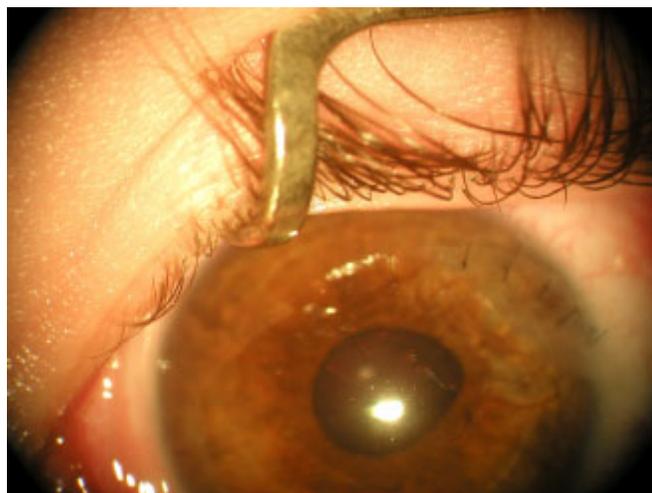


**Fig. 3.** Distribution of cases by age group and sex

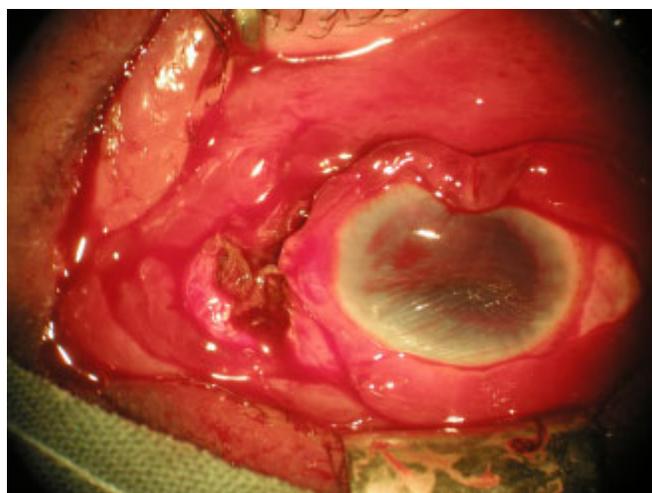
Out of 318 eyes with trauma, the distribution of causes was as follows: 154 lacerations (both of eyeball and apparatus accessories) (48.4 %), 63 contusions (19.8 %), 43 foreign bodies (13.5 %), 40 eye burns (23 chemical and 17 thermal) (12.6 %) and 18 penetrating injuries (5.7 %) (Figure 4, 5, 6, 7, 8, 9).



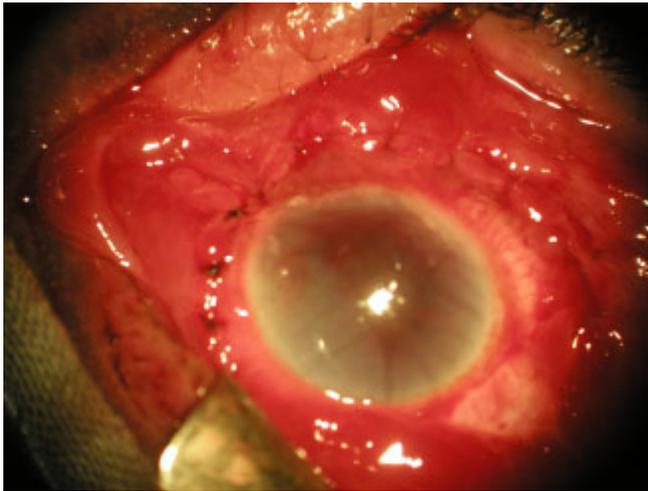
**Fig. 4.** V. p. corneae oc. sin.



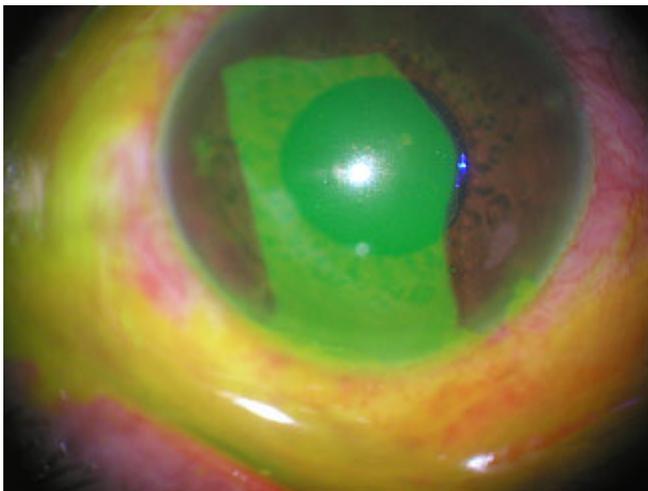
**Fig. 5.** V. p. corneae oc. sin. post oper.



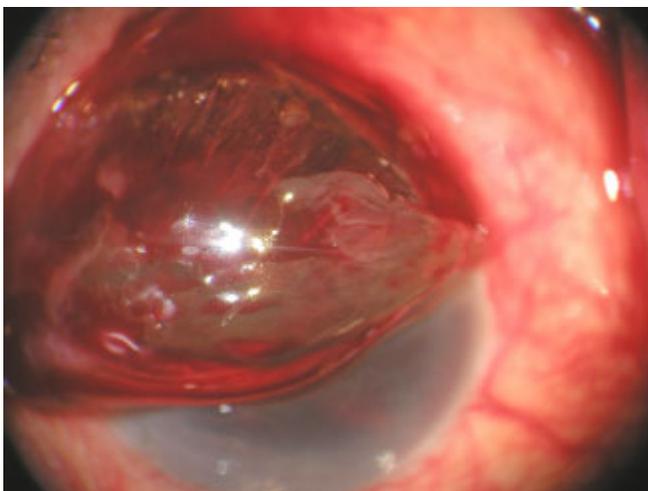
**Fig. 6.** V.l.c. sclerae et prol. uveae oc.sin.



**Fig.7.** V.I.c. sclerae et prol. uveae oc.sin.



**Fig. 8.** Combustio oc. dex.

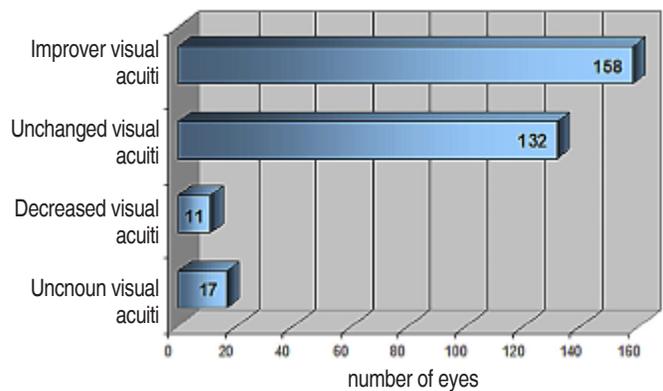


**Fig. 9.** Expuls. haemorrh. oc. sin.

Table 1 shows the visual acuity on admission and on discharge and Figure 10 shows the change in the visual acuity (visual acuity on discharge compared to visual acuity on admission) in the eyes with injury.

Visual acuity	Admission	Discharge
0	16	16
PPLC	57	34
0,01 - 0,04	24	20
0,05 - 0,25	35	34
0,3 - 1,0	169	197
unknown	17	17

**Table 1.** Visual acuity on admission and on discharge



**Fig. 10.** Change in visual acuity

In 83 of the cases (27.3 %) the outcome of the trauma was visual impairment or blindness – 68 men (42 blind, 26 visually impaired) and 15 women (11 blind, 4 visually impaired).

All the cases were treated during the first 12 hours after admission. However the period between injury and admission varied from several hours to several days.

### DISCUSSION:

Ocular trauma is a common cause of unilateral blindness and visual impairment in many countries [1, 3, 4]. Our study showed that the rate of eye injuries among men is higher than among women. That trend was found in all age groups and is in line with evidence from other studies [1]. A possible explanation could be that men may be more likely to neglect safety measures in their everyday activities than women.

The rate of eye injuries was higher in age groups

0-17 and 50-59. That could be explained with the lack of self-preservation experience in the first group and age related delay of reflexes in the second group which is yet in active working age.

More cases of eye injury were found among urban residents compared to rural residents, but this is probably due to their higher proportion of all cases treated.

In the study, the most frequent injury found was non-penetrative trauma followed by penetrative trauma and burns. Similar results are reported in another study in Sofia, Bulgaria [2]. Non-penetrative injuries are associated mainly with everyday life (falls, brawls, etc.) while penetrative injuries are associated mainly with professional occupation and hazardous work environment.

We found that in half of the cases visual acuity on discharge improved compared to visual acuity on

admission. A slightly smaller number of cases had no change in visual acuity on discharge, and only in 3.5 % of cases visual acuity decreased due to severe traumatic damage or postoperative complications. Visual acuity on discharge correlates with the severity of the eye injury and the time period between the accident and the treatment. Cases treated in shorter period after the injury had better outcome regarding visual acuity. However the problem is the timely visit of the injured patient to the ophthalmologist. That is why the prevention of eye injuries should be emphasized by improving the health knowledge of the population.

### CONCLUSION:

Eye injuries represent a significant portion of eye pathologies causing poor vision or blindness. Visual impairment and blindness in some of the cases permanently disturb social and professional adaptation.

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