SANAMED
2020; 15(2): 107–110
ISSN-1452-662X

DOI: 10.24125/sanamed.v15i2.411
UDK: 616.713-001.3(560)"2018/2019"
ID: 18271497
Original article

INVESTIGATING THE FACTORS THAT AFFECT THE FREQUENCY OF VISITS DUE TO CORNEAL FOREIGN BODIES

Ayyildiz Taha,[1] Ozturk Yucel[2]

[1] Bursa City Hospital, Department of Opthalmology, Bursa, Turkey
[2] Haydarpasa training and research hospital, Department of ophthalmology, Istanbul, Turkey

Primljen/Received 20. 04. 2020. god.

Prihvaćen/Accepted 17. 06. 2020. god.

Abstract: **Introduction:**The purpose of this study is to show whether or not there is a relationship between number of visits in shipyard workers who visit clinics with complaints of foreign bodies in their cornea and parameters of working hours, duration of working in years, time of working without a break and age.

Methods: All patients who visited the Emergency Service of the Ahi Evran University Research and Training Hospital between 1 March 2018 and 31 March 2019 with complaints of corneal foreign bodies were examined based on their number of visits in the last one year, daily hours of work, duration of working in years, time of working without a break and age. While corneal foreign body traumas for up to 3 times in the last one year were included in one group, those that were experienced for 4 times or more frequently were included in the other group.

Results: 140 male patients were included in the study. While 67 of the participants were included in the group of patients with corneal foreign body traumas for up to 3 times in the past year, 73 were included in the group of patients with corneal foreign body traumas for 4 times or more frequently in the past year. There was a statistically significant relationship between experiencing corneal foreign body traumas for 4 times or more frequently per year and more daily working hours, longer times of working without a break, short working period and younger age (p-value: < 0.001).

Conclusion: Corneal foreign bodies are eye injuries that may lead to loss of sight or reduced sight and are associated with loss of labor and increased treatment costs. In our study, among the patients who came up with complaints of corneal foreign body traumas for 4 times or more per year, the risk factors was observed to consist of long daily working hours, long time of working without a break, shortness of the time of starting work and early age.

Keywords: Cornea, foreign body, frequency of application.

INTRODUCTION

Corneal foreign bodies constitute the most frequently encountered group of ocular traumas after corneal abrasions. Corneal foreign body traumas are preventable eye traumas, and they are frequently associated with metallic foreign body trauma (1). Corneal foreign body traumas are frequently accompanied by symptoms of pain (2). Encountering reduction in sharpness of sight is not prevalent, but issues such as corneal scar formation, infectious keratitis and rarely endophthalmitis may lead to reductions in sharpness of sight (1, 2). While most corneal foreign bodies are superficial and benign in nature, they are associated with severe ocular problems in contrast to this. In addition to creating an economic burden by causing loss of labor by from a few hours up to a few days, corneal foreign bodies are one of the leading causes of monocular blindness in industry workers (1, 3).

While the etiology of corneal foreign body injuries varies, the most frequently encountered example is the combination of lack of protective glasses and high-risk jobs (4). These high-risk jobs involve activities such as grinding, forging, drilling and welding. In addition to these widespread causes, unexpected causes such as exposure of the eye to debris during activities like driving or walking may also result in corneal foreign bodies.

Self-medication and removal of the foreign body by the person are common practices associated with lack of an ophthalmologist at the workplace. Treating corneal foreign bodies with over-the-counter drugs and trying to remove them with the help of various apparatuses may lead to severe ocular complications. It is def-

initely possible to prevent corneal foreign body accidents and potentially severe outcomes. Wearing suitable protective glasses prevents approximately two thirds of these accidents (3).

The objective of this study is to show whether or not there is a relationship between being included in the groups of visits of up to 3 times and 4 times or more due to corneal foreign body traumas and parameters of working hours, duration of working in years, time of working without a break and age.

MATERIAL AND METHODS

The study was planned in compliance with the Patient Rights Directive and ethical rules by considering the principles of the Declaration of Helsinki. It is a cross-sectional and observational study. Each case that was included in the study provided written consent stating that they voluntarily participated in the study.

Among the cases who visited the polyclinic between the dates of 1 March 2018 and 31 March 2019, 280 eyes of 140 male patients who had corneal foreign bodies and were working at a shipyard were included in the study. After receiving detailed anamnesis from the cases, anterior segment and fundus examinations were performed. Information was received from all cases on frequency of visiting due to corneal foreign bodies in the last year, daily working hours, working without a break, years of work and age.

While corneal foreign body traumas for up to 3 times in the last one year were included in one group, those that were experienced for 4 times or more frequently were included in the other group. The two groups were examined based on daily working hours, working without a break, years of work and age. The data were statistically analyzed by using SPSS (Statistical Package for the Social Sciences) for Windows 17.0. Mann-Whitney U test was used to determine the relationships between parameters. The results were interpreted in a 95% confidence interval and on a significance level of $p < 0.05$.

RESULTS

While 134 eyes of 67 participants were included in the group of patients with corneal foreign body traumas for up to 3 times in the past year, 146 eyes of 73 were included in the group of patients with corneal foreign body traumas for 4 times or more frequently in the past year.

For the group of patients with corneal foreign body traumas for up to 3 times in the past year, the daily working time was 513.25 ± 36.4 minutes (min.), time of working without a break was 253.2 ± 19.5 min., working duration was 78.6±15.4 months, and the mean age was 41.2 ± 14.7 years, while, for the group of patients with corneal foreign body traumas for 4 times or more frequently in the past year, the daily working time was 618.1 ± 40.6 min., time of working without a break was 300.7 ± 26.8 min., working duration was 60.2 ± 10.5 months, and the mean age was 26.1 ± 10.5 years (Table 1).

When the relationships between parameters were examined by Mann-Whitney U Test, a significant relationship was found between visiting 4 times or more per year due to corneal foreign bodies and more daily working hours, long times of working without a break, short working period and younger (p-value: < 0.001).

DISCUSSION AND CONCLUSION

Although they are accepted as small ocular traumas, foreign bodies are associated with significant ocular morbidity. They are economically significant as they usually lead to loss of labor by affecting young men at working ages (5, 6, 7). The patients who were included in our study were male workers of a shipyard, and while the mean age in one group was 26.1 ± 10.5 years, the mean age in the other group was 41.2 ± 14.7 years. These mean ages were similar to those reported by previous studies (8-11). Nevertheless, the finding that the mean age in the group with 4 or more corneal foreign body complaints per year was significantly lower showed that the frequency of corneal foreign body trauma increased among the younger participants.

Serinken et al. studied work-related eye injuries and found that the frequency of eye trauma increased as ages got younger and work experience got shorter (11). Gobba et al. found the frequency of ocular trauma in young patients to be two times higher than older patients (12). As a result of their study on port workers,

Table 1. *Factors that affect frequency of corneal foreign body visitation frequency*

	Corneal foreign body trauma for up to 3 times (n : 67)	Corneal foreign body trauma for 4 times or more (n : 73)	P-value*
Daily working time (min.)	513.25 ± 36.4	618.1 ± 40.6	< 0.001
Working without a break (min.)	253.2 ± 19.5	300.7 ± 26.8	< 0.001
Duration of work (months)	78.6 ± 15.4	60.2 ± 10.5	< 0.001
Age	41.2 ± 14.7	26.1 ± 10.5	< 0.001

Cesar-Vaz et al. determined that usage of protective glasses would reduce symptoms related to ocular trauma (13). We also found that young age, lack of sufficient work experience, long working hours and working without a break are risk factors for the frequency of corneal foreign body traumas.

The standard method for treating corneal foreign bodies involves removal of the foreign body, covering up the eye, antibiotic drops and drops containing non-steroid analgesics (14, 15, 16). Krogsgaard et al. argued that patient cooperation is better with ointments rather than drops, and oral non-steroid analgesic tablets should be added to the treatment (17). There are also studies suggesting that, in treatment of corneal foreign bodies, although covering up the eye is conventionally recommended, it is not useful (18, 19). It was reported that some cases require corneal debridement.

Consequently, we have determined with this study that recurring corneal foreign body traumas rather affect young men, those with less work experience, those with long daily working hours and those who work for a long time without a break. At this point, it is important for employers and employees to collaborate to determine a working plan towards preventing the negative effects of corneal foreign body traumas.

Author Statement: This paper accepted on 5th International Eurasian Congress on natural nutrition healthy life and sport congress.

Conflict of Interests: The authors declare that there are no conflicts of interest related to this article.

Funding: None

Licensing

Sažetak

ISPITIVANJE FAKTORA KOJI UTIČU NA UČESTALOST POSETA ZBOG POVREDA SA PRISUSTVOM STRANOG TELA U ROŽNjAČI

Ayyildiz Taha,[1] Ozturk Yucel[2]

[1] Bursa City Hospital, Department of Opthalmology, Bursa, Turkey
[2] Haydarpasa training and research hospital, Department of ophthalmology, Istanbul, Turkey

Uvod: Cilj ove studije je bio da pokaže da li postoji povezanost broja poseta klinici od strane radnika brodogradilišta zbog sumnji na strano telo u rožnjači i parametara kao što su broj radnih sati, godine radnog staža, period na poslu bez pauze i broj godina.

Metode: Svi pacijenti koji su posetili urgentnu službu Ahi Evran University Research and Training Hospital, u periodu od 1. marta 2018. do 31. marta 2019. zbog sumnji na strano telo u rožnjači, su bili ispitivani u skladu sa brojem poseta tokom prethodnih godinu dana, broju radnih sati tokom dana, godinama radnog staža, perioda na poslu bez pauze i broj godina. Dok su povrede sa prisustvom stranog tela u rožnjači do tri puta u protekloj godini svrstane u jednu grupu, oni sa 4 ili više puta tokom protekle godine su svrstani u drugu grupu.

Rezultati: 140 muških pacijenata je uključeno u studiju. Dok je 67 ispitanika bilo svrstano u grupu pacijenata sa povredom sa prisustvom stranog tela u rožnjači do tri puta tokom prethodne godine, 73 je bilo u grupi sa povredom sa prisustvom stranog tela u rožnjači 4 ili više puta u protekloj godini. Postoji statistički značajna povezanost između povreda sa prisustvom stranog tela u rožnjači 4 ili više puta godišnje i većeg broja radnih sati u danu, dužeg perioda rada bez pauze, kraćeg radnog iskustva i manjeg broja godina (p-value: < 0.001).

Zaključak: Povrede sa prisustvom stranog tela u rožnjači mogu dovesti do gubitka ili oštećenja vida i povezane su sa gubitkom radne sposobnosti i povećanjem troškova lečenja. U našoj studiji, među pacijentima koji su se javili Klinici 4 ili više puta tokom protekle godine, primećeno je da faktori rizika predstavljaju veći broja radnih sati u danu, duži period rada bez pauze, kraće radno iskustvo i manji broj godina.

Ključne reči: Rožnjača, strano telo, učestalost.

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Correspondence to/Autor za korespondenciju
Ayyildiz Taha
Bursa City Hospital, Department of Opthalmology
Bursa, Turkey
email: obirtahadir@hotmail.com