



An Assessment of Sharps Injuries in Healthcare Workers

Sağlık Çalışanlarında Delici-Kesici Alet Yaralanmalarının Değerlendirilmesi

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ABSTRACT

Objectives: During the healthcare services, healthcare workers are under the risk of sharps and needle stick injuries. In this study, we evaluated occupational injuries seen in our hospital and emphasized the importance of reducing the risk of exposure to these injuries through compliance with infection control precautions.

Materials and Methods: In this study, we retrospectively evaluated the data of the Infection Control Committee of Karadeniz Technical University Faculty of Medicine on work-related sharp injuries among healthcare workers between 01.01.2016 and 01.02.2018.

Results: This study was carried out with sixty-six healthcare workers. The mean age of the healthcare workers was 29.3(±7.62) years. The injuries were most frequently observed in nurses. Majority of the injuries had occurred in internal medicine clinics and most of them were needle stick injuries. In 99.7% of the injuries, contamination state was known. Forty-nine of 66 employees were immune to the hepatitis B virus. After the injuries, any acute viral infection was not developed. Three out of the 6 employees injured by positive serology of human immunodeficiency virus sources were given prophylaxis for four weeks after contact.

Conclusion: All healthcare workers should be informed about the measures against injuries, the proper use of protective equipment and the importance of vaccination and, they should be subjected to periodic training.

Keywords: Healthcare workers, sharps injuries, hepatitis B, hepatitis C, human immunodeficiency virus

ÖZ

Amaç: Sağlık bakım hizmetleri sırasında sağlık çalışanları delici kesici aletlerle yaralanma tehlikesiyle risk altındadır. Çalışmamızda hastanemizde görülen mesleki yaralanmaların değerlendirilmesi ve enfeksiyon kontrol önlemlerine uyumla maruziyet riskinin azaltılmasının önemine vurgu yapılmıştır.

Gereç ve Yöntemler: Çalışmamızda 01.01.2016-01.02.2018 tarihleri arasında Karadeniz Teknik Üniversitesi Tıp Fakültesi Hastanesi, Enfeksiyon Kontrol Komitesi'nin çalışan yaralanma kayıtları retrospektif olarak değerlendirildi.

Bulgular: Altmış altı sağlık çalışanı formu çalışmaya alındı. Çalışanların yaş ortalaması 29,3±7,62 idi. Yaralanma en sık hemşirelerde görüldü. En fazla yaralanma dahili kliniklerde olmuştur. En fazla yaralanma iğne batması sonrası meydana geldi. Yaralanmaların %99,7'sinde kontaminasyon durumu biliniyordu. Altmış altı çalışanın 49'u hepatit B virüsüne karşı bağışıklıydı. Yaralanma sonrası çalışanlardan hiçbirinde akut viral enfeksiyon gelişmedi. İnsan immün yetmezlik virüsü pozitif kaynakla yaralanan 6 çalışanın 3'ü temas sonrası dört hafta profilaksi aldı.

Sonuç: Tüm sağlık çalışanları, yaralanmalara karşı önlemler, koruyucu ekipmanların uygun kullanımı ve aşılmanın önemi konusunda bilgilendirilmeli ve periyodik eğitimler almalıdır.

Anahtar Kelimeler: Sağlık çalışanları, delici kesici alet yaralanmaları, hepatitis B, hepatitis C, insan immün yetmezlik virüsü

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Introduction

Healthcare workers are at risk of occupational exposure to infected blood and body fluids contaminated with hepatitis B virus (HBV), hepatitis C virus (HCV) and human immunodeficiency virus (HIV) that can cause significant mortality and morbidity (1,2). Today,

although many medical supplies are disposable and infection rates are low, sharps and needlestick injuries (NSI) continue to be the fact that healthcare workers frequently face (3). However, most of the contacts do not result in infection. Infections are mainly caused by mucosal and percutaneous injuries (4). In order to

reduce the risk of transmission of pathogens from infected blood or body fluids to healthcare workers, hand washing, proper use of protective barriers, adherence to the standard precautions when using needles and other sharp instruments are the most important protection methods for all healthcare workers (1). In this study, it was aimed to determine the occupational injury rates among healthcare workers at high risk for occupational exposure to NSI. In this study, the importance of compliance with infection control precautions in reducing the exposure risk was emphasized.

Materials and Methods

This study was carried out through retrospective examination of the data of the Infection Control Committee of Karadeniz Technical University Faculty of Medicine on work-related sharp injuries between 01.01.2016 and 01.02.2018. The data of sixty-six healthcare workers were evaluated. The healthcare workers were grouped as nurses, doctors, intern students, cleaning staff and technicians. Demographic characteristics of the injured employees, types of injury, use protective equipment, immunization status, and contamination states of the injuries were investigated. The data were recorded in excel format and the results were evaluated.

Results

Sixty-six healthcare workers with a mean age of 29.3 ± 7.62 years were exposed to NSI between 01.01.2016 and 01.02.2018. Twenty-three (34.9%) of the subjects were male, 43 (65.1%) were female. Among the professional groups, the biggest group consisted of nurses (50%) followed by doctors (16.7%), cleaning staff (12.1%), technicians (12.1%), and interns (12.1%), respectively. Most of the injuries were observed in internal medicine clinics (33.3%) followed by those in intensive care units (18.2%), operating room (18.2%), surgical clinics (15.1%), emergency room (13.7%) and in the phlebotomy department (1.5%), respectively. A total of 68.2% of the employees were exposed to needle stick injury, 15.1% to mucosal contact with blood, 9.1% to sharps injury and, 7.6% of them were exposed to contact with other body fluids (Table 1).

During the injuries, 55 of the employees (83.3%) were using gloves as the protective equipment. The contamination status was known in 99.7% of the injuries, whereas it was not known in 0.3% of them. During injuries, 22.7% of the employees were exposed to anti-HCV-positive sources, 13.6% to hepatitis B surface antigen (HBsAg)-positive sources and 9.1% were exposed to the positive HIV-positive sources. Forty-nine of 66 employees were immune to HBV. Because anti-HBs <10 IU was identified in 2 of the 9 employees exposed to HBsAg-positive source, HBV vaccine and immunoglobulin were administered. After the injuries, any acute viral infection was not developed in the employees. Three out of the 6 (9.1%) employees injured by HIV-positive sources were given prophylaxis for four weeks after contact (Table 2). The other 3 employees did not use the recommended drugs for prophylaxis because of side effects, and for having negative HIV RNA testing after 6 months.

Discussion

Healthcare workers face many risks and dangers related to their occupation in the working environment. In terms of occupational

exposure, NSI is a serious problem that can often be prevented. Similar injuries also occur in nursing homes, emergency care services, and other health care services, such as private homes. In infections, especially HBV, HCV, and HIV are associated with occupational contagion. However, more than 20 other pathogens can be transmitted by injury (5,6).

Looking at the occupational groups of the 66 healthcare workers investigated in this study, it was observed that, most frequently, nurses had been exposed to injuries (50%). In terms of other occupational groups, following the nurses, doctors (16.7%), cleaning staff (12.1%), technicians (12.1%), and interns (12.1%) had been exposed to injuries, respectively. In the literature, several studies, in which similar evaluations were made, also showed that nurses were the first group being most frequently exposed

Mean age	29.3±7.62
Gender	Number (%)
Female	43 (65.1%)
Male	23 (34.9%)
Job	Number (%)
Nurse	31 (50%)
Doctor	11 (16.7%)
Cleaning staff	8 (12.1%)
Technicians	8 (12.1%)
Intern students	8 (12.1%)
Department	Number (%)
Internal clinics	22 (33.3%)
Intensive care units	12 (18.2%)
Operating room	12 (18.2%)
Surgical clinics	10 (15.1%)
Emergency room	9 (13.7%)
Phlebotomy service	1 (1.5%)
Type of injury	Number (%)
Pinprick	45 (68.2%)
Mucosal contact with blood	10 (15.1%)
Sharp objects	6 (9.1%)
Contact with other body fluids	5 (7.6%)

Healthcare workers	66
Anti-HBs >10 IU	49
HBsAg positive	-
Anti-HCV positive	-
Anti-HIV positive	-
Source	
Anti-HCV positive	15 (22.7%)
HBsAg positive	9 (13.6%)
Anti-HIV positive	6 (9.1%)
HBs: Hepatitis B surface, HBsAg: Hepatitis B surface antigen, HCV: Hepatitis C virus, HIV: Human immunodeficiency virus	

to injuries (6,7,8,9). In different studies, the frequency of injuries varies in different occupational groups in several studies. In a study carried out by Merih et al. (10), it was seen that the most frequently injured occupational group was the cleaning staff group with the rate of 71.9%. Another study found that the most frequently injured occupational group was doctors with the rate of 56% (11).

In a study, it was shown that most of the healthcare workers exposed to NSI did not report the injury and did not take the necessary precautions (12). Although the number of NSI cases seems to be low in our study, it is thought that the majority of healthcare workers considers injuries as insignificant and do not report. In a study carried out by Altok et al. (13), it was indicated that 87.3% of the healthcare workers exposed to SNI did not report the injuries. The Centers for Disease Control and Prevention (CDC) estimates that 385.000 healthcare workers each year are exposed to SNI (6). Due to the missing data, it is not possible to assess the actual size of injuries among healthcare workers. Surveys on healthcare workers showed that at least 50% of occupational injuries were not reported (14,15).

In a study conducted by Kişioğlu et al. (16), it was found that injuries were seen mostly in surgical clinics. In another study conducted with doctors, it was found that the commonest site in which such injuries were sustained was surgical clinics and it was reported that most of the injuries occurred during suturing (17). In contrast to the literature, in the present study, it was determined that the rate of SNI in internal medicine clinics was higher (33.3%); this rate was 18.2%, 18.2%, 15.1%, 13.7% and 1.5% for intensive care units, operating rooms, surgery clinics, emergency clinics and the phlebotomy department, respectively. Studies available in the literature found that needlestick injuries were especially observed during needle recapping (18,19). Similar to the literature, it was also determined in our study that injuries mostly occurred as a result of percutaneous needlestick injuries with the rate of 68.2%.

The CDC recommended standard protection measures in 1982 and updated in the following years. According to these measures, blood and body fluids should be considered potentially infectious (18). In a prospective surveillance of percutaneous, mucous membrane, and cutaneous blood contacts among healthcare workers who provided home infusion therapy or performed procedures using needles or sharp instruments in the home setting, it was determined that masks, gowns and protective glasses or goggles were used in 52%, 5% and 2% of 14.744 procedure visits, respectively (20). Other studies in the literature have shown that the rate of protective equipment use varied between 55% and 68% and that the use of gloves was the most common (18,21). In our study, it was found that 83.3% of healthcare workers used gloves as protective equipment, however, any data related to other protective equipment use was not determined.

In the case of injuries that occur as a result of contact with blood or body fluids, skin regions should be washed with soap and water, and the mucous membranes should only be washed with water (18,21). In terms of potential HBV, HCV and HIV transmission, serologies of the healthcare worker exposed to INS and the source patient should be looked at. Today, prophylaxis is recommended against HBV and HIV after contact and employees should be evaluated in terms of immunization and prophylaxis (18). In this study, anti-HBS >10 IU was found in 49 of the participants. Those who were not immune were enrolled in the vaccination

program. For 0.3% of the healthcare workers exposed to NSI, the source causing injury was unknown. In the cases where the source was known, 22.7% of the sources were found to be anti-HCV-positive, 3.6% - HBsAg-positive, and 9.1% were HIV-positive. In the case where the source was HBsAg-positive, because anti-HBs <10 IU was identified in 2 employees, HBV vaccine and immunoglobulin were administered. 3 out of the 6 (9.1%) employees injured by HIV-positive sources were given prophylaxis for four weeks after contact. In a survey study, 3.8% of the injured healthcare workers were reported to have contact-related HBV infection 0.3% had contact-related HCV infection (22). In the present study, the healthcare workers exposed to NSI were followed for 6 months and any acute viral infection was not developed in any of them.

Conclusion

Healthcare workers may experience occupational exposure to NSI during their health care services. This situation creates psychological stress on the employees especially in contaminated injuries. All the healthcare workers should be informed about the measures against injuries, the proper usage of protective equipment and the importance of vaccination. The trainings should be given periodically and the participation of healthcare workers in these trainings should be ensured. It is thought that the transmission frequency of infections will be reduced by full compliance with standard precautions and the correct use of protective equipment.

Ethics

Ethics Committee Approval: Retrospective study.

Informed Consent: Retrospective study.

Peer-review: Externally peer-reviewed.

Authorship Contributions

Surgical and Medical Practices: N.N.A., Concept: İ.K., N.N.A., Design: F.A., N.N.A., Data Collection or Processing: N.N.A., F.A., Analysis or Interpretation: G.Y., F.A., N.N.A., Literature Search: N.N.A., Writing: N.N.A.

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