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Seroprevalence of Hepatitis B Virus, Hepatitis C Virus and HIV among Health Care Staff in a State Hospital

Bir Devlet Hastanesindeki Sağlık Çalışanlarının Hepatit B Virüs, Hepatit C Virüs ve HIV Seroprevalansları

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Dear Editor;

As a nature of their profession, health-care professionals are at risk of exposure to infectious agents originating from infected patients and physical environment. Among these infectious agents, hepatitis B virus (HBV), hepatitis C virus (HCV), and human immunodeficiency virus (HIV) play a major role. According to WHO data 3 million (two million of those to HBV, 0.9 million to HCV and 170.000 to HIV) health care staff are exposed to viral agents as a result of injury by contaminated medical equipments (1). The aim of this study was to determine HBV, HCV and HIV seroprevalence among health-care staff in Nenehatun Obstetrics and Gynecology Hospital and to enroll the hepatitis B surface antigen (HBsAg) (-)/anti-HBs (-) health care staff to vaccination program.

Records of 493 health-care staff who were working between January 2011 and January 2016 were retrospectively evaluated. Blood samples collected from the subjects were analyzed for HBsAg, anti-HBs, anti-HBc immunoglobulin (Ig) G, anti-HCV by enzyme-linked immunosorbent assay (ELISA) (Rose, Hitachi). Anti-HIV reactive samples detected in the laboratory at our hospital were considered suspicious for HIV infection and, for confirmation, new blood samples were taken and sent to Ankara Refik Saydam Hıfzısıhha Institute.

A total of 493 health-care professionals (156 male, 337 female; mean age 36 years) were included in the study. Blood samples were taken for HBAg, anti-HBs, anti-HBc IgG and anti-HCV testing. HBsAg-reactive patients were also investigated other hepatitis B markers. Of the 493 health-care professionals, 25 were doctor (5.07%), 212-nurse (43%), 60-technician (12.2%), 85-cleaning staff member (17.2%), 43-medical secretary (8.7%), 42-administrative staff (8.5%), 15-security guards (3.04%), and 11 were food handler (2.2%).

Among occupational groups, HB immunity was highest in nurses (95.8%) and least in the group named as other group (secretary, administrative staff, security guards and food

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handlers) (53.2%). Evaluation of HBsAg reactivity distribution in health-care staff showed that 5 cleaning staff members, and 1 (1.2%) technician had HBsAg reactivity. HBsAg reactivity was not detected among doctors and nurses (Table 1). Anti-HCV and anti-HIV reactivity were not detected in any subject.

Evaluation of immunity against HBV showed that there were vaccine-induced immunity in 95.8% of midwives-nurses, in 92% of doctors, in 75.3% of technicians, in 58.1% of cleaning staff and in 53.2% in the group named as other group (secretary, administrative staff, security guards and food handlers). Seven health-care staff had innate immunity to HBV (Table 2).

Several studies indicated that seroprevalence of viral hepatitis among health-care professionals was between 0.4 and 3.6% (2,3). Hospital conditions, number of health-care staff, and occupational group distribution may be the cause of the differences in these rates. In our study, we found the rate of HBsAg reactivity as 1.2%. One of 6 HBsAg reactivity detected personnel had started to receive chronic hepatitis treatment. The other 5 personnel were accepted as HB carrier and were recommended follow-up visits 2 times in a year.

Screening and follow-up of health-care staff regularly provide early detection and treatment of chronic hepatitis. In that way, we can prevent fatal complications, such as cirrhosis and hepatocellular carcinoma.

Table 1. Distribution of hepatitis B virus results among occupational groups

Occupational groups	HBsAg (+)		Anti-HBs (+)	
	n	%	n	%
Doctor (n=25)	-	-	23	92
Midwife-nurse (n=212)	-	-	203	95.8
Technician[1] (n=85)	1	1.2	64	75.3
Cleaning staff (n=43)	5	11.6	25	58.1
Other[2] (n=111)	-	-	59	53.2
Total (n=493)	6	1.2	374	75.9

[1]Laboratory, x-ray and anesthesia technicians
[2]Secretary, administrative staff, security guards and food handlers
HBsAg: Hepatitis B surface antigen, Anti-HBs: Hepatitis B

The prevalence of anti-HBs reactivity among health-care professionals in our country has been reported to be 17.9-52.9% (4). However, in our study, we determined that it was 75.9%. We found total anti-HBc reactivity in only 7 persons. We assume that the reason for the high rate of vaccine-induced immunity was due to regular screening for viral hepatitis and HIV markers and vaccination of seronegative health-care workers.

The doctors (92%) and mid-wives-nurses (93.8%) had the highest vaccination rate. The lowest vaccination rate was in the group named as the other (secretary, administrative staff, security guards and food handlers). Not contacting to patient directly and fear and unwillingness to receive vaccine were the reason for the low vaccination rate in this group. Hundred nineteen personnel without HB immunity were included in HBV vaccination program.

The frequency of HCV infection in the general population ranges between 0% and 3%. Studies in our country showed similar results (3,4). In our study, we did not detect anti-HCV reactivity.

Similar to our results, many studies in our country have not detected anti-HIV reactivity among health-care staff (2,3).

All health-care professionals are at risk of blood borne diseases. Studies from different regions of our country reported different seroprevalence rates. It is observed that there were different vaccination rates also in the same hospital (2,3,4,5). In our study, the rates were consistent with the data in our country. Education of health-care professionals about the risk of blood-borne diseases will increase the awareness. Since HB is preventable with effective vaccines, screening of the hepatitis markers in all health care staff, vaccination of nonimmunized persons, taking standard precautions to reduce the risk of transmission via direct contact with patients, using personal protective equipments, performing education programs about blood-borne diseases are essential. In addition, screening programs will enable early treatment and follow-up of infected health-care personnel and prevent complications associated with those diseases. Further comprehensive seroprevalence studies across the country are warranted.

Table 2. Distribution of immunity against hepatitis B virus among occupational groups

Occupational groups	Natural immunity		Vaccine induced immunity		Nonimmunity	
	n	%	n	%	n	%
Doctor (n=25)	-	-	23	92	2	8
Midwife-nurse (n=212)	4	1.8	199	93.8	9	4.2
Technician[1] (n=85)	1	1.2	63	74.1	20	23.5
Cleaning staff (n=43)	-	-	25	58.1	13	30.2
Other[2] (n=111)	2	1.8	57	51.4	52	46.8
Total (n=493)	7	1.4	367	74.4	119	24.1

[1]Laboratory, x-ray and anesthesia technicians
[2]Secretary, administrative staff, security guards and food handlers

Ethics

Peer-review: External and Internal peer-reviewed.

Authorship Contributions

Concept: Handan Alay, Design: Handan Alay, Neslihan Çelik, Data Collection or Processing: Berrin Göktuğ Kadıoğlu, Esra Çınar Tanrıverdi, Fatma Battal Mutlu, Analysis or Interpretation: Zülal Özkurt, Literature Search: Emine Parlak, Writing: Handan Alay.

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References

1. http://www.who.int/injection_safety/toolbox/en/ManagingInjectionSafety.pdf?ua=1/ 14/06/2016.
2. Keçik Boşnak V, Karaoğlan I, Namıduru M, Şahin A. Gaziantep Üniversitesi Şahinbey Araştırma ve Uygulama Hastanesi sağlık çalışanlarında hepatit B, hepatit C ve HIV seroprevalansı. Viral Hepat J 2013;19:11-14.
3. Baysal B, Kaya Ş. Bir eğitim araştırma hastanesi personelinde HBV, HCV ve HIV seroprevalansı. Viral Hepat J 2012;18:94-97.
4. Mıstık R. Türkiye'de viral hepatit epidemiyoloisi yayınlarının irdelenmesi. İçindekiler: Tabak F, Balık I (eds). Viral Hepatit 2007. 1. Baskı. İstanbul: Viral Hepatitle Savaşım Derneği, 2007:10-15.
5. Koçak F, Kiremit E, Akdağ G. Başakşehir Devlet Hastanesi personelinde HBV, HCV ve HIV seroprevalansı. Viral Hepat J 2013;19:162.