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Zoology

Seroprevalence of HBV, HCV and HIV Infections among Foreign Workers in El-Beyda City

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Original Research Article

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Abstract: Libyan and worldwide medical experts have expressed concerns about the potential for an increase in infection of immunodeficiency virus (HIV) and hepatitis (HBC and HCV) particularly in foreign workers. The prevalence of theses infications are the greatest threats to blood safety and risk factors in the default Libyan and non Libyan populations. Thus, a cross section was intended to study the analysis of the blood specimens, of the foreign workers in the laboratory of the Red Crescent in the city of El-Bayda Libya. A total of 4520 specimens was included in the subjects who apply for a certificate of health for work, during the period from January to October 2017. Each drawing of the blood samples of the applicants has been tested for detection, probability of the presence of the virus HIV, HBV and HCV use HBsAg, anti-HCV and anti- HIV by a third gene-ration enzyme linked immunoassay (ELISA). From all of the samples tested, the frequency of HBsAg positive cases was 1.84%, the number of anti-HIV positive samples were found 0.15% and 0.17% positive anti-HCV of samples among nineteen different nationalities. The number of HBsAg positive samples was found to be particularly high in subjects from Sudan and Chad with 0.66% and 0.42% respectively. The frequency of HCV positive blood among all subjects was 0.15%.
Keywords: HBC, HCV, HIV infections, foreign worker, enzyme-linked immunosorbent assay (ELISA), El-Beyda and health certification.

INTRODUCTION

Hepatitis B virus (HBV) and C virus (HCV) infections are a major global public health problem warranting high priority efforts for prevention, control and treatment [1, 2]. Worldwide, HBV accounts for about 370 million chronic infections, HCV for an estimated 130 million, and HIV for about 40 million. About 2–4 million people infected with HIV have chronic HBV co-infection and 4–5 million have HCV co-infection [3]. The world health organization (WHO) has warned all developed, developing and poor countries about the threats of viral hepatitis infections as this viral infection is not preventable by merely mass vaccinations; it needs to take actions to improve monitoring and screening process and to provide in time treatment at regional and national level [4]. Libya, a developing country of approximately 6 million people, belongs to the intermediate endemicity countries with a wide variance of sero-positivity among different regions and populations [5]. Various studies on the prevalence of of HBV, HIV, and HCV infections. A national investigation of infection, was found in the general population in Libya during 2003 revealed widespread of 2.2% and 1.2% for HBV and HCV, respectively [6]. And the prevalence of the infection of hepatitis C in the Libyan apparently reported (7.9%) health [7]. Another study, the frequency of positive HBsAg of blood donors, anti-HBC in this example was 0.8% and 0.7%, respectively, and found no HIV among blood donors in the West of the Libya (Tripoli) [8]. The prevalence of HBV and HCV infectious agents among the prospective blood donors in Northeast of Libya were found 0.21% and 0.24% respectively [9], and (HBsAg and HCV) positive cases were 2.27% and 0.46% among non Libyain population at same area [10]. Libyan and international medical experts were concerned about the prospect of an increase in infections, especially viral hepatitis and HIV [11]. Therefore, international migrants have high rates of infectious diseases, which have important implications for public health services [12]. The declaration contained in an international publication in 1977 and has confirmed that the Libyan social security legislation in 1973 is ranked among the most comprehensive in the world and to protect all

citizens of many risks attached to the use of the Government. The laws of Libya labor covering citizens and foreigners, and Law No. 12 of 2010 labor relations for the provision of medical and social care (article 37) that the employer is organizing a medical examination of a used before resuming work to ensure his safety and health requirement. According to the type of work that he exercises [13]. Therefore, the present study was undertaken to estimate the prevalence of HBV, HCV and HIV among foreign workers who applied to get health certification for job in El-Beyda city from January to October 2017 at the main laboratory of the Red Crescent.

MATERIALS AND METHODS

Cross-sectional study conducted among non-Libyan laboratory of the Red Crescent in El-Beyda city-Libya. This study had taken a totally 4520 specimens during the period of January to October 2017. The blood samples collected from the registered individuals were thoroughly analysed for HBsAg, anti-HCV and anti-HIV using enzyme linked immune third positive serological generation (ELISA) micro-wells methods. Demographic data such as person's age, sex, nationality, occupations were included in the registration form. Data were analysed, presented and described Tables presentations.

RESULTS

All of 4520 blood samples were obtained from different subjects who attended to the Red Crescent to get health certificates for different purpose such as work (majority of them), and education. A total number of subjects were found 18, 42, 52, 156, 795, 449, 701, 941, 671 and 695 in January, February, March, April, May, June, July, August, September and October 2017 respectively (Table 1). Of the 4520 subjects, 97.4% (n=4403), 2.58% (n=117) were male and female respectively. Age distribution relating to 4520 established subjects by age groups for each gender separately was shown in (Table 2). Age of the subjects varied between 20 years to 80 years. The highest percentage prevalence of subjects was found in the age group (21-30) years to 55.70% for male and 0.81% for female of the total number of cases for each gender, followed by age group (31-40) years for both genders with 28.18% and 0.55% for male and female respectively. In case of comparative between different nationality, (Table 3), the highest percentage of prevalence was found in the Egyptian people for both gender followed by Sudan and Syria. Among the studied sample, the prevalence of HBsAg (hepatitis B surface antigen) was found to be 83 males (1.84%), hepatitis C was found to be 7 males (0.15%) and one female (0,022) and HIV was found to be 6 males (0.13%) and one female(0,022) in different nationality for period time of study (Table 4).

Table-1: Number (percentage) of subjects over ten months

Months	No. Male (%)	No. Female (%)
January	10 (0.22)	8 (0.17)
February	36 (0.79)	6 (0.13)
March	40 (0.88)	12 (0.26)
April	146 (3.23)	10 (0.22)
May	787 (17.4)	8 (0.17)
June	443 (9.80)	6 (0.13)
July	687 (15.19)	14 (0.30)
Augast	932 (20.61)	9 (0.19)
Septemper	651 (14.40)	20 (0.44)
October	671 (14.84)	24 (0.53)
	4403 (97.4)	117 (2.58)

Table-2: Age distribution among study's population

Age	No. Male (%)	No. Female (%)
<20	309 (6.83)	32 (0.70)
21-30	2518 (55.70)	37 (0.81)
31-40	1274 (28.18)	25 (0.55)
41-50	446 (9.86)	13 (0.28)
51-60	174 (3.84)	8 (0.17)
61-70	41 (0.90)	3 (0.06)
>71	10 (0.22)	1 (0.002)

Table-3: Demographic characteristics of different nationality

Nationality	No. Male (%)	No. Female (%)
Algeria	2 (0.044)	2 (0.044)
Bangladesh	165 (3.650)	-
Chad	680 (15.044)	3 (0.066)
Egypt	2151 (47.58)	49 (1.08)
Ethiopia	11 (0.24)	2 (0.044)
Gana	2 (0.044)	6 (0.13)
Jordan	7 (0.15)	1 (0.022)
Iraq	1(0.022)	1 (0.022)
Lebanon	1(0.022)	-
Mali	25 (0.55)	-
Morocco	4 (0.088)	4 (0.088)
Nigeria	21(0.46)	2 (0.044)
Ocrania	5 (0.11)	1 (0.022)
Pakistan	20 (0.44)	4 (0.088)
Palestine	24 (0.53)	5 (0.11)
Sudan	1251(27.67)	9 (0.19)
Syria	358 (7.92)	30 (0.66)
Tunisia	14 (0.30)	-
Turkey	2 (0.044)	-

Table-4: Incidence of hepatitis B, hepatitis C and HIV among different nationality

Hepatitis	No. Male (%)	No. Female (%)
HCV	7 (0.15)	1 (0.022)
HBV	83 (1.84)	-
HIV	(0.13)6	1 (0.022)

DISCUSSION

The hepatitis viral infection has become great concern and life threatening in the developed and developing countries [14]. The prevalence of hepatitis infection in the general population in North east of Libya is not available due to the lack of publication for the past decades. Hepatitis markers are important tests in getting health certificate for work, mirage, and education to control and prevent infection related hepatitis. Total 4520 subjects was screened over ten months. Among the studied sample, the prevalence of HBsAg (hepatitis B surface antigen) was found to be 83 males (1.84%) and the prevalence of anti-HCV and anti-HIV were found to be 0.17% and 0.15% ,respectively, in different nationality for period time of study, most of them from Sudan, Chad and Egypt. This result agree with previous study among non Libyan population that the number of HBsAg positive samples was found high in subjects from Chad and Sudan with 0.99 and 0.92% respectively [10]. This result also agree with previous repots, Africa has the highest WHO estimated regional HCV prevalence (5.3%). Studies on the epidemiology of HCV have suggested that the Nile delta region of Egypt has one of the highest prevalence rates of HCV infection in the world with sero-prevalence rates approaching 20% in villagers over the age of 30 years [15]. Sudan is classified among countries with a high hepatitis B surface antigen (HBsAg) endemicity of more than 8% [16]. The prevalence of such virus is reported to be higher in Egypt than in any other country [16]. Egypt has the highest prevalence (17.5%) of HCV in the world [17-18]. Seroprevalance of HIV, HBV were 0.3%, 0.3% respectively in Nigeria [18]. Our results were found high number with hepatitis from Chad. Compared with the situation in other African countries, acute hepatitis and its fulminant form are more frequently observed in Chad [19]. Since 1997 blood units were routinely examined for anti-HCV in all blood banks in Libya, which should reduce the transmission through blood transfusion. To the best of our knowledge, this is few large-scale study to examine the prevalence of sero-markers in blood samples from Libyan or non-Libyan in East of Libya. Generally, Libya is experiencing a major challenge regarding its geographical, political and social-ethnic identity. Thus, future planning regarding infectious disease should be prioritized [20]. More recently The sero-prevalence of HBV, HCV, HIV, syphilis and co-infection was 2.0, 0.7, 0.3 and 0.6% in Eritrea [21]. Our present investigations found low percentage HIV infections among all subjects. In the privous study, showes that the frequency of Syphilis and HIV is shown to be low and the changeable in the rate of HIV and Syphilis infections from the year to year that might be due to the differences in geographical locations, mean age of blood donors, religious level, sample sizes, the periodic time of studies and the type of procedures used. Frequency of HIV in this study was 0.013% , which is higher than that reported in same area among blood doner

(0.014%) [22], but was same in the capital of Libya (0.15%) [23].

CONCLUSION

Despite local public health efforts to prevent and control HBV, HCV and HIV infections, these diseases remain serious health problems in Libya. Hence, further studies are needed to elucidate the different factors associated with the higher prevalence of this infections among Libyan and non-Libyan pupation.

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