

Seropositive prevalence of Transfusion transmitted infections among blood donors in Al-Anbar province after war displacement period

* Huda Rafea Al-alwani

Ph.D. Microbiology, college of Medicine, University of Anbar/Iraq.

Abstract

Background: Estimating the prevalence of Transfusion transmitted infections (TTIs), namely HIV, HBV, HCV, and syphilis antibodies or antigen, among blood donors can expose the problem of unremarkable infections in healthy-looking members of the general population and also offer data that is important in formulating the strategies for improving the management of a safe blood supply. In addition it can give us a guide to the magnitude of some sexually transmitted infections in the community

The aim of study: The main objectives of this study were to determine the seroprevalence of HIV, HBV, HCV and syphilis infections in blood donors in Al-Anbar province after displacement period.

Method: The study population constituted the subject who donated blood at the main blood bank in Al-Anbar province. serological tests by using ELISA kits were used to detect transfusion - transmissible infectious agents among blood donors.

Results: From 10.697 types of bloods volunteer groups 0, 99, 15, 117 cases of HIV, HBV, HCV and VDRL respectively were discovered through their attending to blood bank for donation of blood, the percent of HIV was 0%, HBV was 0.93%, HCV was 0.14% and for VDRL was 1.09%.

Conclusion: the present study concluded that high percent of blood donor were infected by *Treponema pallidum* and therefore more attention and more confirmative tests must be performed about this group.

Key words: blood donors, HBV, HCV, VDRL, Anbar province

INTRODUCTION

The innovation of transfusion-transmissible infections (TTIs) has bearer of a new epoch in blood transfusion put into practice worldwide with a magnitude of two essential objectives, safety and guard of human life (1)

One out of 2 people in the world needs a blood transfusion at least once or more. Some of the medical settings anywhere blood transfusion is obligatory are surgical and shocking causes, leukemia, thalassemia, hemophilia, severe anemia, and pregnancy complications (2).

Even though a blood transfusion saves millions of live worldwide each time, recipients of transfusions threat will be infected with blood-borne pathogens. every one year, up to four millions of blood donations worldwide are not tested for human immunodeficiency virus (HIV) and few are weathered for hepatitis B and C viruses (HBV and HCV, respectively). Almost none are screened for human T-cell lymphotropic virus type 1 (HTLV-1) or *Treponema pallidum*, the causative agent of syphilis (3).

The transfusion of blood and its apparatus is one of the most critical procedures in the health care delivery in the present circumstances. Transfusion transmitted infections (TTIs) can be caused by various microorganisms which may be present in the blood being transfused. The main internationally prevalent TTIs are caused by human immunodeficiency virus (HIV), hepatitis B virus (HBV), hepatitis C virus (HCV), *Treponema pallidum* and malaria parasite (4).

HIV, HBV, and HCV are the causative agents of acquired immune deficiency syndrome (AIDS), hepatitis B and C infections, respectively. These infections are able of causing long-term carrier states, extended viremia and infectivity, chronic disorder along with high rates of morbidity and mortality due to chronicity, liver cirrhosis, hepatocellular carcinoma (HCC), and opportunistic infections (5,6).

A rate of recurrence of these viral infections with blood donors vary by uniqueness and ethnic group and directly depends on the incidence of these viruses in the general residents (7).

The earlier study found that the median on the whole risks of infections with human HIV, HCV, and HBV from a process of blood transfusion in sub-Saharan Africa which systematically quantified the risks of transfusion-transmitted infections across

this region. The Syphilis is also a systemic disease caused by *Treponema pallidum* which can be reached by sexual contact, blood transfusion and via vertical transmission (8).

A critical requisite in the procurement of protected blood is to have a national program for donor selection, service, maintenance, and edification; this will minimize donations from donors who might transmit diseases to the recipients. Evenly important is to evaluate the burden and risk factors for TTIs in the general population (9,10).

Estimate the prevalence of TTIs, namely HBV, HCV, and syphilis antibodies or antigen, among blood donors can detect the problem of hidden infections in well-looking member of the general inhabitants and also provide facts that is important in formulating the plans for improving the supervision of a safe blood deliver. In addition it can give us a guide to the scale of some venereal diseases in the community (11).

The main objectives of this study were to detect the prevalence of HIV, HBV, HCV and syphilis infections in blood donors in the Al-Anbar province.

MATERIALS AND METHODS

Study populations

The study population constituted the subject who donated blood at the main blood bank in Al-Anbar province. During the begning of January 2017 to January 2018 a total of 10.697 blood volunteer at the blood bank were of both sexes.

Laboratory tests

Screening tests for all donors were performed by using Rapid tests then each positive sample was confirmed by ELISA test to detect antibodies or antigens for each TTI in blood samples. The ELISA kits were used with HIV, HBsAg, HCV from (Advanced company) while of Syphilis from (fortress diagnostics)

RESULTS

From 10.697 of bloods volunteer groups 99, 15, 117 cases of HBV, HCV and VDRL were discovered through their attending to a blood bank for donation of blood, the percent of HIV was 0%, HBV was 0.93%, HCV was 0.14% and for VDRL was 1.09% as shown in the table 1

Table 1 show the number of total and infected blood donors in each month

Month	Number of donors	Number of HIV infections	Number of HBV infections	Number of HCV infections	Number of VDRL infections
January	779	0	3	0	5
February	702	0	6	3	8
March	850	0	6	1	5
April	875	0	6	1	7
May	820	0	1	1	2
June	670	0	19	2	7
July	950	0	5	3	9
August	625	0	10	1	15
September	897	0	21	2	27
October	999	0	10	0	9
November	720	0	3	0	10
December	826	0	4	1	10
January	984	0	5	0	3
Total	10697	0	99	15	117

Table 2 show the percent of infection

Total	HIV (%)	HBV (%)	HCV (%)	VDRL (%)
10.697	0(0%)	99(0.93%)	15 (0.14%)	117 (1.09%)

DISCUSSION

The donation of blood is an important procedure that saves millions of lives; on the other hand, insecure transfusion practices also situate millions of people at risk of transfusion-transmissible infections (TTIs) (12).

An unsafe blood transfusion is very pricey from both economic and human points of view. long-standing morbidity and mortality, delayed viremia and hidden states resulting from the transfusion of infected blood have far-reaching consequences, not only for the recipients themselves but also for their families and their communities (13).

In this study, the prevalence of Hepatitis B infection obtained was 0.93%. Similar frequency rates of HBV have been reported, such as those in India (4) (1.18%), while lower than (1) (10.9%), (11) (3.84), (2) (2.2%), (10) (1.845) and higher than Iran (7) (0.21%) and Jordan (6) (0.52%). When, compare my result with other provinces in Iraq, percent of HBV was higher than Basrah (14) and Baghdad (15), while lower than Thi-Qar (16).

The present study shows that HCV has 0.14%, this percent lower than India (4), Libya (8), Pakistan (10), Suez Canal (17) Ghana (3) and Baghdad (15). our percent was higher than (1), while present study was similar to Jordan (6) Iran (7) and Basrah (14). The percent of Syphilis in this study was higher one among other transmissible diseases with 1.9%. This percent was higher than Lybia (8), Jordan (6), Turkey (2), Suez Canal (17), Thi-Qar (18) and Basra (15) provinces and lower than Pakistan (10) and Ghana (3). The same result was obtained in north Ethiopia (11) and Diyala province in Iraq (19).

This study revealed the percent of HIV infection which was 0%, this percent was consistent with (6) and (15) and lower than (3), (1) and (20).

This study shows that percent of HIV, HBV, and HCV were converged with another percent in other countries or nearby provinces and the differences with other countries may be due to some differences in socioeconomic status, health behaviors and attitudes, standard of life, risk behaviors, rate of this infection in the general population, immunization status, public education, level of safety measures in public health services, effectiveness of donor selection program, and quality of blood screening tests in different parts of the world.

The present study showed that percent of VDRL was high compared to nearby countries and provinces. This result indicates

the change in the sexual behavior of people especially after displacement period which has the large role in this change either because of the psychological stress or presence of temptations in new life that make certain people forget their belief that creates it. The significant of the seroprevalence of HIV, HBV, HCV, and syphilis among blood donors is a precious information which will help us to know the hidden percentage of infections that prevails in the community and to reduce the risk of transfusion-transmissible infectious agents through blood transfusion.

In this study, we conclude that a large proportion of people are infected with a different infectious disease and live in our community as normal one, either they have not information about their infection or know and they donate their blood. In two cases the infections will be transmitted among people, therefore the central blood bank must make contact with infected one to treat these cases to reduce the transmission of these transmissible infectious diseases.

REFERENCES

1. Yusuf Mohammed and Alemayehu Bekele.(2016) Seroprevalence of transfusion transmitted infection among blood donors at Jijiga blood bank, Eastern Ethiopia: retrospective 4 years study. *PMC.* ; 9: 129.
2. Seva ÖNER, Gülçin YAPICI, Caferi Tayyar SASMAZ Ahmet Öner KURT and Resul BUGDAYCI.(2011) Hepatitis B, hepatitis C, HIV, and VDRL seroprevalence of blood donors in Mersin, Turkey. *Turk J Med Sci.* ; 41(2): 335-341.
3. William Ampofo, Nicholas Nii-Trebi, Simeon Aidoo, Victor Nuvor, David Ofori-Adjei, Justina Ansah, James Brandful, Kenji Abe, Hideo Naito, Naoki Yamamoto, and Koichi Ishikawa.(2011) Prevalence of Blood-Borne Infectious Diseases in Blood Donors in Ghana. *Journal of clinical Microbiology.* ; 40(9): 3523-3525.
4. Purushottam A.Giri, Jayant D. Deshpande, Deepak B. Phalke and Laximan B.Karle.(2012) Seroprevalence of Transfusion Transmissible Infection Among Voluntary Blood Donors at a Tertiary Teaching Hospital in Rural Area of India. *J family Med. Prim. Care.* ; 1(1): 48-51.
5. Nwokeukwu H., Nwabuko C., Chuku A., Ajuogu .. and Dorathy OA.(2014) Prevalence of human immunodeficiency virus, hepatitis B virus, hepatitis C virus, and syphilis in blood donors in a tertiary health facility in south eastern Nigeria. *Hematology and Leukemia.* 2(1):4.
6. ALGani FA.(2011) Prevalence of HBV, HCV and HIV-1, 2 infections among blood donors in Prince Rashed Ben Al-Hassan Hospital in North Region of Jordan. *Int J .Biol. Med. Res.* ;2(4):912-6.

7. Fatemeh Farshadpour, Reza Taherkhani, Saeed Tajbakhsh, Marziyeh Gholizadeh Tangestani, Gholamreza Hajiani, Nasrin Sharifi, Sakineh Taherkhani and Abdolreza Nejadbolkehr .(2016) Prevalence and Trends of Transfusion-Transmissible Viral Infections among Blood Donors in South of Iran: An Eleven-Year Retrospective Study. PLOS. .
8. Marfoua. S. Ali, Salema R.M Qowaider and Souad.A M. and Moftah. (year ??) Seroprevalence rates of transfusion-transmitted infections among blood donors in Northeast of Libya.
9. Ahmad G.(2011) An estimate of transfusion-transmitted infection prevalence in general populations. Hepat Mon. ;11(12, Dec):1002–3.
10. Aisha Arshad, Munira Borhany, Nida Anwar, Imran Naseer, Rehan Ansari, Samson Boota, Naveena Fatima, Mustansir Zaidi and Tahir Shamsi. (2016)Prevalence of transfusion transmissible infections in blood donors of Pakistan. BMC Hematology ; 16: 27
11. Belay essema Gizachew Yismaw, Afework Kassu, Anteneh Amsalu, Andargachew Mulu, Frank Emmrich, Ulrich Sack.(2010) Seroprevalence of HIV, HBV, HCV and syphilis infections among blood donors at Gondar University Teaching Hospital, Northwest Ethiopia: declining trends over a period of five years. BMC Infectious Diseases. , 10:111.
12. Diro E., Alemu S. and G/Yohannes A. (2008) Blood safety & prevalence of transfusion transmissible viral infections among donors at the Red Cross Blood Bank in Gondar University Hospital. Ethiop Med J 46: 7-13.
13. Tessema B. Yismaw G., Kassu A., Amsalu A., Mulu A., et al. (2010) Seroprevalence of HIV, HBV, HCV and syphilis infections among blood donors at Gondar University Teaching Hospital, Northwest Ethiopia: declining trends over a period of five years. BMC Infect. Dis. 10: 111-116.