

TRANSFUSION TRANSMITTED DISEASES AMONG BLOOD DONORS OF BASRAH BLOOD BANK الأمراض المنتقلة عبر نقل الدم عند المتبرعين بالدم في بنك الدم في مدينة البصرة

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ملخص البحث

هدف البحث: تحديد مدى انتشار الأمراض المنتقلة بواسطة نقل الدم عند المتبرعين بالدم في مدينة البصرة والتي تشمل فيروس متلازمة عوز المناعة المكتسبة (الإيدز AIDS)، التهاب الكبد الفيروسي B و C، والإفرنجي (السفلس).

طرق البحث: تم إجراء دراسة راجعة معتمدة على سجلات المتبرعين بالدم في بنك الدم في البصرة خلال الأعوام 2006، 2007 و 2008. تتضمن هذه السجلات نتائج الاختبارات المصلية المجرة للمتبرعين لكشف فيروس عوز المناعة البشري HIV، فيروس التهاب الكبد B و C، واختبار VDRL لكشف الإفرنجي.

النتائج: أظهرت الدراسة أن أعلى عدد للمتبرعين كان في سنة 2007، كما أن عدد المتبرعين الذكور يفوق الإناث خلال سنوات الدراسة الثلاث. بلغ المعدل الكلي لانتشار المستضد السطحي لالتهاب الكبد B (0.22%)، في حين بلغ 0.08% بالنسبة لالتهاب الكبد C، و 0.05% لإيجابية اختبار VDRL. لوحظ وجود اختلاف هام إحصائياً في نسب الانتشار بالنسبة للمجموعات العمرية المختلفة ($p > 0.01$)، حيث كان أعلى معدل انتشار لالتهاب الكبد B هو ضمن طرفي العمر (> 20 سنة و ≤ 50 سنة)، أما في التهاب الكبد C فقد كان معدل الانتشار الأعلى لدى المجموعة العمرية 40-49 سنة، في حين كان معدل الانتشار الأعلى للإفرنجي هو ضمن المجموعة العمرية 20-29. لوحظ أن انتشار التهاب الكبد B والإفرنجي أعلى عند الذكور مقارنةً بالإناث، أما انتشار التهاب الكبد C فقد كان أعلى لدى الإناث (50%) دون وجود فارق هام من الناحية الإحصائية ($p < 0.05$). لوحظ أن الاختلاف في انتشار الأمراض المنتقلة بواسطة نقل الدم تبعاً لمكان التوطن هو اختلاف هام جداً من الناحية الإحصائية ($p < 0.001$) حيث كان انتشار التهاب الكبد B أعلى عند المتبرعين من أصول ريفية، في حين كان انتشار التهاب الكبد C أعلى لدى المتبرعين من أصول مدنية.

الاستنتاجات: لا يزال نقل الدم أحد المصادر الهامة لنقل الأمراض الإنتانية، حيث لوحظ وجود انتشار كبير لالتهاب الكبد الفيروسي B و C والإفرنجي لدى المتبرعين بالدم في البصرة، في حين لم يلاحظ وجود فيروس HIV لدى أي من المتبرعين بالدم في هذه الدراسة.

ABSTRACT

Objective: The aim of this work is to estimate the prevalence of transfusion transmitted diseases in blood donors of Basrah blood bank, with special entity of AID'S, hepatitis B and C, and syphilis.

Methods: A retrospective record based study involved the records of Basrah blood bank for the years 2006, 2007, and 2008. The reported results of the serological screening tests of the blood donors for HIV and HCV,

HBV, and Venereal Disease Reference Laboratory (VDRL) for the diagnosis of syphilis were analyzed.

Results: The study showed that the highest number of donors was in the year 2007 with the predominance of males than females for the three studied years, the overall prevalence of HBsAg was 0.22%, of HCV was 0.08% and of VDRL was 0.05%. The difference of prevalence of transfusion transmitted diseases among different age groups was statistically significant ($p < 0.01$), where the prevalence of hepatitis B was highest at the two age

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extremes (<20 years and ≥50 years), for hepatitis C the highest prevalence was at the age groups between 40-49 years and for syphilis, the highest prevalence was at the age groups between 20-29 years. The prevalence of hepatitis B and syphilis was higher among males while the prevalence of hepatitis C was higher among females (50.0%) with no significant difference ($p>0.05$). The difference of prevalence of transfusion transmitted diseases by place of residence was statistically highly significant ($p<0.001$), where the prevalence of hepatitis B was higher among rural donors, while the prevalence of hepatitis C and syphilis was higher among urban donors.

Conclusions: *Blood is still one of the main sources of transmission of infections; and hepatitis B, hepatitis C viruses and syphilis are prevalent among donors except HIV virus which is not detected among studied donors.*

INTRODUCTION

Blood has been used since 1930 for various indications.¹ Transfusion therapy is a well established treatment in various medical and surgical procedures.² Transfusion medicine, apart from being important for the medical treatment of each patient, also has great public health importance.³ After the introduction of the blood banks and better storage techniques it becomes more widely used in patients.⁴

Blood is one of the major sources of transmission of Hepatitis B, Hepatitis C, HIV, Syphilis, and many other diseases.^{3,5} Discovery of these hazards brought a dramatic change in attitude of physicians and patients about transfusion of blood.⁶

In recent years there has been increased public concern about the safety of blood transfusion with respect to transfusion transmitted infections. HIV-1, HIV-2, hepatitis B, hepatitis C, and human T cell leukemia/lymphoma virus are transmissible by transfusion and are associated with important clinical disease.⁷

The hazards of transfusion can be minimized by proper screening and selection of donors before collection of blood.⁶

It has been accepted that prevalence of transfusion transmitted diseases is much lower in healthy, voluntary blood donors as compared to professional blood donors.⁶ In spite of donor screening with high specific and sensitive methods, transfusion of virus through blood transfusion cannot be avoided because virus remains undetectable due to prolong incubation period so a person can become potentially infective long before sero conversion.⁸

Epidemiological studies are necessary for ongoing preventive strategies regarding prevention of these diseases.

In Basrah, the main source of blood donation is replacement donors and the majority of them are patient's relatives or friends.

Proper screening of blood and selection of the donors is very important to insure a safe blood supply.

It is mandatory to test each donor's blood for syphilis by a Venereal Disease Reference Laboratory (VDRL), and for HBsAg, anti - HCV, and anti - HIV.

The reactive donors are deferred and whole blood or blood components produced from them are destroyed, and send the positive donors for further confirmatory investigations.

The objective of this study is to estimate the prevalence of transfusion transmitted diseases in blood donors of Basrah blood bank, with special entity of AID'S, hepatitis B and C, and syphilis.

METHODS

A retrospective record based study was carried out to study the prevalence of transfusion transmitted diseases among blood donors of Basrah blood bank for the years 2006, 2007, and 2008.

The study based on data for these three years which included (name, age, sex, and residence), and the reported results of the serological tests of the blood donors. These tests included screening test for

antibodies for HIV and HCV, and assay for hepatitis B surface antigen (HBsAg), and also the result of a Venereal Disease Reference Laboratory (VDRL) for the diagnosis of syphilis. Chi squared test used as a test of significance and $p < 0.05$ regarded as significant.

RESULTS

The total number of the blood donors in the three studied years was (161987). Table 1 shows the distribution of blood donors in each studied year. The table shows that the highest number of donors was in the year 2007 with the predominance of males than females for the three studied years.

Year	Total	Males	Females
2006	48711	48143	568
2007	58473	58128	345
2008	54803	54487	316
Total	161987	160758	1229

Table 1. Distribution of blood donors in the studied years.

Table 2 shows the prevalence of HBsAg, anti-HCV, VDRL, and anti-HIV among blood donors for the studied years. It shows that the overall prevalence of HBsAg was 0.22%, remained the same (0.24%) during the studied period, while the overall prevalence of HCV was 0.08% and increased from 0.07% to 0.11% during the studied period and the overall prevalence of VDRL was 0.05% and was decreased from 0.06% to 0.02% during the studied period. There wasn't any positive case of HIV detected during the studied period.

Year	Total number of blood donors	HBsAg		HCV		VDRL	
		No.	%	No.	%	No.	%
2006	48711	118	0.24	36	0.07	30	0.06
2007	58473	106	0.18	28	0.04	32	0.05
2008	54803	134	0.24	61	0.11	14	0.02
Total	161987	358	0.22	125	0.08	76	0.05

Table 2 . Prevalence of HBsAg, anti-HCV, VDRL, and anti-HIV among blood donors for the studied years.

Table 3 shows the distribution of the blood donors with transfusion transmitted diseases (BTDD) according to age. It shows that the highest prevalence (44.7%) was at the age group 30-39 years, followed by 34.0% at the age group 20-29 years, with the lowest prevalence was at the age group of <20 years (2.3%) and ≥ 50 (3.8%). Regarding the distribution of donors with BTDD by age and prevalence of diseases, it is evident that the prevalence of hepatitis B was highest at the age groups ≥ 50 years and <20 years (85.7% & 84.6%) respectively, while for hepatitis C the highest prevalence was at the age groups between 40-49 years (30.6%), and for syphilis, the highest prevalence was at the age groups between 20-29 years (21.1%), the difference of prevalence of transfusion transmitted diseases among different age groups was statistically significant ($p < 0.01$).

Table 4 shows the distribution of donors with BTDD by sex, it is evident that the prevalence of hepatitis B and syphilis was higher among males than females (54.1% and 13.6%) respectively, while the prevalence of Hep C was higher among females than males (50.0%), the difference of prevalence by sex was statistically not significant ($p > 0.05$).

Table 5 shows the distribution of the blood donors with transfusion transmitted diseases according to the place of residence, it is evident that the overall prevalence of BTDD was higher among urban donors (61.4%), regarding the prevalence of diseases, it shows that the prevalence of hepatitis B was higher among rural donors (73.6%), while the prevalence of hepatitis C and syphilis was higher among urban donors (26.5%

Age (years)	Transfusion Transmitted Diseases							
	Hepatitis B		Hepatitis C		Syphilis		Total	
	No.	%	No.	%	No.	%	No.	%
<20	11	84.6	2	15.4	0	0.0	13	2.3
20-29	107	56.3	43	22.6	40	21.1	190	34.0
30-39	172	68.8	51	20.4	27	10.8	250	44.7
40-49	50	58.8	26	30.6	9	10.6	85	15.2
≥50	18	85.7	3	14.3	0	0.0	21	3.8
Total	358	64.0	125	22.4	76	13.6	559	100.0

Chi-Squared test= 23.716, df= 8, p<0.01

Table 3. Distribution of the blood donors with transfusion transmitted diseases according to the age.

Sex	Transfusion Transmitted Diseases							
	Hepatitis B		Hepatitis C		Syphilis		Total	
	No.	%	No.	%	No.	%	No.	%
Male	357	54.1	124	22.3	76	13.6	557	99.6
Female	1	50.0	1	50.0	0	0.0	2	0.4
Total	358	64.0	125	22.4	76	13.6	559	100.0

Chi-Squared test= 1.02, df=2, p>0.05

Table 4. Distribution of the blood donors with transfusion transmitted diseases according to sex.

Place of residence	Transfusion Transmitted Diseases							
	Hepatitis B		Hepatitis C		Syphilis		Total	
	No.	%	No.	%	No.	%	No.	%
Urban	199	58.0	91	26.5	53	15.5	343	61.4
Rural	159	73.6	34	15.7	23	10.7	216	38.6
Total	358	64.0	125	22.4	76	13.6	559	100.0

Chi-Squared test=14.182, df= 2, p <0.001

Table 5. Distribution of the blood donors with transfusion transmitted diseases according to the place of residence.

and 15.5%) respectively, the difference of prevalence of transfusion transmitted diseases by place of residence was statistically highly significant (p<0.001).

DISCUSSION

Blood transfusion and component therapies are well-

established and essential medical practices. However, blood collected from large population is associated with the risk of pathogen transfusion.⁹ Numerous risks to transfusion therapy and their variability, the seriousness of adverse events, and their consequences for the patient's life as well as the variability of transfusion therapy, make the decision to transfuse a patient very difficult. The

awareness of the risks has sensitized the public and the medical profession and frequently invoking a transfusion avoidance strategy.¹⁰ Not all unhealthy donors will be recognized by a medical checkup, and it is necessary to employ laboratory testing to further improve the safety of blood products.¹¹

The mandatory tests used on blood donors testing in Basrah include antibodies for HIV and HCV, and assay for hepatitis B surface antigen (HBsAg), and VDRL for the diagnosis of syphilis. The overall prevalence of hepatitis B was higher than that for Croatia (0.16%) in 1999 and lower than that for Macedonia (2.246%) in 1999,³ it is lower than that in Egypt in the year 2000 (1.3%), this is explained by the recruitment of donors from lower socioeconomic classes as soldiers and workers at factories.¹² Also it is lower than that in Iran in the year 2000 (0.95%), this might be due to the ethical or geographical characteristics of Iran or because of specific prevalent subtypes of hepatitis B virus in Iran.¹³

For hepatitis C, the estimated prevalence by this study was lower than that in Kuwait¹⁴ and Iran,¹³ but higher than that for Canada¹⁵ in 2003, which stated that the risk of transfusion transmitted infection among donors is extremely low due to donors education regarding inclusion and exclusion criteria.¹³

For syphilis, the estimated prevalence by this study was lower than that found in other studies in Croatia Canada, India,^{3,15,16} this could be explained by the religious and ethical variability.

In the present study, the prevalence of HIV was found to be 0.0%, which is comparable to a study carried out in Egypt in the year 2000,¹² which stated that the modes of transmission are not found in the Islamic Oriental countries according to the tradition.¹² But it is different from that in Turkey (0.001),¹⁷ Tanzania (1.5%),¹⁸ in Germany (0.48%),¹⁹ this could be due to prohibition of promiscuous sexual relations in Islamic countries.

In this study, the difference of prevalence of transfusion transmitted diseases among different age groups was statistically significant ($p < 0.01$) which was

comparable to other studies in Kuwait, Canada and Nigeria.^{14,15,20}

Regarding sex, the study found that BTDD are more prevalent among males than females, but the difference of prevalence by sex was statistically not significant ($p > 0.05$), which was comparable to other study in Pakistan in 2007 and Nigeria in 2002.^{5,20}

The study found statistically highly significant difference of prevalence of transfusion transmitted diseases by place of residence ($p < 0.001$), where the prevalence of hepatitis B among donors from rural areas was higher than urban; this could be due to lower vaccination coverage rates in the rural than urban areas, while the prevalence rates of hepatitis C and syphilis were higher among donors from urban than rural areas which are comparable to other studies from Iran¹³ and Nigeria.²⁰

CONCLUSIONS

In conclusion, blood is one of the main sources of transmission of hepatitis B, hepatitis C, HIV viruses and syphilis. The majority of donors in our country are either voluntary, relatives or friends, who are apparently healthy, but this study showed that these diseases are prevalent among donors except HIV virus, therefore it is recommended a need to develop a strategic plan that incorporate the diverse background of the blood donors in Basrah, appropriately focused donor education regarding inclusion and exclusion criteria together with the help to institute national public health intervention programmes that will involve mandatory screening of blood and blood products before transfusion and promotion of health education regarding BTDD and its prevention.

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