

Letter to the Editor

Low prevalence of transfusion-transmissible infections among voluntary blood donors in South India

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Transfusion of blood and blood products is a lifesaving phenomenon that forms an integral part of medical and surgical therapy [1,2]. Despite the availability of improved donor screening technologies and viral inactivation procedures, the risk of transmission of transfusion transmissible infections (TTIs) still remains a major concern [3,4]. Factors such as blood donations during the window period, emergence of newer transmissible pathogens, and prevalence of asymptomatic carriers pose a serious challenge to blood safety [2]. Hence constant monitoring and retrospective analysis of the incidence of TTIs, notably hepatitis B virus (HBV), hepatitis C virus (HCV), human immunodeficiency virus (HIV), and syphilis among voluntary blood donors becomes essential to evaluate the prevalence of TTIs in the population. While the data on seroprevalence of TTIs among voluntary blood donors have been previously published from the north, west and the eastern Indian regions, there has been a paucity of data from the peninsular Southern India [1,5,6]. Hence we evaluated the serosurveillance of certain major TTIs among voluntary blood donors attending the blood bank of a government health centre in Southern India.

Retrospective data collected from voluntary blood donation camps from January 2005 to December 2009 were analyzed. Blood donors were selected with strict adherence to the guidelines published by the National AIDS Control Organisation (NACO), India [7]. In the study period of five years, a total of 9,843 serum specimens were screened for the presence of HBsAg (Zhongshan

Biotech HBsAg ELISA Kit, China), anti-HCV antibody (HCV Microlisa, Mitra & Co., New Delhi, India) and anti-HIV antibody (HIV Microlisa, Mitra & Co., New Delhi, India) by a commercial microplate ELISA method and reagin antibody by a commercial non-treponemal rapid plasma reagin (RPR) card test (Span Diagnostics, Surat, India). Statistical analyses were performed with GraphPad Prism ver 5.0 (GraphPad Software Inc., San Diego, USA) by Chi-square test for trend and the analysis was considered to be significant at $P < 0.05$.

Of the total 9,843 specimens investigated, 142 (1.44%) were positive for TTIs. Of the 142 positive reactions, 96 (0.98%) were found to be the carriers of HBV infection (HBsAg), 22 (0.22%) were positive for anti-HCV antibodies, 19 (0.19%) were positive for anti-HIV antibodies and 5 (0.05%) had syphilis, *i.e.*, the reagin antibody (Table 1). Although the seropositivity to syphilis reflected a declining trend during the study tenure ($P = 0.04$), the deviation in the yearly seropositivity of overall TTIs remained insignificant ($P > 0.05$). Notably, in the year 2007, the overall incidence of TTIs was found to be low (Figure 1), which could be explained by the fact that the majority of the blood donors that year were recognized as voluntary college students, a low-risk group.

The seroprevalence of HBsAg was relatively low (0.98%, $n = 9,843$) in our study when compared to the reported rates in other parts of country, such as 1.66% ($n = 1,06,695$) in Eastern India [5], 1.7% ($n = 5,849$) from Haryana [1], and as high as 3.44% ($n=46,957$) in Western India [6]. HBsAg

Table 1. Yearly positivity and overall prevalence of certain major transfusion-transmissible infections (TTIs) among voluntary blood donors in South India

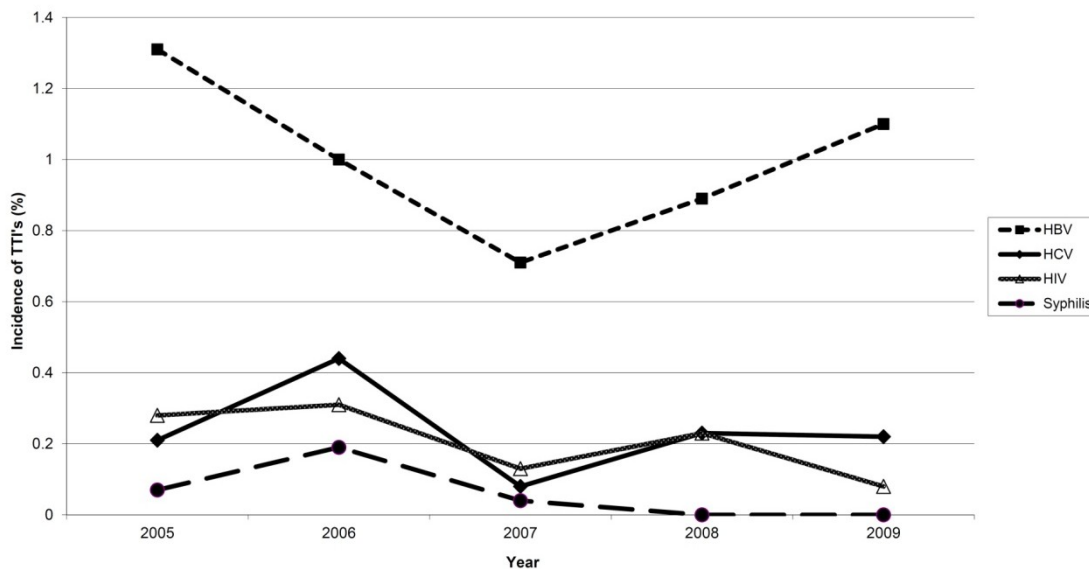
Year	No. of Samples	HBV*	HCV†	HIV†	Syphilis‡	Total No. of Infections (%)
		No. of Infections (%)	No. of Infections (%)	No. of Infections (%)	No. of Infections (%)	
2005	1452	19 (1.31)	3 (0.21)	4 (0.28)	1 (0.07)	27 (1.86)
2006	1604	16 (1)	7 (0.44)	5 (0.31)	3 (0.19)	31 (1.93)
2007	2389	17 (0.71)	2 (0.08)	3 (0.13)	1 (0.04)	23 (0.96)
2008	2134	19 (0.89)	5 (0.23)	5 (0.23)	0	29 (1.36)
2009	2264	25 (1.1)	5 (0.22)	2 (0.09)	0	32 (1.41)
Total	9843	96 (0.98)	22 (0.22)	19 (0.19)	5 (0.05)	142 (1.44)

*Detection of hepatitis B surface antigen (HBsAg) by ELISA

† Detection of specific antibodies against HCV and HIV by ELISA

‡ Detection of reagin antibody (standard test for syphilis) by rapid plasma reagin (RPR) card test

Figure 1. Incidence of Transfusion Transmissible Infections (TTI's) among voluntary blood donors of south India



seroprevalence in our study was also relatively low when compared with reports from other parts of the world [8-10]. Furthermore, previous reports from the northern, eastern, and western states of India and Pakistan revealed the HCV seroprevalence to be 1.5%, 0.35%, 0.29%, and 3% respectively, while the present investigation reported HCV seroprevalence to be 0.22% [1,5,6,10]. The seropositivity for HIV was 0.19% in our study which is low as compared to studies from other parts of India [1,5,6]. The seropositivity for syphilis was 0.05%, which again is relatively low as compared to that reported from the other parts of the country [1,5,6] as well as that of other countries [8,9,11]. Therefore, the seroprevalence of syphilis, HIV, HBV and HCV infections in our geographical region was relatively less than that of other parts of the country. Although the seroprevalences of HIV and HBV among the blood donors of South India were higher than those reported from Nepal, the overall prevalence of TTIs remains low in our region [11]. This lower seropositivity is believed to be attributed to improved counseling of blood donors, adherence to standard donor selection criteria, and rationale use of blood. In concordance with the previously published reports [1,5,6,12] the prevalence of HBV was higher than the other TTIs among the study population investigated herein [Figure 1].

In conclusion, the present study clearly documents a relatively low seroprevalence (1.44%) of major TTIs among voluntary blood donors of South India. Moreover our study revealed the declining trend of syphilis in our region and it is found to be relatively rare when compared with other TTIs. Although TTIs in blood donors are low in our region, we underline the need for the implementation of better screening methods with improved sensitivities that could detect the agents of TTIs even during the window period. In addition, measures need to be taken on the dissemination of information to the public and improved algorithm for the better recruitment of blood donors to improve blood safety.

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