Analysis of the trend of hepatitis B, hepatitis C, HIV, syphilis, and malaria infections in a rural part of West Bengal

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Sir,

In a vast country like India, a survey of blood transmissible diseases in the country as a whole is very difficult. Individual epidemiological surveys of each state may help us to understand the seriousness of the problem and the changing trends. Among the blood transmissible diseases, hepatitis B (HepB) and hepatitis C (HepC) (both caused by viruses of the family *Hepadnaviridae*), HIV, syphilis (caused by *Treponema pallidum* subsp. *pallidum*), and malaria (caused by *Plasmodium*) are major public health problems in developing countries. HepB is transmitted parentally and causes either symptomatic or asymptomatic disease. Worldwide, an estimated 360 million peoples are chronically infected with HepB.[1] HepC is major cause of chronic active hepatitis, hepatocellular carcinoma, and liver cirrhosis.[2] Among HIV infected people, mitochondrial dysfunction in hepatocytes and other infected cells is a leading cause of cellular death.

We aimed to study the prevalence of these diseases over the last ten years (2000–2009) in the southern part of West Bengal, which includes some remote villages. The population under study included people of diverse backgrounds, cultures, and lifestyles. Blood samples were collected from voluntary blood donors within the age-group of 18–58 years. We organized many health camps to facilitate the collection of a large sample. The most sensitive and specific ELISA test protocol was used to establish the diagnosis. We used the chi-square test for statistical analysis of the data.

Of the 26830 donors assessed, 63.24% (16967) were males and 36.76% (9863) were females. Among them, 452 donors were found to be seropositive for HepB, a prevalence of 1.68%. The seroprevalence of HepC was found to be 1.09%, with the total number of cases being 293. The frequency of HIV was 0.50%, with a total of 135 cases. Infection with syphilis was found in 155 cases, giving a prevalence of 0.58%. The prevalence of malaria was low (0.02%), with only five cases being detected overall. Malaria showed a negligible prevalence in the years 2001, 2003, 2007, and 2009, with one or two cases being detected in each of these years. No cases of malaria were detected in the other years [Figure 1].

HepB infection was the most common among all the diseases for the initial eight years (2000–2007). It showed a relatively low prevalence in the initial years, with the lowest prevalence (0.89%)

being during 2002 [Table 1]. From 2003 onwards HepB showed an increasing trend, with the prevalence peaking in 2005 (2.63%). After this there was a decline. HepC shows a steady increase with the passing years; the highest prevalence was seen in 2009 (2.19%). The present study revealed that HIV infection was highest in 2005 (0.97%) and has decreased during recent years. The highest prevalence of syphilis was during 2005 (0.82%) and the lowest during 2006 (0.22%); after 2006, syphilis started increasing again. Comparative analysis on the change over the years in seroprevalance showed that the data was statistically significant ($P < 0.05$) for HepB, HepC, HIV, and syphilis. The change in the seroprevalence of malaria over the years was not statistically significant ($P < 0.05$).

The present investigation reveals that among the five diseases that were studied, HepC poses a threat to society due to its increasing trend. Judging by the seroprevalence rates for the last 2 years, it appears to be more of a public health challenge than HIV or even HepB in the population studied. Though HepB virus showed the highest prevalence for a long period (from 2000 to 2007), it has now been overtaken by another hepatitis virus, HepC. Thus, this investigation reveals that hepatitis infection needs to be taken much more seriously than HIV in this rural population.

Malaria has been prevalent in India from times immemorial. During 1996, 83% of the total number of malaria cases worldwide were from India.[3] The present study shows that over the last 10 years malarial infection has been negligible in the studied population. The result of this study shows that the risk of blood transfusion–transmitted parasitic infections is lower than that of viral infections, though the malaria parasaites can Cause serious illness, especially in immunocompromised individuals.[4]

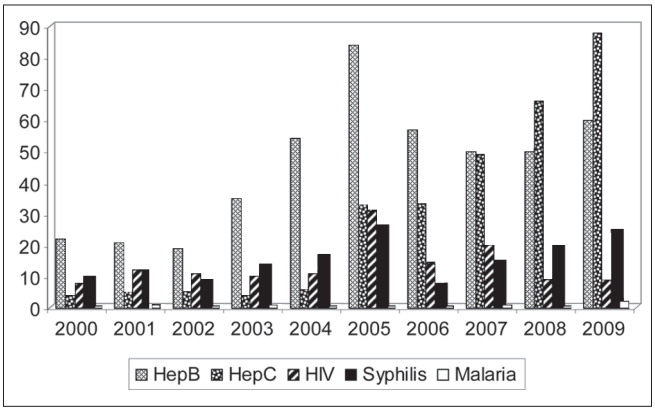

Figure 1: Total number of cases of hepatitis B, hepatitis C, HIV, syphilis, and malaria

Table 1: Prevalence of hepatitis B, hepatitis C, HIV, syphilis, and malaria

Year	Total sample	HepB (%)	HepC (%)	HIV (%)	Syphilis (%)	Malaria (%)
2000	1428	1.54	0.28	0.56	0.70	0.00
2001	1864	1.13	0.27	0.64	0.64	0.07
2002	2123	0.89	0.24	0.52	0.42	0.00
2003	2019	1.73	0.19	0.49	0.69	0.04
2004	2118	2.55	0.28	0.52	0.80	0.00
2005	3190	2.63	1.03	0.97	0.82	0.00
2006	3244	1.76	1.02	0.43	0.22	0.00
2007	3625	1.38	1.35	0.55	0.41	0.02
2008	3206	1.56	2.06	0.28	0.62	0.00
2009	4013	1.49	2.19	0.22	0.62	0.05

Blood transfusion is a secondary mode of transmission of sexually transmitted viral diseases like HepB, HepC, and HIV. There is a high risk that the transfusion recipient can transmit the illness during the window period of these diseases. It is therefore an important duty of any blood bank to examine each and every blood before transfusion and to take all necessary safety measures.

Indirectly, this study also generates data on the prevalence of these diseases and the possibility of epidemics.

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