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Incidence Pattern of HIV, Hepatitis B, C and Syphilis in Rural Population of West Bengal

ARPITA CHATTERJEE

Department of Research & Development, Barasat Cancer Research & Welfare Center
Banamalipur, Barasat, Kolkata 700124, India
E-mail : arpita10c@gmail.com

Abstract

Epidemiological investigation to study the changing spectrum of diseases caused by HIVI/2, HBV, HCV and syphilis was performed for the last successive five years with rural peoples of West Bengal. The incidence of HIV was much higher during 2005 and lowered down in recent years. HBV showed a decline from earlier years, whereas enraging severity was observed in HCV in successive years. Severity profile of syphilis was highest during 2005, it lowered down maximum during 2006, and later again it spread.
Key words : HIV, HBV, HCV, Syphilis, Rural population.

In a country like India where poverty, illiteracy and poor health are rife, the spread of sexually transmitted diseases presents a daunting challenge. The first cases of HIV infection in West Bengal was detected in 1986 and today the epidemic affects all sectors of Indian society and had spread to the general population and even among people that had previously been seen as low-risk, such as housewives and richer members of society (1). The hepatitis B virus (HBV) is 50 to 100 times more infectious than HIV and the prevalence rate of HBV in India is around 4% (2). Every year over 100,000 Indians die due to illnesses related to HBV infection. Hepatitis C virus (HCV) infection was first identified in 1988 (3). Transmission of HCV from infected mother to the infant occurs in about 5% of the cases and most patients with acute HCV infection have no signs or symptoms of infection (4). Syphilis is another common sexually transmitted disease in eastern India caused by the spirochetal bacterium *Treponema pallidum* subspecies *pallidum.* The present investigation aimed to study the severity of diseases caused by HIV, HBV, HCV and syphilis and their changing spectrum for the last five years in the rural peoples of West Bengal.

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Methods

An epidemiological investigation was performed for the last successive five years from 2004 to 2008 with rural peoples of West Bengal from diverse backgrounds, cultures and lifestyle. Blood samples were taken from voluntary blood donors who were apparently healthy and within age group of 18 to 58. To detect HIVI/2, HBV, HCV and syphilis ELISA based serological detection protocol was used following instruction of manufacturer and that are most sensitive and specific. For detection of HIV, HBV and HCV the kits used were Retrolisa, HBV Qualisa and HCV Qualisa (Tulip Diagnostics, India) respectively. For confirmation study of HIV two kits were used namely Biorad Genscreen (USA) and Microlisa (Ag and Ab-P24) (J. Mitra and Co., India). For the confirmation of HBV and HCV the kits used were Monalisa, Biorad (USA) and Genedia 3.0, Biorad (USA) respectively, and these were further confirmed by the kits of Microlisa (J. Mitra and Co., India) for both of them. Syphilis was detected by the kit provided by VDRL-RPR (Becon, India) and further confirmed by the protocol used in Qualigen kit (Glasco, India).

Results and Discussion

The present study revealed that HIV infection

Table 1. Changing spectrum of severity profile of HIV, HBV, HCV and syphilis.

Year	Total sample	HIV Total	HIV Frequency	HBV Total	HBV Frequency	HCV Total	HCV Frequency	Syphilis Total	Syphilis Frequency
2004	2118	11	0.52	54	2.55	6	0.28	17	0.80
2005	3190	31	0.97	84	2.63	33	1.03	26	0.82
2006	3244	14	0.43	57	1.76	33	1.02	7	0.22
2007	3625	20	0.55	50	1.38	49	1.35	15	0.41
2008	3206	9	0.28	50	1.56	66	2.06	20	0.62

was much higher (0.97%) at 2005 and it had lowered down during recent years (Table 1). This observation supports the study of NACO suggesting that the number of people living with HIV has declined. This trend may be due to successful prevention campaigns of various government, non-government and private organizations at different rural localities which led the peoples aware to prevent this devastating sexually transmitted disease, although a study by the National Behavioral Surveillance Survey in 2001 revealed that 32.30% of female and 56.60% of the male respondents in the rural areas had knowledge about the sexual route of HIV transmission (5). At the beginning of 1986, despite over 20,000 reported AIDS cases worldwide, India had no reported cases of HIV or AIDS (6). But now it was estimated that around 2.4 million Indians are currently living with HIV (5). Although individual states and cities have separate epidemics, but Andhra Pradesh, Goa, Karnataka, Maharashtra, Tamil Nadu, Manipur, Mizoram, Nagaland were vulnerable to HIV.

The incidence pattern of HBV showed a decline from earlier years, whereas enraging severity was observed in HCV in recent years (Table 1). In previous study the number of hepatitis B surface antigen carriers in India has been estimated to be over 40 million (7). The socio-economic status of the prospective person has an important bearing on the persistence of carrier state for HBV (8). HCV infection affects 170 million population worldwide (9) and according to WHO estimates the affected individuals are about 2 millions (10).

Severity profile of syphilis was highest (0.82%) during 2005, it lowered down maximum (0.22%) during 2006, and again it spread in successive years (Table 1). Syphilis also increases the risk of HIV infection because HIV can enter the body more easily when there is a sore present. Thus an epidemiological synergy occurs and syphilis and HIV co-facilitate transmission of each other. This is biologically plausible because sexually transmitted diseasess facilitate HIV shedding, cellular recruitment of HIV susceptible cells, and finally breaching of mucosal barriers. Earlier studies also revealed that behaviors that are risky for transmission of syphilis are also risky for transmission of HIV (11).

As India is a vast country, it is difficult to examine the effects of HIV, HBV and HCV on the country as a whole. Thus to obtain a more detailed picture of the crisis individual epidemiological survey of each state is important not only to understand the severity but also to judge the changing spectrum of enraging severity.

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