

Retroviruses in the Caribbean

C. BARTHOLOMEW¹ & F. CLEGHORN²



Transmission of HIV in many Caribbean countries has followed the pattern of initial predominance among homosexual and bisexual males, with the infection subsequently spreading into the heterosexual community. However, on Saint Lucia the epidemic began among heterosexual contacts of Saint Lucian laborers from Florida; in Bermuda 58% of AIDS cases have been in intravenous drug abusers; and in the Bahamas 59% of the AIDS patients have been heterosexuals and 19% children infected via the perinatal route.

Seroprevalence of the human T-lymphotropic virus, type 1 (HTLV-I), whose modes of transmission resemble those of HIV, has been found to range from 2.3% in Trinidad and Tobago to 5.4% in Jamaica. In a study of HIV and HTLV-1 infection patterns in homosexual males in Trinidad and Tobago, the cohort was too small for confirmation that coinfection with these two viruses hastened progression to AIDS, but further investigation is warranted.

Adult T-cell leukemia was first described as a specific clinical entity by Takatsuki et al. (1) in 1977. In 1980 Poiesz and his colleagues at the National Cancer Institute (2) reported detection and isolation of the first human T-lymphotropic virus, HTLV-I, thereby culminating a long and hitherto fruitless search for a human retrovirus. This work subsequently yielded the first clue to the relationship between HTLV-I and adult T-cell leukemia (ATL)—a clue derived from seropositive responses obtained with ATL case serum samples provided to the researchers by Ito of Kyoto University (3).

After clusters of ATL cases were recognized on the islands of Shikoku and Kyushu in southwestern Japan, Catovsky et al. (4) reported cases among six black West Indians residing in the United Kingdom. The virus-disease relationship was documented by a high seropreva-

lence of antibodies to HTLV-I in these patients, who were born in Grenada, Guyana, Jamaica, St. Vincent and the Grenadines, and Trinidad and Tobago. Subsequently, Clark et al. (5) did an epidemiologic survey of the seroprevalence of antibodies to HTLV-I on the island of St. Vincent, finding a seroprevalence of 3.3%. More recent studies in Suriname and Barbados have shown respective HTLV-I antibody seroprevalences of 3.0% and 4.25% (6, 7).

Similar surveys in Jamaica have shown an overall seroprevalence of 5.4% in the general population (5) and have found as many as 70% of all cases of non-Hodgkin's lymphoma in Jamaica to exhibit high-titer HTLV-I antibodies, which suggests that HTLV-I has contributed significantly to the occurrence of lymphoreticular neoplasia on that island (8).

In 1982 a random survey of the Trinidad population was conducted to determine the seroprevalence of hepatitis B infection. This survey detected high seroprevalences of hepatitis B antibodies in both major ethnic groups—people of

¹Department of Medicine, University of the West Indies, General Hospital, Port of Spain, Trinidad and Tobago.

²Caribbean Epidemiology Center, Port of Spain, Trinidad and Tobago.

African and Asian (Indian) origin (9).³ When the stored sera from this survey were tested for HTLV-I antibodies, 37 (2.3%) of 1,578 samples tested by an enzyme-linked immunosorbent assay (ELISA) were found positive for HTLV-I. However, 31 of 802 (3.9%) of the Trinidadians of African ancestry were seropositive, together with five of 208 (2.4%) persons of mixed African ancestry, while only one person out of 448 (0.2%) of Indian descent was seropositive (10). This disparity in ethnic seroprevalence stood in marked contrast to the seroprevalence of hepatitis B antibodies in the two major racial groups.

The almost exclusive restriction of HTLV-I infection to the Afro-Trinidadian population supports the hypothesis of Gallo et al. (11) that HTLV-I came to the Caribbean via the African slave trade. (Although Trinidad is a cosmopolitan island, the people of Indian origin have tended to settle in the rural agricultural lands of central Trinidad, while the Afro-Trinidadians have tended to congregate in the urban areas.) The lone Trinidadian of Indian origin who was seropositive for HTLV-I gave a history of frequent sexual contact with many women of African descent throughout the Caribbean islands.

The modes of transmission of hepatitis B, HTLV-I, and the human immunodeficiency virus (HIV) are very similar—namely, by sexual contact (12); parenterally via blood transfusion (13) or intravenous drug abuse (14); and from mother to child (15), possibly in utero

(16), intrapartum (17), or in breast milk (18). It has been found that HTLV-I, like HIV in the Western Hemisphere, is transmitted more readily from male to female than from female to male (19).

A prospective survey of lymphoreticular malignancies in Trinidad and Tobago conducted from 1 October 1985 to 31 March 1988 found that non-Hodgkin's lymphoma accounted for 69 of 176 (39.2%) of all subjects with lymphoreticular malignancies who were enrolled in the study. Of these 69 cases, 35 (50.7%) were positive for HTLV-I antibodies. Not unexpectedly, all the patients with ATL in Trinidad and Tobago to date have been people of African ancestry.

HIV-1-ASSOCIATED AIDS IN THE CARIBBEAN

The first case report of AIDS in the English-speaking Caribbean was from Trinidad in early 1983 (20). Barbados, Bermuda, Grenada, Jamaica, Saint Lucia, and Suriname reported their first cases in 1984; and Antigua, the Bahamas, Cayman Islands, St. Kitts/Nevis, and St. Vincent and the Grenadines reported cases in 1985. Anguilla's first case was reported in 1987 (21).

Worldwide, three general patterns of HIV-1 transmission have been found (22). The first pattern, involving a spread of the virus that began in the mid-1970s to early 1980s, was one in which transmission occurred primarily through homosexual contact, with intravenous drug abuse playing the next largest role. Regions where this pattern has prevailed include Western Europe, North America, some parts of South America, Australia, and New Zealand.

The second pattern, involving virus introduced into the affected communities in the early to late 1970s, has affected primarily heterosexuals. Where this pattern prevails homosexual transmission has

³Trinidad and Tobago, the two southernmost islands in the Caribbean Basin, have a 1.2 million population consisting mainly of people of African (41%) and Asian (Indian) origin (41%), people of mixed racial descent (16%), Caucasians (1%), and Chinese (1%). The people of African descent came to Trinidad via the Portuguese slave trade from 1680 onwards, while those of Indian origin came after the abolition of slavery as indentured laborers beginning in 1845.

not been a major factor, but transmission via HIV-infected blood has come to pose a major public health problem. Pattern II has been observed increasingly in parts of Latin America, the Caribbean, and in Central Africa. However, as will be discussed later, the pattern typically observed in the individual "English-speaking" Caribbean islands does not conform to this classification or indeed to any of the three principal patterns described.

The third pattern is one in which the virus has been introduced more recently, in the early to mid 1980s; both homosexual and heterosexual transmission are only just being documented, and parenteral transmission is not a significant problem at present. Areas experiencing this pattern include Asia, the Pacific region (apart from Australia and New Zealand), the Middle East, Eastern Europe, and some rural parts of South America.

Regarding the Caribbean, the initial risk groups affected in Antigua, Barbados, Grenada, Guyana, St. Kitts, and Trinidad and Tobago consisted of homosexual/bisexual men. In these places, especially Trinidad and Tobago, the infection has spread slowly into the heterosexual community via bisexual behavior. In contrast, the AIDS epidemic on Saint Lucia was begun by heterosexual contacts of migrant Saint Lucian laborers from Belle Glade, Florida (23).

Intravenous drug abuse is rarely practiced on these islands. On Bermuda, however, 58.0% of the AIDS cases reported up to May 1988 had occurred among intravenous drug abusers, while only 21.0% had afflicted known homosexual or bisexual men (24).

The Bahamas, which reported its first AIDS case in 1985, has provided detailed information on the risk categories of AIDS patients seen during 1987 (25). The mode of transmission in the Bahamas is

predominantly sexual, with heterosexual transmission accounting for 59% of AIDS cases, homosexual/bisexual males accounting for 10%, transfusions accounting for 1%, and perinatal transmission accounting for up to 19%. In all, 63% of the heterosexual AIDS cases were found in cocaine abusers (not intravenous drug abusers), who in turn were identified with sexual promiscuity and prostitution as a result of drug abuse. Because of this heterosexual predominance, the high percentage of pediatric AIDS cases is not surprising.

HTLV-I, HIV, AND AIDS IN TRINIDAD AND TOBAGO

The first risk group to be affected with AIDS in Trinidad and Tobago was homosexual/bisexual men, among whom the numbers of cases initially doubled about every 12 months. Specifically, there were eight cases in this risk group in 1983, 19 new cases in 1984, 33 in 1985, and 51 in 1986. In 1987 the number of new cases in homosexual/bisexual men fell to 33, but the number of new AIDS cases in heterosexuals kept rising—from five in 1985 and 17 in 1986 to 29 in 1987—so that these almost equalled the number of new homosexual/bisexual cases. Of these 29 heterosexual cases, 15 occurred in males and 14 in females. This trend continued through the first half of 1988, when 33 heterosexual cases and 29 homosexual/bisexual cases were reported. Fourteen of the 33 heterosexual cases occurred in males and 19 in females (Figure 1).

While 173 (56.3%) of all the AIDS cases reported in Trinidad and Tobago occurred among homosexual/bisexual men, bisexual men accounted for a large share (up to 71 cases or 41% of the total). The pattern that emerges is one of heterosexual transmission increasing rapidly in the community, largely as a result of bisexual

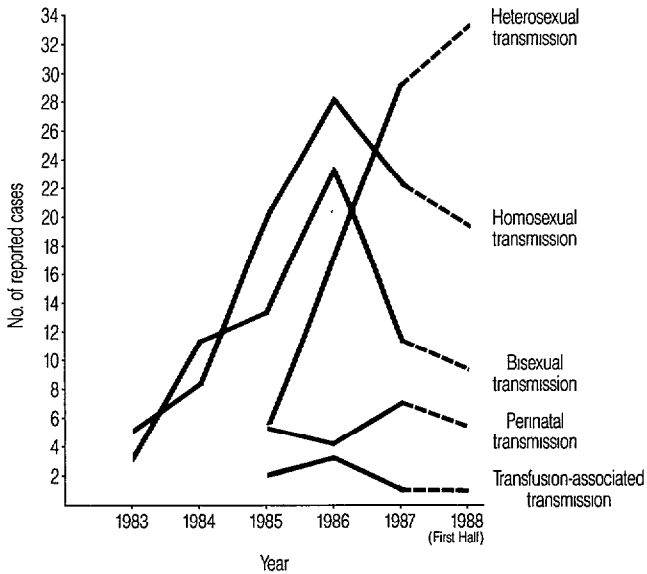


Figure 1. Reported AIDS cases in Trinidad and Tobago, by apparent mode of transmission, through 30 June 1988.

men becoming infected and transmitting the disease to women.

Regarding patterns of HTLV-I and HIV infection, a study was made of a cohort of 100 apparently healthy homosexual men who frequently attended a sexually transmitted disease (STD) clinic in Port of Spain, Trinidad. Forty percent of these men were seropositive for HIV in 1984 and 15% were seropositive for HTLV-I. When adjusted for age, this latter figure represented a HTLV-I seroprevalence six times higher than that of the general population. Six percent of the men in the cohort were coinfecting with HTLV-I and HIV; none of the cohort members were found to be intravenous drug abusers.

Another more recent study of HTLV-I prevalence in HIV-infected individuals was made in 1987. Of 285 consecutive HIV-positive sera tested for HTLV-I antibodies, 35 (12.3%) were found positive. Of these 35 apparent coinfections, 16 (45.7%) occurred in homosexual/bisexual males and 17 (48.5%) occurred in heterosexual individuals (11 males and 6 fe-

males). The other two coinfecting individuals, both adult males, were an intravenous drug abuser and a man whose risk category was unknown.

With respect to the first study, after four-and-a-half years of followup, five (14.7%) of the 34 homosexual men infected with only HIV had progressed to AIDS, as compared to three (50%) of the six coinfecting with HTLV-I and HIV. Trend analysis of the dates of AIDS diagnosis among these 40 men indicated a notably increased apparent risk of AIDS development among individuals coinfecting with HIV and HTLV-I as compared with those singly infected with HIV. Of course, the cohort involved was small, and more time will be required to confirm persistence of this trend. However, the findings clearly indicate a need for further investigation.

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