

Short Communication

Human T-Lymphotropic Type-1 Virus Specific Antibody Detected in Sera of HIV/AIDS Patients in Ghana

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SUMMARY: Serum samples from 124 acquired immunodeficiency syndrome (AIDS) hospitalized patients at the Fevers Unit, Korle-Bu Teaching Hospital, Accra, Ghana, were examined by the particle agglutination test for antibodies to human T-lymphotropic virus type 1 (HTLV-1) core proteins. The subjects included 84 males and 40 females, aged 16 to 54 years. Specific antibodies were detected in only 14 out of the 124 sera samples, giving an overall prevalence rate of 11.29%. The incidence was lower in males (5.95%; 5/84) than in females (22.50%; 9/40) ($P < 0.05$). In both sexes, the age distribution of subjects positive for HTLV-1 antibodies ranged from 35 to 54 years. The prevalence rate reported herein is too low to suggest an association of HTLV-1 with AIDS, though it may indicate an opportunistic infection of AIDS patients by HTLV-1. Whether HTLV-1 is an underlying disease association or whether HTLV-1 plays some auxiliary role in the acquisition and progression of AIDS remains to be determined.

The enormous burden of human immunodeficiency virus (HIV) in sub-Saharan Africa has been well documented, and, according to the World Health Organization (WHO) estimation, about 70% (22.5 million) of the world's infected patients live in this region (1,2). HIV infection in Ghana was first reported in 1986 (3), since then there has been a continuous rise in the prevalence of HIV-infected persons. The prevalence rate is currently estimated at 4% (4). According to the National AIDS (acquired immunodeficiency syndrome)/STD (sexually transmitted disease) Control Program of the Ministry of Health, Ghana, reported cases totaled 600,000 at the end of the year 2000. The HIV pandemic not only causes substantial morbidity and mortality for infected individuals, it also creates a major social and economic burden for the infected individuals, their families, and the nation.

Many of the epidemiological features of AIDS, including its appearance in restricted geographical areas, subsequent emergence in other places, and case-clustering, suggest that a transmissible agent is involved in the aetiology of the disease (5). One of the transmissible aetiological agents is the human T-lymphotropic virus type 1 (HTLV-1) or a variant of the virus (6-8). Growing evidence based on the biological properties of HTLV-1 has implicated the virus as an aetiological factor in AIDS (9-12). Even though AIDS is not always associated with HTLV-1 in HTLV-1 endemic areas, the high prevalence in other endemic areas, such as the Caribbean (13,14) and Africa (15,16), suggests an association between HTLV-1 and AIDS.

We observed in a recent study that the prevalence of HTLV-1 antibodies among healthy blood donors in Ghana was 4.2% (11/265) (unpublished data). In the current study, we further extended our investigations on HTLV-1 to include AIDS patients.

This study was conducted at the Fevers Unit of the Korle-Bu Teaching Hospital, Accra, Ghana, between February and September, 2001. Korle-Bu Teaching Hospital is a leading tertiary hospital that serves the city of Accra, its surrounding urban population, and the southern part of Ghana. Accra, the capital city of Ghana, is a rapidly expanding city with a population of about 2 million.

One hundred and twenty-four HIV/AIDS patients (aged 16 to 54 years; 84 [68%] males and 40 [32%] females) with chronic diarrhea on admission to the Fevers Unit were recruited for the study. All 124 HIV/AIDS (with a single infection from HIV-1) patients fell within the CDC (Centers for Disease Control and Prevention) clinical staging A1-C3 categories, representing asymptomatic AIDS to severe AIDS conditions. The patients had mean CD4 counts of 288 cells/ μ l (95% confidence interval of 237-340 cells/ μ l). All patients reported watery stools lasting from 3-90 days (diarrhea episodes, 3-10 stools/day). The protocol for this study was approved by the Ethical and Protocol Review Committee of the University of Ghana Medical School, and written and informed consent was obtained from all participating patients. The guidelines for the classification of HIV/AIDS in adults from the CDC (17), were applied to both groups of patients. HIV testing was done by the particle agglutination test (Serodia HIV-1 and HIV-2; Fujirebio Inc., Tokyo) and confirmed by Western blot analysis (New Lav Blot I and II) or the synthetic peptide-based immunoassay (PeptiLav I and II), both obtained from Sanofi Diagnostic Pasteur, Marnes-la-Coquette, France. HTLV-1 antibodies was screened with a commercially available HTLV-1 particle agglutination test kit (Serodia; Fujirebio) in accordance with the manufacturer's instructions.

The results showed that of the 124 patients, 110 were negative and 14 were positive for HTLV-1 antibodies, giving an overall HTLV-1 incidence rate of 11.29%. The incidence was lower in males (5.95%; 5/84) than in females (22.50%; 9/40) ($P < 0.05$). In both sexes, the age distribution of subjects positive for HTLV-1 antibodies ranged from 35 to 54 years (Table 1).

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Table 1. HTLV-1 seropositivity rates among HIV/AIDS patients

	Male (n = 84)	Female (n = 40)	Total (n = 124)
Median (range) age (yr)	30.5 (18-54)	23 (16-54)	30 (16-54)
HTLV-1 sero-positive number (%)	5 (5.95)	9 (22.50)	14 (11.29)
Median (range) age (yr)	43 (35-54)	45 (35-54)	45 (35-54)

The overall prevalence rate of 11.29% is similar to the prevalence rate (12%) reported by Brandful et al. (18), but higher than those observed in Kenya (1%) and Tanzania (1%) (15,19), emphasizing the importance of screening HIV/AIDS patients for antibodies to HTLV-1 infection(s) in Ghana.

This is especially important in light of recent reports of close association between HIV/AIDS and HTLV-1 (20,21), although our study was not designed to explore such relationships. Rather, the data presented herein may be interpreted as showing only another opportunistic infection acquired by HIV/AIDS patients. In the future, in view of the high prevalence rate of antibody to HTLV-1 in HIV/AIDS patients reported here, it would be interesting to conduct a comprehensive and systematic study of the HTLV-family and the diseases in it associated with HIV/AIDS in patients within various regions of the country. This would help confirm or clarify the incidence, association, and/or distribution of HTLV infection in HIV/AIDS patients. Such data would help explain whether HTLV-1 antibodies detected in some cases of HIV/AIDS are evidence of an underlying disease association or whether HTLV-1 plays some auxiliary role in the acquisition and progression of AIDS. Limitations of our study include the small sample size.

In conclusion, our results suggest that HTLV-1 is prevalent among HIV/AIDS patients in Ghana. Further studies are therefore necessary to define the role of HTLV-1 in the progression of AIDS.

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