PREVALENCE OF TREPONEMA PALLIDUM ANTIBODIES IN SERA OF HUMAN IMMUNODEFICIENCY VIRUS (HIV) INFECTED AND UNINFECTED GHANAIANS

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SUMMARY
Serum samples that were sent to the Noguchi Memorial Institute for Medical Research (NMIMR) to be tested for HIV infection using Western Blot and enzyme linked immunosorbent assay (ELISA) were tested for antibodies to Treponema pallidum. In all 102 HIV-positive and negative sera were tested.

Forty-one (41.2%) HIV positive sera were positive in the T. pallidum haemagglutination assay (TPHA) while only 8(7.8%) of the HIV negative sera were positive. HIV positive sera also showed higher antibody titres of syphilis than the HIV negative sera (305 ± 296 versus 86 ± 96; t 1.86, p > 0.05).

These findings suggest some association between HIV infection and reactivity in TPHA serology. It also confirms the presence of sexual transmission in the study population as both diseases are sexually transmitted.

The establishment of STD clinics where detailed interview sessions, physical as well as serological examinations of subjects could be conducted is indicated.

Key Words: Syphilis, HIV, Antibodies

INTRODUCTION
Several studies conducted among female prostitutes and men attending sexually transmitted diseases clinics in East and Central Africa have shown a strong association between genital ulcers (mainly due to chancroid and syphilis) and HIV transmission1-3. This disturbing trend has been confirmed by studies from the United States and India4,5. These studies showed that among 35 western-blot confirmed HIV positive cases, 25 had genital ulcers. Similarly from the USA Quinn et al6 showed that a history of treatment of syphilis and reactive test for syphilis treatment were significantly associated with HIV infection; for example in heterosexual non-intravenous drug users the Odds Ratio was 8.7, Confidence Intervals 4.9-15.5, p < 0.001.

Indeed in the USA the rate of detection of new cases of syphilis in 1987 was at its highest since 19507. The other disturbing fact is that, individuals with HIV infections often develop the serious late manifestations of syphilis, which may involve the central nervous system, earlier in the course of the disease than usual.

The presence of syphilitic chancre may provide a breach in the genital epithelium, allowing direct inoculation of HIV that may be present in the genital secretions of an infected sexual partner8. The predominant lymphocytic infiltration at the base of a syphilitic ulceration may also serve to increase the efficiency of transmission of HIV from an HIV infected individual.

In view of the implications of these findings on man-
agement of HIV and syphilis patients and the control of both diseases, we conducted a pilot study to assess the association between HIV infection and prevalence of antibodies to Treponema pallidum in Ghanaian patients. The findings are presented in this report.

SUBJECTS AND METHODS
One Hundred and Two (102) serum samples each from individuals who were confirmed positive for HIV in the Western Blot assay (BIORAD Clinical Division Hercules, France (HIV 1) and Diagnostic Pasteur, France (HIV 1)) were used in the study. Samples that tested negative in both ELISA and Western Blot were controls. These samples were sent to the Virology Unit of NMIMR from various health facilities across Ghana.

The serum samples were tested anonymously for syphilis antibodies using T. pallidum haemagglutination test (TPHA) as per the manufacturer’s specifications (Kyowa Chemical Company, Japan). The technicians who conducted the test for syphilis antibodies did not have any prior knowledge of the HIV status of the subjects.

The data was analysed using the Student t test to assess the significance of the differences that were observed between the two groups.

RESULTS
Of the 102 serum samples from the group that tested positive for HIV 42 (41.2%) were positive in the TPHA test while only eight (7.8%) were positive in the HIV negative group. The mean titres for the serum samples that were positive in TPHA were 305 ± 296 and 86 ± 96 in the HIV positive and negative groups respectively. These were significantly different (t 1.86, p > 0.05), the range of titres in the HIV positive cases was 40-1240 and 40-320 in the HIV negative cases.

DISCUSSION
This study has shown a strong association between reactive test for syphilis and HIV infection. It supports previous findings from Quinn et al\(^8\), which showed that “of all potential risk factors for HIV infection in this population, the variable that most consistently correlated with HIV infection was reactive serologic test for syphilis”.

There appears to be a stronger immune response in the HIV positive group than the HIV negative group as indicated by the relatively higher syphilis antibody titres recorded in the former. These findings seem to underscore the significance of HIV transmission by patients with other STDs in the population. There is therefore the need for the establishment of STD clinics in Ghana, where HIV patients will be carefully monitored for syphilis and other STDs and other genital ulcers.

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REFERENCES


