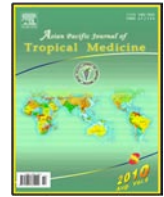


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Seropositivity of *Chlamydomphila pneumoniae* immunoglobulin G antibody of HIV/AIDS patients in Abuja, Nigeria

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ABSTRACT

Objective: To detect IgG antibody to *Chlamydomphila pneumoniae* (CP) in sera of HIV/AIDS patients and provide rationale for inclusion of routine screening for anti-CP antibodies and anti-chlamydial agents in the Nigerian National HIV/AIDS Management Plan. **Methods:** Serum samples from 34 consenting HIV/AIDS patients attended a Government-approved Antiretroviral Treatment Facility in Abuja were screened by enzyme-linked immunosorbent assay for anti-CP IgG antibody using ImmunoComb® Chlamydia Bivalent IgG Test kit (Orgenics, Israel). **Results:** Anti-CP IgG antibody was detected in 20 (58.8%) of 34 patients tested. The detection rate was higher among the males (8/13; 61.5%) than the females (12/21; 57.1%). Patients of the age group 16–30 years had the highest (7/10; 70%) detection of anti-CP IgG antibody. **Conclusions:** The result of the present study suggests the presence of anti-CP antibodies in sera of the HIV/AIDS patients, and reinforces the need for routine screening for anti-CP antibodies as a necessary intervention to reduce the burden of *Chlamydomphila pneumoniae* (*C. pneumoniae*) infections and to reduce HIV-positive morbidity in Nigeria. The outcome of this study also provides justification for the possible inclusion of anti-chlamydial agents in the National HIV/AIDS Management Plan to provide prophylaxis against or treat active *C. pneumoniae* infections.

1. Introduction

Human immunodeficiency virus/Acquired immunodeficiency syndrome (HIV/AIDS) is a growing global problem, in terms of its incidence and mortality. The current estimated 33.4 million people living with HIV and AIDS mortality of 2.0 million has made the HIV/AIDS epidemic among the leading causes of death worldwide^[1]. In Nigeria, epidemiological surveillance of HIV/AIDS showed an increasing prevalence from 0.000 001% in 1986 to 5.8% in 2001, a drop in 2003 to 5.0% and a further slight drop in 2005 to 4.4%^[2–4]. A recent report has shown that the estimated number of AIDS death in Nigeria has increased progressively from 42 000 in 1995 to the 170 000 in 2007^[5]. Multi-organ involvement by opportunistic infections and neoplasms is the major cause of morbidity and mortality in people living with HIV/AIDS^[6]. People with HIV or AIDS are

at a greater risk for contracting “opportunistic” diseases because these diseases take advantage of the body’s lowered defenses.

Chlamydomphila (formerly *Chlamydia*) *pneumoniae* (*C. pneumoniae*) is a small, non-motile, Gram-negative and obligate intracellular pathogen^[7]. It commonly causes pharyngitis, bronchitis and atypical pneumonia mainly in elderly and debilitated patients but in healthy adults^[8–12]; and less commonly causes several other illnesses such as meningoencephalitis, arthritis, myocarditis, Guillain-Barré syndrome, Alzheimer’s disease, fibromyalgia, Chronic Fatigue Syndrome, prostatitis, and many others^[12–15].

Infection with *C. pneumoniae* occurs worldwide, especially in adults^[16], with a reported 40% to 90% prevalence of serum antibody to the species^[17–19]. It was shown to be a frequent cause of pneumonia and other diseases in HIV/AIDS patients^[12,20,21]. In Nigeria, information on the seroprevalence of *C. pneumoniae* in HIV/AIDS patients is lacking or at best scarce. Given the high number of AIDS deaths in Nigeria, the second highest in the World, after South Africa^[5,22], the additional burden of *C. pneumoniae* infections will further increase HIV-related deaths if not routinely screened for and checked. The present study aims

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at the detection of anti-*C. pneumoniae* IgG antibodies in sera of HIV/AIDS patients which attended a Government-approved Anti-retroviral Treatment (ART) Center to provide a basis for the possible inclusion of routine screening for anti-*C. pneumoniae* antibodies and anti-chlamydial agents for prevention or treatment of *C. pneumoniae* infections in the National HIV/AIDS Management Plan in Nigeria.

2. Materials and methods

2.1. Patients and specimen collection

During the period April 2005 to March 2006, a total of 34 patients (13 males, 21 females) between the age of 16 and 46 years old which attended the ART Facility at the National Institute for Pharmaceutical Research and Development, Abuja were enrolled for the study. These patients, which had CD4 lymphocyte counts of 35–1 460 cells/ μ L and PCV of 34–47%, gave their consent in writing, by filling and signing a questionnaire administered to them.

Five milliliters of blood was collected from a vein of each of the patients using a sterile syringe, then allowed to coagulate at room temperature and serum separated. The sera were kept at -20°C until required for testing.

2.2. ImmunoComb® Chlamydia Bivalent IgG test

Detection of anti-CP IgG was done by a solid-phase enzyme-linked immunosorbent assay (ELISA) using ImmunoComb® Chlamydia Bivalent IgG [*Chlamydomphila trachomatis* (*C. trachomatis*) and *C. pneumoniae*] kit manufactured by Orgenics (Israel). This test kit is a quantitative serologic test that uses two distinct strains on two differentiated spots: L2 serovar strain (*Chlamydia trachomatis*) and IOL 207 (TWAR) strain (*C. pneumoniae*). The extraction and elimination of the common genus-specific lipopolysaccharide (LPS) antigenic fraction enables the specific and differential diagnosis of *C. trachomatis* and *C. pneumoniae* infections. The EIA was performed and interpreted in accordance with manufacturer's instructions.

3. Results

Anti-*C. pneumoniae* IgG antibodies were detected in 58.8% (20/34) of the patients tested. The detection rate was higher among the males (61.5%; 8/13) than the females (57.1%; 12/21). Patients of the age group 16–30 years had the highest detection of anti-*C. pneumoniae* IgG antibodies (70%; 7/10) followed by those of age group > 45 years (66.7%; 2/3) and lastly age group 31–45 (52.4%; 11/21).

4. Discussion

C. pneumoniae can be detected by culturing, antigen detection assays (the direct fluorescent antibody assay and enzyme immunoassay), serology and molecular

techniques^[23,24]. However, due to the problem of one or a combination of cost, availability of testing kits, expertise and laboratories, time-demand, sensitivity and specificity, serological testing, the “gold standard” being the microimmunofluorescence (MIF) test, is currently the most widely used tool for routine diagnosis of *C. pneumoniae* infection^[24].

Both IgG and IgA classes of antibodies are generated upon *C. pneumoniae* infection in a patient; but while IgG antibodies tend to last for years, the presence of IgA is more correlated with an on-going infection or with a recent event^[16]. Thus, the detection of IgG against *C. pneumoniae* in the sera the HIV/AIDS patients in our study may be indicative for a past, recent or active status in acute, chronic and recurrent CP infections. Elsewhere, a high prevalence of antibodies to *C. pneumoniae* in HIV-positive individuals in Thailand has been reported^[21]. The decrease in the detection rate with age observed in our study is not in agreement with earlier data elsewhere that the distribution of seroprevalence of *C. pneumoniae* infection increases with age^[23] but agrees with a recent report in Thailand^[21].

Although ImmunoComb assay for IgG antibodies to *C. pneumoniae* was found to be inferior to those of the MIF, the serology gold standard^[14], it can be used as a method for presumptive serology due to its rapidity and ease of performance. Wherever possible, one or more additional tests should also be performed to increase the specificity of such studies. Thus, further study that employs a larger sample population size across the country and uses other detection techniques is required to confirm this observation. Although in a small population size, the detection of anti-*C. pneumoniae* IgG in sera of HIV/AIDS patients attending the ART Center in Abuja provides rationale for possible inclusion of routine screening for anti-*C. pneumoniae* antibodies (either IgG or IgA) and anti-chlamydial agents in the National HIV/AIDS Management Plan in Nigeria.

Conflict of interest statement

We declare that we have no conflict of interest.

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