

**DETECTION OF CHLAMYDIAL ANTIGEN IN CERVICAL SPECIMENS FROM ANTENATAL CLINIC ATTENDEES IN BENIN CITY, NIGERIA****<sup>1</sup>Isibor, J. O., <sup>2</sup>Ugbomoiko, D., <sup>1</sup>Nwobu, G. O., <sup>3</sup>Ekundayo, A. O.,  
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Four hundred consenting antenatal clinic attendees were serologically screened for evidence of *Chlamydia trachomatis* infection. Infection with this organism is underreported in many countries including Nigeria. In the antenatal clinic setting in most developing countries, antigen detection has found widespread application in diagnosis due to lesser demands of cost, expertise, and time required to obtain results. In this study, Chlamydia antigens were serologically detected using an immunochromatographic method (Hexagon Chlamydia Rapid Test Kit manufactured and described by Human Gesellschaft für Biochemica und Diagnostical MbH-Germany). Overall, 40 (13.3%) of the 300 women screened had chlamydia antigens in their endocervical specimens while 100 women (control subjects) were negative for chlamydial antigens. There seems to be an association between chlamydial infection and vaginal discharge, abortion and infertility. We highly recommend the necessity to include chlamydia screening tests in antenatal health care in Nigeria to prevent unpleasant sequelae

**Keywords:** Chlamydial antigens, endocervical specimen, antenatal women, Benin City, Nigeria.

**INTRODUCTION**

*Chlamydia trachomatis* includes the agents of trachoma, lymphogranuloma venereum, and urogenital tract disease and inclusion conjunctivitis (1-4). Although *C. trachomatis* infection is underreported in most countries of the world, it is fast assuming a prominent role as the major aetiological agent of sexually transmitted non-gonococcal urethritis (5). Krul (6) has reported that 50 million new cases of *C. trachomatis* infection occur annually, worldwide.

Although most infections caused by *C. trachomatis* in women are asymptomatic, clinical manifestations include cervicitis, urethritis, endometritis, pelvic inflammatory disease (PID), or abscess of the Bartholin gland (7). Culture studies have shown that among women infected with *C. trachomatis*, 50 to 60% are infected at both the cervix and urethra, 30% have only cervical infections, and 5 to 30% have only urethral

infections (8). The importance of cervical Chlamydial infection in the pathogenesis of pelvic infection is well recognized (9-12). Although the major impact of disease caused by *C. trachomatis* is on the female reproductive tract, the agent also causes infections in man and children.

The biggest challenge to the control of chlamydial disease is that as many as 70 to 80% of women and up to 50% of men who are infected do not experience any symptoms (4,13-14). The study of Scholes *et al* (15) however provides evidence that, once women at high risk are identified and tested, the incidence of PID can be reduced.

In the less developed countries of the world, chlamydial infections in women are not routinely diagnosed in our hospitals. Until recently, cell culture of inocula from urogenital specimens was considered the "gold standard" for detection of *C. trachomatis* because it has a specificity that approaches 100% (16). However, antigen and nucleic acid detection technologies have found

widespread application in diagnosis due to lesser demands of cost, expertise, and time required to obtain results (17-20). Previous studies (21-22) have indicated prevalence rates of chlamydial infections in various Nigerian cities.

This paper reports on the prevalence of *C. trachomatis* infection among unsuspecting women attending an antenatal clinic in Benin City, Nigeria.

**PATIENTS AND METHOD**

**Study population**

The patient group consisted of three hundred consenting pregnant women (mean age 28 years, range 19 to 42 years) who were consulting the antenatal clinic of Central Hospital, Benin City, Nigeria. One hundred non-pregnant women within the same age range served as control. These were screened for the presence of *C. trachomatis* antigen in their endocervical specimens. Each subject gave her consent and responded to a questionnaire containing series of screening criteria such as: number of sexual partners, marital status, age, number of previous still births and abortions, etc. Only those who had not been on tetracycline or erythromycin therapy within the past 3 months before sampling were included in the study.

**Methodology**

The Hexagon chlamydia test kit (cat. No. 58012) used for this study employs an immuno chromatographic method for the direct detection of chlamydia antigen in extracts from patient's specimens.

**Specimen collection and sample extraction**

The clinician aseptically cleansed the vagina and cervix of traces of blood and mucus using a sterile cotton ball before inserting the Hexagon chlamydia collect swab (cat No. 58912) into the endocervical os. The swab was rotated for 15-30 seconds, carefully withdrawn and immersed into the extraction solution provided in the collection tube. This was left for 10-15 minutes at room temperature to allow for proper sample

extraction. At the end of the extraction time, the liquid was removed from the swab by twisting it against the tube wall while removing the swab from the tube. The swab extract was used within 30 minutes.

**Test procedure**

The test device and the sample of the extract were brought to room temperature on a level workbench. 4 drops of sample extract were carefully added drop-wise onto the sample window on the device, and allowing each drop to be completely absorbed. This was allowed to incubate and read at 20 minutes. The test results as well as the controls incorporated within the test device were read and recorded.

**RESULTS**

Of the 300 subjects screened for the presence of chlamydia antigens, using the Hexagon chlamydia reagents, 40 (13.3%) yielded positive results while no chlamydia antigen was detected in specimens from the control subjects (Table 1).

**Table 1: Prevalence of *C. trachomatis* antigens in antenatal clinic patients**

No of patients	No positive for antigens (%)	No negative for antigens (%)
300	40 (13.3)	260 (86.7)
100 (Control)	0 (0)	100 (100)

$\chi^2 = 14.77, p < 0.005$

Of the 40 women demonstrating presence of chlamydial antigens in their cervical specimens, 10 had two previous abortions while only 1 had one previous abortion. All had vaginal discharge at the time of visiting the clinic. 30 out of the 40 positive cases were carrying nine months old pregnancies, while the remaining 10 women were in their first trimester. Also 30 out of the 40 positive women were childless.

**DISCUSSION**

The primary aim for undertaking this study was to use the rapid immunochromatographic test to detect chlamydial infection in unsuspecting women attending hospital clinics for their antenatal

check-up. Of the 300 women attending the antenatal clinic, 40 (13.3%) demonstrated presence of chlamydia antigens in their endocervical specimens; thus showing evidence of their having contacted *C. trachomatis* infection. Thirty of the 40 positive women in our study had advanced to their ninth month of pregnancy. Martin *et al* (23) have reported that pregnant women with *C. trachomatis* infection were 10-fold more likely to have poor outcomes such as still birth and neonatal death. Gestation periods were also significantly shorter in infected women. However, the present study, like the earlier works of Hardy *et al* (24) and Harrison *et al* (25) does not confirm this association, as the 30 pregnant women with chlamydial antigens had progressed to the ninth month of pregnancy.

Responses to our study questionnaires reveal that 11(27.5%) of the 40 women harboring chlamydial antigens have had previous abortions. Although we do not have evidence that these previous abortions were caused by infection with chlamydial organisms, two independent studies (26, 27) have however indicated an association between exposure to *C. trachomatis* and recurrent spontaneous abortions.

The 40 women positive for chlamydial antigens had vaginal discharges. This is one of the symptoms associated with chlamydial infections (16) and so, we suggest that routine screening of antenatal women, especially those with vaginal discharges, be carried out in order to prevent or reduce the incidence of PID and its adverse sequelae. A previous study (21) in Benin City has established a link between chlamydial infection and primary and secondary infertilities in women. It could be possible that chlamydial infection may have been responsible for the infertility observed in 30 of the 40 women carrying chlamydial antigens.

Analysis of the questionnaires dispensed during the present study, showed that 75% of

women carrying antigens were found to be childless at the time of obtaining specimens from them.

A study by Ofor (unpublished observation) showed a high prevalence (23%) of *C. trachomatis* infection among pregnant women and 37% prevalence in non-pregnant group in Lagos. Also, Azenabor and Eghafona (22) had earlier demonstrated the presence of chlamydial infection in Benin City, this time, amongst infertile women where a prevalence of detectable chlamydial antibodies of 22% and 25% for primary and secondary infertility respectively was recorded. A prevalence rate of 13.3% was found in this study. Some workers (23, 28) have shown that the prevalence of *C. trachomatis* infection in pregnant women ranges from 2 to 35%.

Since it has been proven that pregnant women with chlamydial infections are at increased risk for adverse outcomes of pregnancy and post partum PID (23-25, 28), results from this study should stimulate our health planners and providers towards including chlamydial screening of antenatal women as effective preventive measures for our women folk. We disagree with the views of Obunye *et al* (29) that screening for chlamydial infection is not yet feasible, for reasons of high costs and the difficulty of reaching the target population. We believe that the proverbial journey of a thousand miles starts with a step!

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