Association Of Socio-Demographic Parameters With Endocervical And Vaginal Pathogens Of Women Attending A Cytology Clinic In Lagos: A Pilot Study

1. E. Onuoha, F. T. Ogunsola, O. I. Anoriu and O. O. Abudu
Department of Medical Microbiology and Parasitology
Department of Obstetrics and Gynaecology
College of Medicine, University of Lagos.

Correspondence F. T. Ogunsola

ABSTRACT

High Vaginal Swabs (HVS) and Endocervical Swabs (ECS) were collected from each of 112 consecutive women attending the cytology clinic of a University Teaching Hospital in Nigeria between May and August 1998. Organisms were recovered from 62 (55.4%) and 24 (21.4%) of the HVS and ECS samples respectively. Thirty-eight (33.9%) of the HVS organisms were sexually transmitted pathogens or potential pathogens. Of these 112 cases, sexually transmitted pathogens made up a total of 14 (12.5%), which included (Neisseria gonorrhoea, 2 (1.8%) and Trichomonas vaginalis 12 (10.7)). The prevalence rates of endogenous organisms of pathogenic potential were: Gardnerella vaginalis, 8 (7.1%); and Candida albicans 16 (14.3%). Of the 2 cases with N. gonorrhoea infection, one was asymptomatic while the other was co-infected with T. vaginalis. Four (33.3%) of 12 and 4 (50%) of 8 women infected with T vaginalis and G. vaginalis respectively, had vaginitis clinically diagnosed. Six (37.5%) of 16 of these with C. albicans had vaginal discharge. Socio demographic parameters like age occupation, education and marital status were correlated with the incidence of the Reproductive Tract Infections (RTIs). Occupation and level of education attained were found to have significantly influenced prevalence rates of the RTI pathogen (p<0.05).

Key Words: Socio-demographic parameters, Reproductive Tract Infections.

INTRODUCTION

Reproductive tract infections (RTIs) are frequent and troublesome disorders during the productive life of women and cause great socio-economic and medical problems. It is most frequently encountered in the age group 20-30 years old1-9. Vaginal discharge is one of the most frequent complaints seen in self-referred cases in the gynaecological clinics7 and seen in 28-33% of women attending STD’s clinics7,9.

The common clinical entities of vulvovaginal candidiasis (VVC), trichomoniasis, gonorrhoea, and bacterial vaginosis (BV) account for over 90% of all cases of vaginal discharge in various clinical settings in developing countries4. In developed countries however, bacterial vaginosis appears to be an increasing cause of vaginal infections relative to candidiasis, trichomoniasis and gonorrhoea7,10.

Many studies have been conducted in developing countries, in particular Nigeria, to determine the relative incidence of these causative agents of RTIs but their results have been inconclusive22,9. This may have been due to the fact that these studies were carried out in different cities; because the prevalence of particular organisms have been shown to vary amongst different groups and different environmental settings8.

Most of these studies were done in general gynecological clinics, STD clinics and in high risk groups like commercial sex workers (CSWs). The implication of the apparent contradictory reports on the prevalence rates of RTIs is that more prospective and repitive studies are required in different environmental settings to establish the definite pattern of RTI. Therefore there is a need to study the prevalence of RTI in apparently health women which may be used as a measure of the prevalence of RTI in the general population.

In this study, the carriage rates of pathogens in the female reproductive tract of women of child bearing age who came for routine screening at the Lagos University Teaching Hospital, were determined and correlated with socio-demographic parameters of age, occupation, education and marital status.

MATERIALS AND METHODS

Sample Collection

Samples of High Vaginal Swabs (HVS) and Endocervical Swabs (ECS) were collected in each of 112 consecutive women between the ages of 16 and 46 years, with or without vaginal discharge, from different social backgrounds attending the cervical cytology clinic at LUTH between May and August, 1998. The women were non menopausal, had no history of chronic metabolic disease, and were not on any antibiotic in the preceding two (2) weeks. The age, educational background, marital status, and occupation of each patient under study was recorded. Informed consent was obtained from each patient.

A general examination of the patients including a pelvic examination was carried on each patient and HVS and ECS were collected using sterile dacron tipped swab sticks.

Bacteriology

The presence, colour and pH of all vaginal discharge were recorded. The colour of the discharge was described as clear, white, yellow, yellow-green, or green. The quantity of discharge was interpreted as slight or copious. The pH of each specimen was determined with pH paper (Whatman, - BDH, England); and any colour development
read within 30 seconds against a pH colour scale ranging from 1 to 14.

Wet mounts, hanging drop and giemsa-stained, iodine, stained and gram-stained smears of each specimen were examined by microscopy and all specimens were plated on the modified Thayer-Marten agar and chocolate agar in the clinic and taken to the laboratory in a candle-extinction jar where they were incubated at 35-37°C with added carbon dioxide in a candle-extinction jar for 24-48 hours.

Statistical Analysis

Results were analysed statistically by the chi-square test at 5% significant level.

RESULTS

This study was conducted on 112 women who came for routine screening at the cervical cytology screening clinic of Lagos University Teaching Hospital.

Organisms were recovered from 62 (53.4%) and 24 (21.4%) of the 112 HVS and 112 ECS samples respectively. Thirty-eight (33%) isolates were identified as pathogens or potential pathogens of the reproductive tract and included G. vagitus, 8 (7.1%); T. vaginalis, 12 (10.7%); C. albicans, 16 (14.3%); N. gonorrhoea, 2 (1.8%) (Table II). The two cases of N. gonorrhoea were found in women of lower educational qualification in which one was asymptomatic and the other co-infected with T. vaginalis.

Fourteen (11.2%) of the 122 women had vaginal discharge, and 9 (8.9%) had RTI pathogens. Four (33.3%) of 12 and 5 (50%) of 8 women infected with T. vaginalis and C. albicans respectively, had vaginitis clinically diagnosed. Six (37.5%) of 16 of those with C albicans had vaginal discharge. Eight and two specimens of HVS and ECS respectively had pH > 6.5 and G. vagitus were isolated from them in health, the cervix, endocervix, and other organs of the upper reproductive tract do not have microflora unlike vagina, and this accounted for the poor recovery of T. vaginalis, G. vagitus and C. albicans from ECS specimens. (Table II). This is due to lower pH of the cervical canal which makes it difficult for the organisms to survive. A pH < 6.0 was recorded for most ECS specimens. Organisms were mostly recovered from the HVS samples. The HVS samples were thus used to illustrate the distribution of RTI pathogens among the socio-demographic groups; Table I, II, IV and V.

The age of the patients studied ranged from 16-46 years with a mean age of 31.2 years. Majority of the patients, 63 (71%) were in 25-34-year age group while the age groups 15-19, 20-24 and 40-44 were in the minorities (Table I). There was no significant difference in the distribution of pathogens amongst the three groups. Twenty (17.9%) of the 112 women were single. Of the 92 married women, 84 (75%) were in monogamous marriages while 8 (7.1%) were in polygamous marriages (Table III). Table IV shows the educational qualification of the women and its effect on prevalence rates. The best educated women had the lowest incidence of RTI pathogens while the highest was in women with no formal education. The occupational distribution of women in relation to the incidence of isolated pathogens showed that those with low level/unkilled businesses recorded the highest rates (Table V).
**Table IV**

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<tr>
<th>Education Qualification of Patients in Relation to Incidence of RTI Pathogens per Educational Group</th>
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<tr>
<td>No. (%) of Patients with RTI Pathogens</td>
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<td>No. of Patient (%)</td>
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**DISCUSSION**

Several studies have been reported on the prevalence of STIDs and TIs in Nigeria. Few have been conducted on otherwise healthy women attending obstetrics and gynecology clinics. The incidence of *Chlamydia trachomatis* in Nigeria is under reported because of inadequate facilities for its diagnosis. The methods available, i.e., microscopy and culture, are not always reliable and insensitive for genitourinary and cervical specimens. The tests for these conditions are more specific, but not diagnostic, and require much higher concentrations of the organisms in the specimens before detection.

Of all the pathogens of RTI identified in the study, *N. gonorrhoea* was the least prevalent (1.8%); which compared with some previous reports. Of the two cases, one was asymptomatic and the other a married woman who had been treated for a gonococcal infection previously. Reported prevalence rates of *N. gonorrhoea* has been on steep decline, and in some studies did not even find the organisms at all. This is probably due to a combination of factors. Many patients now go to the quacks or self medication for cure because conventional health care is too expensive. Even when they come to the hospital, poor handling and transport of samples to the laboratory affect the survival of the organisms, making them undetectable.

The prevalence of T. Vaginalis on the other hand compared favourably with the reported 3-27% from Ibadan, Lagos, 10.5% and 10.9% to 12.6%, but rates were lower than those obtained from the general population of certain Lagos communities. The communities are rural and many of the women may be of low educational status which support our findings of association of low socioeconomic status with RTIs.

The reported prevalence rate 12% for *C. albicans* in asymptomatic women at Ibadan compared with the findings in this study; but was at variance in women with vaginal discharges at Ibadan.

Similarly, the rate of 9% reported for *G. vaginalis* in asymptomatic women attending family planning clinics at Ibadan agrees with our findings. However, a study carried out in Lagos in 1992 reported a much higher rate (51%) in non-pregnant women. Probably the rate declined as suggested by our findings due to improved social, educational and occupational status of the patients studied. Half of the women in *G. vaginalis* had clinically diagnosed vaginitis, though others had slight discharge that were not symptomatic. The significance of this was not known and the patients were lost to follow up to determine if they later developed symptomatic infection. The isolation of *G. vaginalis* and *C. albicans* become significant if overgrown relative to other microflora, especially lactobacilli, and in compromised individuals.

**CONCLUSION**

The educational level attained and type of occupation appear to be associated with the presence of reproductive tract infections. The lower the status of the women, the lower the incidence of RTIs, and confirms the role of women education in reducing morbidity and mortality. A larger study will be carried out to establish beyond doubt the validity of the data obtained.

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