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Prevalence of Genital Mycoplasmas in Women of Various Socio-Economic Status

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Abstract: The prevalence of genital mycoplasma, a sexually transmitted pathogen, was studied in 168 reproductive aged women in Ibadan, Nigeria, using bacteriologic methods. An overall prevalence rate of 35.7% was obtained; with the highest prevalence rate found among artisans (50%) and students (39.1%). Women aged 21 - 25 years and 36 - 40 years had prevalence rates of 41.6 and 47.4%, respectively, while those with parity 4 and above had a higher prevalence rate (52%) as against those with parity 3 and below (33.6%). The educational status of the women revealed a statistically non-significant increase in prevalence of the organism in women who had secondary and tertiary education (36.7%) as against those with primary or no education ($p>0.05$). The need for health education of women, especially during a younger age is hereby emphasized to enlighten them on the need to avoid the acquisition of these microorganisms as well as other sexually transmitted pathogens which may adversely affect them in future.

Key words: Mycoplasma · Prevalence · Women · Socio-economic status

INTRODUCTION

Mycoplasmas are widely spread in nature and human mycoplasmas most often inhabit the respiratory and the genital tracts of humans. Genital tract mycoplasmas which comprise *Mycoplasma* and *Ureaplasma species* are common commensal inhabitants of the lower genitourinary tracts in sexually active adults. Human genital mycoplasmas may be transmitted by direct contact between hosts i.e. venereally through genital-genital contact or oral-genital contact. It can also be transmitted vertically from mother to offspring either at birth or in-utero or by nosocomial acquisition through transplanted tissues [1].

Colonization of these organisms after puberty has been reported to occur primarily as a result of sexual contact since sexually mature persons with no history of sexual contact are infrequently colonized with genital mycoplasmas [2]. It has also been observed that colonization increased more rapidly with increasing sexual experience in women than in men, thus suggesting that women are more susceptible to colonization with these organisms [3].

Genital colonization by mycoplasmas may also be linked to lowered socio-economic status as some investigators isolated more of the organisms from women attending a municipal hospital as against those attending private clinics [4]. DiMusto *et al*. [5] also associated mycoplasmas with patients of low economic status and another worker reported that carriage of genital mycoplasmas and subsequent disease are likely related to sexual behaviour and socio-economic status [1].

Many authors have reported that these organisms could play important roles in genital tract pathologies such as bacterial vaginosis [6], pelvic inflammatory diseases [7], infertility [8] and several adverse pregnancy outcomes [9,10]. Having earlier reported the implication of the presence of these organisms in the reproductive tracts

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of female mice [11] and in the genital tracts of women of reproductive age [12], this study seeks to know the prevalence of these organisms on women, especially as concerns their ages, parities and socio-economic status.

MATERIALS AND METHODS

Subjects: These comprise 168 consecutive clinic attendees (women) to the antenatal and gynaecology clinics of the University College Hospital, Ibadan between March and July, 2004. Their ages, parities, educational status and occupations were obtained from them using questionnaire.

Sampling: Two (2) high vaginal swabs were collected from the lateral and posterior vaginal walls of these women by the clinicians. Mensurating/bleeding women were excluded from the study.

Methods: One of the vaginal swabs from each subject was inoculated into mycoplasma broth and the second, into ureaplasma broth as described by Agbakoba *et al*. [12]. These were incubated at 37°C for 24 hours for the ureaplasma broth and up to 3 days for the mycoplasma broth. After incubation, subcultures were made from the ureaplasma broth onto ureaplasma agar and from the mycoplasma broth onto mycoplasma agar. The agar plates were incubated under increased carbon dioxide atmosphere at 37°C for 24-72 hours for ureaplasma agar and up to 10 days for mycoplasma agar. These were examined daily with the use of dissecting microscope for the presence of "fried egg" colonies; which if present, indicate suspected genital mycoplasma species. The isolation and identification of mycoplasmas and ureaplasma are as described in earlier studies[13,14]. Both the mycoplasma and ureaplasma isolates were hereafter referred to as genital mycoplasmas. The results were presented as tables with percentages and the statistical significance of all the isolation rates was determined using the Microsoft Excel Computer assisted SPSS programme. The significance level was set at 95% confidence interval and p values less than 0.05 ($p < 0.05$) were considered significant.

RESULTS

Genital mycoplasmas were found among the different age groups of the women in varying proportions. Table 1 shows that the highest rate was at 35 - 40 years (47.4%) followed by 21- 25 years (41.6%). The least was at age group 26 - 30 years (25%).

Table 1: Age distribution of vaginal mycoplasmas among the subjects

Age (years)	No. examined	No.(%) positive
21 - 25	12	5 (41.6)
26 – 30	56	14 (25.0)
31 – 35	63	25 (39.7)
36 – 40	19	9 (47.4)
> 40	18	7 (38.9)
Total	168	60

Table 2: Distribution of vaginal mycoplasmas by parity of subjects

Parity	No. examined	No. (%) positive
0	60	18 (30%)
1	48	20 (41.6%)
2	26	8 (30.8%)
3	15	4 (26.6%)
4	5	3 (60%)
5^{+}	14	7 (50%)
Total	168	60

X^2= 20.662; Probability (p) = 0.148

Table 3: Distribution of organisms using the socio-economic status of the subjects.

Occupation	No. examined	No (%) positive
Artisans	18	9 (50%)
Students	23	9 (39.1%)
Housewives	9	3 (33.3%)
Business women	58	19 (32%)
Civil servants	60	20 (33%)
Total	168	60 (35.7%)

X^2= 9.643; Probability (p) = 0.842

Table 4: Distribution of Vaginal Mycoplasmas according to educational status of the women.

Educational status	No. examined	No (%) positive
Nil	6	1 (16.7)
Primary	15	5 (33.3)
Secondary	60	25 (41.7)
Tertiary	87	29 (33.3)
Total	168	60

In table 2, the prevalence was found to be higher among women with parities 4 and above (52.0%) as against those with parities 3 and below (33.3%); this result was not statistically significant ($p > 0.05$).

Socio-economically, the isolation of genital mycoplasmas was found more among artisans (50%) and students (39.1%). Business women, civil servants and housewives had low prevalence rates of 32.8% and 33.3%, respectively (Table 3). No statistically significant relationship however exists between the occupation of the women and the isolation rates.

Table 4 shows also shows a non-significant relationship between the educational status of the women and the isolation of mycoplasmas ($p > 0.05$). More mycoplasmas (36.7%) were isolated among the subjects with secondary and tertiary educational status than those with primary or nil education (28.5%).

DISCUSSION

Age distribution generally did not follow any pattern in the isolation rate of genital mycoplasmas from the women in this study. There was also no statistically significant association between isolation of genital mycoplasmas and the ages of the women. Similarly, other investigators also found no statistically significant correlation between the ages of the patients and the incidence of mycoplasmas in their own study [15]. Harrison *et al*. (1983) [16] reported a lack of correlation of *Mycoplasma hominis* and *Ureaplasma urealyticum* with younger age in the pregnant women they studied while Moller [17] reported that the incidence of *M. hominis* in the uterine cervix decreased after menopause.

Genital mycoplasmas were found among women of various parities but increased at a higher parity. This is in agreement with the findings of workers who reported a significant association between colonization and number of pregnancies [18]. In another study, it was reported that *Mycoplasma hominis* was more (61%) in nulliparous women while *Ureaplasma urealyticum* was more (71%) in parous women [19]. The higher prevalence of mycoplasmas in this study population could be due to the fact that these women might have been colonized by the organisms much earlier in life and may have remained untreated with subsequent pregnancies; unlike the less parous women who probably just acquired the organisms and may not have been as exposed to much sexual contact as the more parous women.

The socio-economic status of the women in this study showed that mycoplasmas were more among the students and artisans. This probably could be due to the fact that these groups of women do not have steady incomes; most of them are young and highly sexually active and may take to multiple partners to augment their meager income. This finding agrees with others who associated the increase in genital mycoplasmas with low socio-economic status [4, 5]. Multiple partnerships have been reported as a risk factor to colonization by genital mycoplasmas. Younger age, lower socioeconomic status, sexual activity with multiple partners and the usage of oral contraceptive have also been associated with increased rates of colonization [20]. That Mycoplasmas were isolated more among the highly educated in this study is not in agreement with the findings of those who associated the isolation of *M. hominis* with low educational level [4, 21]. In this work, mycoplasmas were found more among the women in the higher educational cadre and students in tertiary institutions inclusive. These results may be explained by the fact that higher number of samples for this study came from women who are fairly learned and who patronized the University College Hospital, Ibadan (a tertiary-care hospital) from where these samples were obtained and who could afford the cost of such a Teaching Hospital. On the other hand, the women in the lower socio-economic cadre are normally known to prefer cheaper and smaller hospitals for their medical cares and more often prefer to visit chemist shops for their health needs; hence their low turnout at clinic (sampling site) and consequently low isolation rates.

In spite of the non-statistical significant findings in this study, the high isolation rates of these organisms among artisans and students as well as women in age group 21 to 25 years of age goes to show the need to educate women at their younger age and stage in life on healthy sexual practices. Though genital mycoplasmas have been known to be present in women asymptomatically [22], they have also been reported as sexually transmitted pathogens [23] and have been known to be responsible for a variety of genital tract pathologies [6-8]. It has been reported that many sexually active men and women appear to be chronically infected or colonized by *M. genitalium* without apparent clinical symptoms and may continue to transmit the organisms through sexual contact [24].

Hence if an adolescent, a young undergraduate female student or a not too educated young apprentice is well informed on sex education and the need to avoid premarital sex as well as multiple sexual partners she may be saved the problem of acquiring a sexually transmitted pathogen which may cause her problems much later in life. Awareness should also be created in women on the essence of screening themselves and their prospective life partners of all forms of sexually transmitted organisms (genital mycoplasmas inclusive) before marriage. Health is wealth; and the importance of reproductive health cannot be over-emphasized.

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