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BACTERIOLOGICAL AND PARASITOLOGICAL ASSESSMENT OF VAGINITIS IN PREGNANT WOMEN IN ISEYIN, OYO STATE, NIGERIA.

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Specimens of High Vaginal Swabs (HVS) of 135 pregnant women were examined to determine the cause of vaginitis in pregnant women in Iseyin, Oyo State, Nigeria between August and October 1999. Study subjects were selected from patient attending selected antenatal clinics in public, private and mission hospitals/clinics in Iseyin. Samples were collected from subject in lithotomy position using sterile cuscos bivalve speculum. Sample were analysed by using standard technique as described. A structured questionnaire was also administered in order to obtain vital epidemiological information necessary for the study as described. The data analysis was done using chi square test. Results shows that 45 (33.3%) were positive for *Candida spp*, 15 (11.1%) for *Gardnerella vaginalis* and 5 (3.7%) for *Trichomonas vaginalis*. Sexual activities of individual have no significant effect on prevalence of vaginitis while symptomatology was a major indicator of infection. The effect of educational attainment and religion on infection rate was discussed. Infection decreased with age of patients while infection distribution by age of pregnancy gave a confusing pattern and the factors responsible for this were discussed. Since vaginitis could be asymptomatic most time, the screening of all pregnant women with risk factors for preterm labour and premature rupture of membranes must be undertaken. Prompt treatment of cases is also recommended.

Key Words: Pregnant women, vaginitis, aetiologic agents, prevalence, Iseyin.

INTRODUCTION

Vaginitis is inflammation of the vaginal, a disease entity first described by Willinson (1). Abnormal vaginal discharge and related symptoms are frequent complaints in patients attending obsterics and gynaecology clinics and some form of vaginitis inducing organism, such as *Candida albicans* or Bacterial Vaginosis (BV) are commonly diagnosed. In acute vaginitis, the squamous epithelial lining of the vaginal wall is invaded and inflammed causing discomfort, pruritus, or pain in addition to discharge. There is no doubt that the microorganisms associated with cases of vaginitis frequently are isolated from asymptomatic women (2).

During pregnancy, the vaginal is more susceptible to infection, resulting in a higher incidence of colonization and sypmptomatic vaginitis. The clinical attack rate is increased maximally during the third trimester and symptomatic recurrence is also more common. Vaginitis has been observed in 61-90% of pregnant vaginal carriers as shown by Carrel *et al* (3).

Bacterial vaginosis (BV) is an entity receiving extensive attention

in pregnancy and needs greater focus on the part of the clinicians. It is found in 15 to 23% of pregnant women with up to 50% of patients being asymptomatic (4,5,6.). The vulnerability of pregnant women to these infections is as a result of increased levels of oestrogen during pregnancy, which creates a climate for the growth of these agents (7).

Whereas so much work has been done on vaginitis and its aetiologic agents in other parts of the world, because of the importance of the subject, little or no work has been reported in Nigeria. Therefore this study is aimed at determining the prevalence of the aetiologic agents of vaginitis among pregnant women in Iseyin, Nigeria with a view to having a data base for planning effective case management and control of the problem.

MATERIALS AND METHODS

Study area

The study was conducted in Iseyin in Iseyin Local Government Area of Oyo State between August and October 1999. Iseyin, with a population of about 79,838 (national census 1991) predominantly Yoruba, is located on the longitude 4°15E and latitude 8°N, about 98 kilometers North of Ibadan, the Oyo State capital. Their main stay of economy is farming and trading with a reputation for the production of native fabrics called 'Aso Oke'. The town is endowed with many educational and health institutions both at primary and secondary levels. It is a community of mixed religions.

Study subjects

For the purpose of the study and sample collection, the hospitals and health institutions in the study area were grouped into 3-viz mission, public and private. The hospitals from each group were then randomly selected by balloting using lottery method. One hospital from each category was thus selected. The chosen hospitals for the study were: Our lady catholic hospital (mission), central maternity centre (public) and faith foundation hospital (private) respectively. The target population was pregnant women in Iseyin and those included in the study were those with symptom of vaginitis as recommended by Thomason *et al* (8). Most of the women who presented themselves in the hospital were in the third trimester.

Sample collection

One hundred and thirty five high vaginal swab samples were collected from pregnant women attending the antenatal clinic in the three hospitals enlisted in the study. Non- pregnant women on postnatal visit were included in the

study as controls. Specimens were collected with the assistance of clinical staff, with patents in lithotomy position using sterile coscos bivalve speculum. A structured questionnaire sheet was used to obtain information such as age, educational level, trimester, religion, occupation, marital status, number of sexual partners, symptoms and other important questions about their social life.

Sample analysis

Cultures were done on modified Brain Heart Haeme agar, a multipurpose medium by using the conventional rolling method and incubated anaerobically at 37°C for 48 hours. All isolates were identified using the method described by Cruickshank *et al* (9) and characterized using the criteria of Cowan and Steel (10). Wet mount preparation for isolation of protozoa was done. The slide was prepared by suspending the discharge on the swab in a drop or two saline previously placed on the glass and examined microscopically using x10 and x40 objectives to scan at least ten fields for protozoa, *Trichomonas vaginalis* and yeast cells.

Data analysis

Data were analysed statistically using the Chi-square test to determine the significance of some variable where applicable; a p value of <0.05 was considered significant.

RESULTS

Table 1 shows the distribution of isolates from pregnant women in Iseyin. Of 135 subjects examined, 45(33.3%) were positive for *Candida albicans*, 15 (11.1%) for *Gardnerella vaginalis* and 5(3.7%) for *Trichomonas vaginalis*. Data revealed that infection rate with these agents differ significantly with age of the patients ($p<0.05$). Generally, there were mixed infections with some other bacterial agents. Table 2 shows the distribution of infective agents by number of pregnancies. Result reveals that infection decreases with number of pregnancies. There was a significant difference when rates were analysed using the chi-square test ($p<0.05$). Fig 1 shows infection rate by sexual activities. There was no significant difference in infection rate between subjects with single and those with multiple sexual partners ($p>0.05$). Also women who had intercourse during pregnancy were more infected than those who did not. However, the difference was not statistically significant ($p>0.05$). Table 3 shows infection rate by trimester. Data revealed that the age of pregnancy did not affect infection rate distribution ($p>0.05$). Table 4 shows distribution by symptomatology and actiological agents. There were higher infection rates among

women with symptoms of discharge and itching than those without any symptoms. The chi-square test revealed significant difference in infection rate between patients that presented with symptoms and the control group without any symptom ($p<0.05$). Table 5 shows distribution by marital status. Infection rates were higher among the married and polygamous than all other groups. Statistically however, the difference was not significant ($p>0.05$). The distribution of agents of vaginitis by educational level is shown in Table 6. Marginally there is a decrease in infection rate with educational level, and there was a zero percent infectivity of all the agents of vaginitis among women with tertiary education. However, the difference was not statistically significant ($p>0.05$). The result of the distribution of infective agents by occupation is presented in Table 7. There is a variation in prevalence with no definite pattern. The statistical analysis revealed that there was no significant difference in the infection occurrence rate between the occupational groups ($p>0.05$). Table 8 shows distribution of infection by religion. There was 48% infectivity among muslims and 34% infectivity among christians. The Chi-square test revealed no statistical significant difference between the two ($p>0.05$).

Table 1: Distribution of agents of vaginitis and other bacterial isolates by age.

		Isolate distribution						
Age (yrs)	Number Examined	Candida spp %	G. vaginalis	T.vaginalis	Strept. Spp.	Kleb spp	E.coli	Staph spp
≤20	30	11(36.7%)	2 (6.7%)	0 (0)	0 (0)	9(30%)	5(16.7%)	25(83.3%)
21-25	55	17(30.9%)	8(14.6)	2(3.63%)	5(9.1%)	13(23.6%)	11(20%)	43(78.2)
26-30	38	13(34.2)	13(10.5)	3(7.89%)	2(5.3%)	7(18.4%)	10(26.3%)	30(78.9%)
31-35	10	3(30.%)	1(10%)	0 (0)	0 (0)	2(20%)	3(30%)	9(90%)
36 & above	2	1(80%)	0 (0)	0 (0)	0 (0)	2(100%)	0(0%)	2(100%)
Total	135	45(33.3%)	15(11.1%)	5(3.7%)	7(5.2%)	33(24.4%)	29(21.5%)	109(80.7%)

P<0.05

Table 2: Distribution of infection by number of pregnancy

No of pregnancy	Total No examined (%)	Candida spp	G.vaginalis	T. vaginalis	Total No infected
1	45(33.3%)	15(33.3%)	4(8.9%)	1(2.2%)	20(44.4%)
2.	41(30.4%)	16(39.9%)	4(9.8%)	1(2.4%)	21(51.2%)
3.	16(11.9%)	5(31.3%)	1(6.3%)	0 (0)	6(37.5%)
≥4	15(11.1%)	3(20%)	4(26.7%)	0 (0)	7(46.7%)

P>0.05

Table 3: Distribution by Trimester

Trimester	Total No examined (%)	Candida spp	G.vaginalis	T. vaginalis	Total No infected
First	4(2.9%)	3(75%)	0 (0)	0 (0)	3(75%)
Second	29(21.5%)	6(20.7%)	3(10.3%)	1(3.4%)	10(34.5%)
Third	102(75.5%)	36(35.3%)	12(11.8%)	4(3.9%)	52(50.9%)

P>0.05

Table 4: Distribution by symptomatology and aetiologic agents

Symptoms	Total No examined = 135(%)	Candida (%)	G.vaginalis (%)	T. vaginalis (%)	Total No infected (%)
Discharge	127(94.1%)	44(34.6%)	12(9.4%)	5(3.9%)	61(48.0%)
No discharge	8(5.9%)	1(12.5%)	3(32.5%)	0(0)	4(50%)
Itching	57(42.2%)	25(43.9)	3(5.3%)	5(8.8%)	33(57.9%)
No itching	78(57.8)	20(25.6%)	12(15.4%)	0(0)	32(41.1%)
Itching+ discharge	57(42.2%)	27(47.4%)	3(5.3%)	5(88%)	35(61.4%)
Discharge + no itching	70(51.9)	18(25.7%)	10(14.3%)	0 (0)	28(40%)
Control (Neg)	8(5.9)	1(12.5%)	3(37.5%)	0 (0)	4(50%)

P>0.05

Table 5: Distribution of agents of vaginitis by marital status

Marital Status	Total No examined (%)	Candida spp (%)	G.vaginalis (%)	T. vaginalis (%)	Total No infected
Married & polygamous	49(36.3%)	20(40.8%)	7(14.3%)	0(0)	27(55%)
Married & monogamous	58(42.9%)	17(29.3%)	4(6.9%)	1(3.4%)	22(37.9%)
.Single	28(20.7.5%)	8(28.6%)	4(14.3%)	0(0)	12(42.9%)

P>0.05

Table 6: Distribution of agents of vaginitis by educational level

Educational level	Total No examined (%)	Candida (%)	G.vaginalis (%)	T. vaginalis (%)	Total No infected (%)
Non-formal	37(27.4%)	12(32.4%)	6(16.2%)	2(5.4%)	20(54.1%)
Primary	54(40%)	12(38.9%)	2(3.7%)	2(3.7%)	25(46.3%)
Secondary	41(30.4%)	12(29.3%)	7(17.1%)	1(2.4%)	20(48.8%)
Tertiary	3(2.2%)	0 (0)	0 (0)	0 (0)	0 (0)

P>0.05

Table 7: Distribution of agents of vaginitis by occupation

Occupation	Total No examined (%)	Candida (%)	G.vaginalis (%)	T. vaginalis (%)	Total No infected (%)
Trader	97(71.9%)	35(36.1%)	12(12.4%)	5(5.15%)	52(53.6%)
Civil servant	5(3.7%)	1(20%)	1(20%)	0(0)	2(40%)
Farmer	5(3.7%)	1(20%)	0(0)	0(0)	1(20%)
Artisan	24(17.8%)	7(29.2%)	1(4.2%)	0 (0)	8(33.3%)
Housewife	4(2.9%)	1(25%)	2(25%)	0 (0)	2(50%)

P>0.05

Table 8: Distribution of agents of vaginitis by Religion

Religion	Total No examined	Candida spp	G.vaginalis	T. vaginalis	Total No infected
Christian	23(17.0%)	6(26.1%)	2(8.7%	0 (0)	8(34.8%)
Muslim	112(82.9%)	39(11.6%)	13(11.6%)	5(4.5%)	57(48.2%)

P>0.05

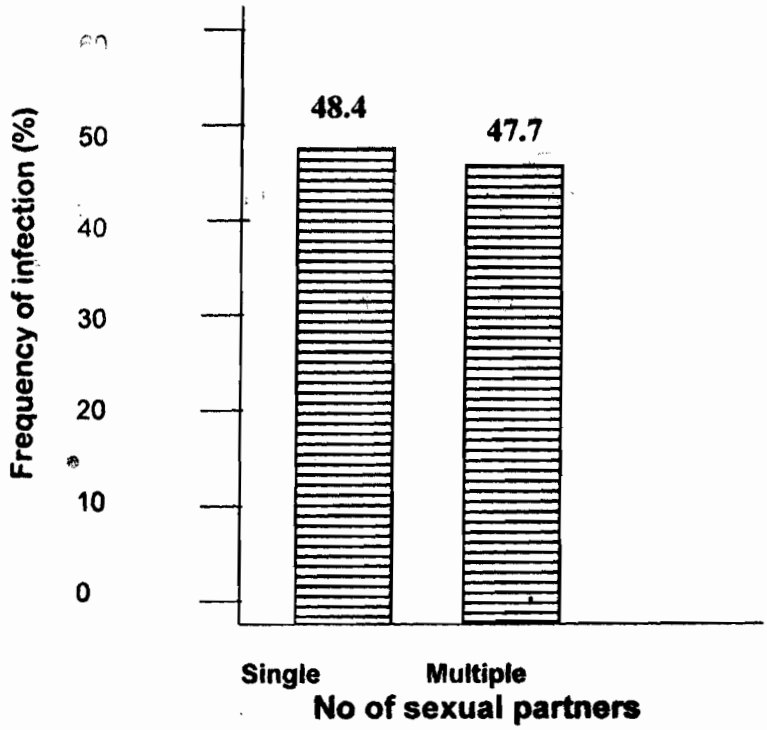

Figure 2a: Infection rate by sexual activities (Number of sexual partners)

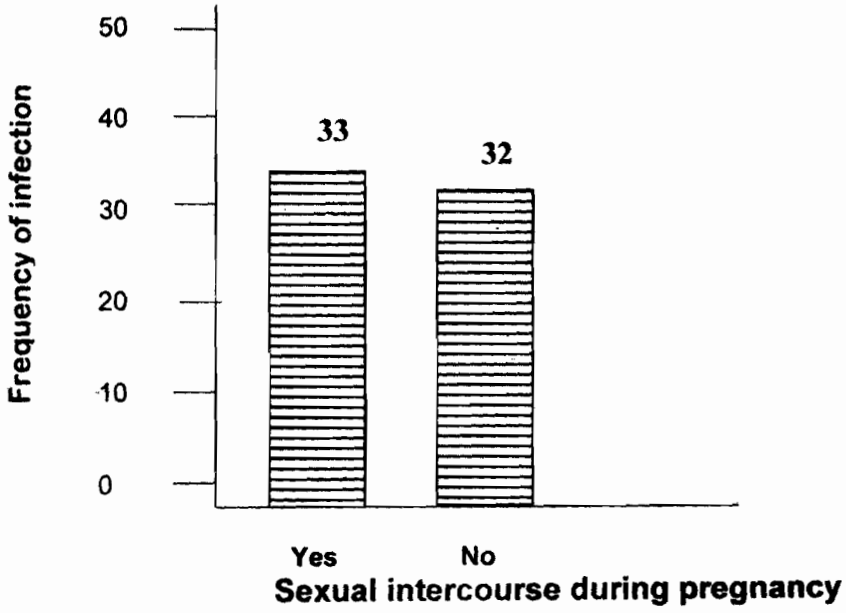

Figure 2b: Infection rate by sexual activities (intercourse during pregnancy)

DISCUSSION

The study of microorganism incriminated as aetiologic agents of vaginitis serves to emphasis this complicated interaction that may exist between these microorganisms and the host. Studies have shown that organisms associated with vaginitis are part of the host's own microflora or exogenous microorganisms that must interact with species present as part of the host's indigenous flora (2). It has been shown in this study that the main organisms incriminated with vaginitis in pregnancy are *Trichomonas vaginalis*, *Candida albicans* and *Gardnerella vaginalis*. This confirms the observation of some authors (10). *Candida albicans* with the occurrence rate of 33.3% in Iseyin has been shown to be the commonest cause of vaginitis among the pregnant women in the area, a report, which is in consonance with the 30-40% prevalence reported by Hurley (12). This study has shown that *G. vaginalis* with 11.1% is second to *Candida albicans* in prevalence. Although this figure does not fall into the range (15.2%) reported by Amsel *et al* (4), there is agreement in the position the parasitic infection occupies as the second most prevalent cause of vaginitis in pregnant women. Our report that *Trichomonas vaginalis* occurs less frequently is not controverted by other workers (13,14). Mixed infections have remained a common occurrence in the study area. This is in conformity with the report of Lossick (14) who also agree that infection with these agents differ significantly with age of the patients ($p<0.05$). Garber *et al* (15) also agree that there is an increased incidence of *Trichomonas vaginalis* in pregnancy. This study has shown that the occurrence rate of infective agents shows no definite pattern with the number of pregnancy ($p>0.05$). This may not be unconnected with the level of health education among the populace. The subjects may have learnt from experience the need for prompt treatment as symptoms of infection manifest.

Result in this study has shown that age of pregnancy has no significant relevance in the distribution of infection ($p>0.05$). This is at variance with the reports of Monton *et al* (16) and Hopsu-Havu (7), who showed that symptomatic disease is developed in about 10% of women during the first trimester and 36-55% during the third trimester. This disagreement in the report may be as a result of the attitude of the patients in our study area. Most of them usually attend clinic only during the third trimester. This has brought about the imbalance in the numbers in the respective stages of

pregnancy, which may have accounted for the inference.

It has been shown in this study that sexual activities of the subjects have no significant impact on the level of infection. There was no significant difference in the level of infection between women who had single sexual partner and those with multiple partners. This is an aberration from the belief that promiscuity and / or unfaithfulness premised on infidelity are a major epidemiological factor of disease diffusion. The fact of the case may be due in part to regular case treatment, or those partners do not operate outside the regulars who may be bacteriologically clean. It was also observed in this study that sexual intercourse during pregnancy does not necessarily promote infection, as there is no statistical difference in the infection rate between those pregnant women who claimed to engage in sexual intercourse during gestation, and those who denied. Therefore, it could be safe to assume that when sexual activity is restricted faithfully to one partner (that is zero grazing) the health of the individual is not thrown into jeopardy. However, the incidence of infection was significantly higher in women married into polygamous setting than those in monogamous homes. On the contrary the data in Table 5 revealed that there is no significant difference between married women and the single pregnant women. This revelation presents a paradoxical picture as opposed to the general belief that sexual promiscuity among partners do expose them more to risk of infection (14). Besides, these patients are at greater risk of contacting HIV. This is a subject of future investigation.

This study has shown that symptomatology and infection rates are linearly related. There were higher infection rates among subjects with vaginal itching and discharge than those without these symptoms. The factors responsible had been enunciated by many workers (15, 17) who incriminated surface protease action on mucous membrane of the vaginal in cases of Trichonomoniasis. It has been shown that the level of education of women has effect on the incidence of vaginitis in the study area. The uneducated and illiterate were mostly infected. Although the infection rate decreases with the level of education, the difference was not statistically significant ($p>0.05$). This study also showed that religious belief and occupation had no effect on the distribution of infection among the study population ($p>0.05$).

Whereas the infection could be either symptomatic or asymptomatic, many workers

(11,12,18,19) had documented the pathogenesis and sequelae of the infection. The disease could lead to premature rupture of membranes in pregnancy, pre-term labour and procure abortion. The infection may predispose the patients to HIV infection and other opportunistic infections with grave consequences. Therefore, it is recommended that pregnant women must register in the antenatal clinic within the first trimester for adequate and timely management. It is of paramount importance for the pregnant women to undergo periodic screening in order to forestall pre-term labour and premature rupture of membranes.

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