

The prevalence of *Trichomonas vaginalis* and *Candida albicans* infection in the lower genital tracts of antenatal patients in Abakaliki, Southeastern Nigeria

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Abstract

Aims: To determine the prevalence of *Trichomonas vaginalis* and *Candida albicans* infection among an asymptomatic pregnant population and to document their pregnancy outcomes.

Methods: This was a prospective study involving antenatal clinic attendees at the Ebonyi State University Teaching Hospital, Abakaliki, Nigeria. They were randomly recruited and informed consent obtained. Vaginal specimens were collected from them and analyzed in the laboratory. They were followed up till delivery and pregnancy outcomes documented.

Results: Two hundred expectant mothers were recruited. The prevalence rate of *Trichomonas vaginalis* and *Candida albicans* were 0.5% and 27.5% respectively. Due to the high dropout rate in the study, it was impossible to make any reasonable inference about the pregnancy outcomes associated with these conditions.

Conclusion: There is probably the need for the use of more sophisticated methods for the detection of *Trichomonas vaginalis*. The existing methods in most laboratories in the country may not be adequate. There is also probably the need for a larger sample size and a stricter follow up of the patients in order to document any adverse pregnancy outcomes associated with these conditions.

Keywords: Prevalence, *Trichomonas vaginalis*, *Candida albicans*, antenatal care

Introduction

Trichomonas vaginalis and *Candida albicans* infections have not been the focus of intensive study or active control programs. This apparent neglect may be a function of the relatively mild nature of the disease,¹ lack of effect on fertility, and the historical absence of association with adverse birth outcomes, although recent data² suggest a possible causal role of *Trichomonas vaginalis* in low birth weight and prematurity. Prevalence rates of 65% and 0.3% have been reported for *Candida albicans* and *Trichomonas vaginalis* respectively in a pregnant population in South Nigeria.³ In Western Nigeria,⁴ prevalence rates of 2.52% and 2.2% have been reported for *Trichomonas vaginalis* and *Candida albicans* respectively amongst

a non pregnant population. A related study⁵ among antenatal and gynaecological patients in Ghana reported a prevalence of 2.7% and 34.2% for *Trichomonas vaginalis* and *Candida albicans* respectively. In Dares Salam,⁶ a prevalence of 95% was reported for *Trichomonas vaginalis* among women seeking care for genital infections. High prevalence rates of between 23-51% have been reported for *Trichomonas vaginalis* among African Americans in the United States of America.⁷

This study seeks to provide data on the prevalence of *Trichomonas vaginalis* and *Candida albicans* among an asymptomatic antenatal population and to determine the associated pregnancy outcomes. Outcome measures in the study population.

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Methods

This was a prospective study conducted in September 2003 at Ebonyi State University Teaching Hospital, Abakaliki to assess the prevalence of *Trichomonas vaginalis* and *Candida albicans* infections among asymptomatic antenatal patients in Abakaliki. The Hospital is situated in Abakaliki metropolis and is a 300-bedded tertiary center that serves as a referral center in the state and the adjoining states. The department of Obstetrics and Gynaecology where this study was conducted has nine consultant obstetricians/gynaecologists and 24 resident doctors. The indigenes of Abakaliki are mainly farmers, traders and civil servants.

Two hundred out of 375 consecutive women who attended the antenatal booking clinic of the hospital in September 2003 and satisfied the inclusion criteria participated in the study. The inclusion criteria included: having no history of vaginal discharge or bleeding per vaginam; pregnancy within the first or second trimester and the gestational age was certain. Informed consent was obtained from all the patients recruited for this study and ethical clearance was obtained from the ethical committee of the Hospital. Those patients who declined were excluded from the study.

Collection of vaginal specimen

The patients were examined in the dorsal position. Using a sterile Cusco's speculum, access into the posterior fornix was obtained. The vaginal secretion was collected using sterile swab sticks. The swab sticks was then transferred immediately to the laboratory for

immediate analysis. Microscopic examination of wet preparations with 0.85% saline and 10% potassium hydroxide (KOH) was used to identify *Trichomonas vaginalis* and *Candida albicans*. Haematoxylin and eosin staining method was further used to identify *Trichomonas vaginalis*. Specimen was inoculated on to Sabouraud medium for the detection of *Candida*, sucrose-sugar assimilation and germ tube test was used to identify *Candida albicans*.

A proforma was used to document the relevant data from the patient and was subsequently analyzed using the epi info statistical software package version 3.3.2.

Results

The ages of the two hundred women range from 16 years to 40 years. The mean age was 24.7 years with a standard deviation of ± 6.5 years. The frequency distribution of the ages shows that 7 women (3.5%) were in the age range 16-19 years; one hundred and eighty (90%) were between 20-34 years; while 13 or 6.5% were between 35-40 years. The parity of the patients ranged from zero to eight (table1). The mean parity was 2.4. However, majority of the participants (89 or 44.5%) were nulliparous, 62(31%) were multiparous while 49(24.5%) were grandmultiparous.

There was a high dropout rate in the population studied. Thus, 127 out of the 200 women (63.5%) studied for *Candida* were lost to follow-up during the antenatal period and did not deliver in our centre. One patient out of 200 patients studied had *Trichomonas vaginalis* and she delivered in our centre. Out of the 55 patients who had *Candida albicans* in pregnancy,

Table 1. Showing age distributio of study population

AGE:	CANDIDA		ALBICANS	
	POSITIVE (%)	NEGATIVE (%)	TOTAL (%)	
≤19 YRS	2(28.5)	5(71.4)	7(3.5)	
20-34 YRS	50(27.8)	130(72.2)	180(90)	
≥35 YRS	3(23.1)	10(76.9)	13(6.5)	
	55(27.5)	145(72.5)	200(100)	
	$X^2 = 0.14; df = 2;$	$p = 0.9330$		
Parity				
ZERO	25(28.1)	64(71.9)	89(44.5)	
1-4	14(22.6)	48(77.4)	62(31.0)	
5-8	16(32.7)	33(67.3)	49(24.5)	
Total	55(27.5)	145(72.5)	200(100)	
	$X^2 = 1.58; df$	$= 2; P = 0.4537$		

Table 2. Observed intra/post-partum complications

Complications	<i>Candida albicans</i> Positive (N=16)	<i>Candida albicans</i> Negative (N = 57)
Spontaneous rupture of membrane at term	7 (43.8%)	25 (43.9%)
Spontaneous rupture of membrane pre-term	2 (12.5%)	10 (17.5%)
Pre-term labour	3 (18.8%)	13 (22.8%)
Pre-term delivery	3 (18.8%)	13(22.8%)
Low birth weight	3 (18.8%)	5(8.8%)
Vacuum delivery	3(18.8%)	9 (15.8%)
Caesarean section	2 (12.5%)	4 (7.0%)
Post-partum haemorrhage	2(12.5%)	3 (5.3%)
Birth asphyxia	3(18.8)	11(19.3%)
Macerated still birth	0(0)	2(3.5%)
Fresh still birth	0(0)	1(1.8%)

16(29.1%) patients delivered in the centre, while 57(40.7%) out of 145 women who were negative for *Candida albicans* delivered in the centre. However, the proportion of those with *Candida albicans* (16 out of 55 or 29.1%) and those without *Candida* (57 out of 145 or 40.7%) shows no statistically significant differences ($X^2 = 1.80$; $P = 0.180$) and are therefore comparable. Therefore, we present the data set of the 73 women studied for *Candida albicans*, who were followed up to term and who also delivered in our hospital in this section.

Prevalence of *Candida albicans* and outcome of pregnancy

While 55 women (27.5%) had *Candida albicans*, 145(72.5%) had negative results. Table 1 shows age and parity did not have any statistical effect on the findings (p value 1.0000 and 0.4914 respectively). Table 2 shows that women with *Candida albicans* had more postpartum haemorrhage (12.5%), Caesarean section (12.5%), low birth weight babies (18.8%) and vacuum delivery (18.8%) compared with women without *Candida albicans*. The numbers of patients followed up were too small to allow for any test of statistical significance.

Prevalence of *Trichomonas vaginalis*

Trichomonas vaginalis was found in the vaginal secretion of only one woman. The prevalence rate was 0.5%. The only patient with *Trichomonas vaginalis* in the study was a 26 year old gravida 4, para 3⁺⁰ patient who had an uneventful pregnancy, labour and delivery.

She had a spontaneous vertex delivery at 40 weeks gestation of a live 2.5kg baby with APGAR scores of 8 and 10 in 1 and 5 minutes respectively. She had no postpartum complications.

Discussion

The prevalence of *Trichomonas vaginalis* of 0.5% is lower than was expected but similar to the 0.3% reported³ among an asymptomatic pregnant population in South-South Nigeria. It is however lower than the 2.52% reported from Western Nigeria⁴ among a non pregnant population and 2.7% reported⁵ among antenatal and gynaecological population in Ghana. The figure from this study and other related studies from West Africa are however at variance with the high prevalence rates reported⁷ for African –Americans in the USA. Several reasons may account for this disparity in prevalence rates, the fact that only asymptomatic pregnant women were included in our study population obviously would have affected the prevalence rate reported in this study. Furthermore most diagnostic techniques available for *Trichomonas vaginalis* in most centres in the developing world including our centre have a relatively low sensitivity such as wet mount preparations or Papanicolaou smear. Wet mount, one of the methods used in this study has an estimated sensitivity of 58% when compared to culture,⁸ while the sensitivity of Papanicolaou smear is approximately 57%⁷. The accuracy of these techniques also depends on the experience of the microscopist.⁸ The sensitivity of culture when compared with polymerase chain reaction PCR has been estimated to be 70%.⁹ Such highly sensitive PCR and related techniques are not routinely

used nor readily available for diagnosis of *Trichomonas vaginalis* in many developing countries like Nigeria. This is a limitation in our study although an attempt was made to mitigate this shortcoming by immediate analysis of the samples after collection and by utilizing several methods.

Though compliant of itchy whitish discharge is a relatively common presentation among the pregnant and non pregnant population in Nigeria, there seems to be limited data on the prevalence of *Candida* infection in pregnancy. The prevalence rate of *Candida* in the pregnant population studied was 27.5%, this is much lower than the 65% prevalence rate reported for a pregnant population in South-South Nigeria.³ It is however higher than the prevalence rate of 2.2% reported among gynaecological patients in Western Nigeria,⁴ but closer to 34.2% reported among antenatal and gynaecological patients in Ghana.⁵ The relatively high prevalence rate reported in this study may probably relate to the fact that the vagina is more susceptible to colonization by *Candida* during pregnancy. Accordingly, it is possible that a higher prevalence rate may have been reported in this study if symptomatic women were not excluded from the study population. The observed differences due to age, parity on the prevalence of *Candida albicans* were not of statistical significance.

Though the study set out also to document the associated pregnancy complications associated with *Trichomonas vaginalis* and *Candidiasis*, the high dropout rate in the study could not allow for any meaning deductions on the pregnancy outcomes. It is been observed in an earlier study¹⁰ from the centre that many booked patients of the hospital also register for antenatal booking in several other facilities and rather come to the centre to deliver when complications arise in labour.

Conclusion

The limitation highlighted above notwithstanding, this study defines the need to have more data on the prevalence of *Trichomonas vaginalis* and *Candidiasis* in pregnancy using more sophisticated laboratory methods. It also calls for a larger sample size and a stricter follow up of the patients in order to document any adverse pregnancy outcomes associated with these conditions.

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