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Prevalence of Sexually Transmitted Diseases (STD) Among Women in a Suburban Sudanese Community

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ABSTRACT

338 women with age ranging from 15 to 69 years in a suburban Sudanese community were randomly selected and studied. Urine sample, high vaginal swabs and blood samples were investigated for bacterial vaginosis, candidiasis, trichomoniasis, gonorrhoea, HIV and syphilis. The sensitivity and specificity of some laboratory tests were evaluated. Bacterial vaginosis was found in 17.2% of the subjects, candidiasis in 10.1%, trichomoniasis in 7.7%, gonorrhoea in 1.2%, HIV in 1.2% and syphilis in 0.9% of the subjects. The sensitivity and specificity of amine test as a criterion for diagnosing bacterial vaginosis was 58.6% and 73.2%, respectively. The respective values of clue cells in wet preparation were 43.1% and 99.6%. The vaginal discharge in women with bacterial vaginosis lacked pus cells unless associated with concurrent infection.

INTRODUCTION

Sexually transmitted diseases (STD) have a worldwide distribution and polymicrobial etiology with variation of the prevalence according to location and population studied. Data from the United States of America has revealed prevalence of bacterial vaginosis between 10% and 32% [2]. In the United Kingdom bacterial vaginosis was found in prevalence rates ranging from 11% to 28% in different studies [1,4,5].

In Sudan, Omer [9] reported a prevalence rate of 18.1% of bacterial vaginosis in a suburban population. Trichomoniasis is widely studied in Sudan with prevalence rate as high as 18.3% [8] or as low as 6.5% [9]. Figures from Egypt showed comparable prevalence as that of Sudan, 18.2% [11]. However in United Arab Emirates the prevalence was only 1.6% [10]. Gonococcal infection was very common in Sudan and the prevalence rate was 10.2% with only USA having higher prevalence in the literature [3]. The association of HIV infection with other

STD is well documented. However, this association has not been studied before in Sudan and only three STD diseases were reported in the previous studies. This work is a part of a community-based study that aimed at the study of maternal morbidity, common causes of vaginal discharge and prevalence of STD among Sudanese women.

PATIENTS AND METHODS

The study was conducted in Haj Yousif district, Eastern Nile Province, Khartoum State. Women enrolled were selected by systematic random sampling after informed consent as part of a community-based screening study. They were currently or previously married and not menstruating at the time of specimen collection. Clinical check up and sample collection were done at the maternal, child health and fertility improvement centre. The total number of subjects was 338 with age ranging from 15 to 69 years. All subjects were screened for candidiasis, trichomoniasis, gonorrhoea, syphilis, HIV and bacterial vaginosis.

Mid-stream urine (MSU), high vaginal and cervical swabs together with 5 ml of venous blood were collected from each woman. Cusco's speculum was used to facilitate the collection of the cervical specimen. Immediately after collection, one swab was used to prepare wet saline preparation, a smear of vaginal discharge on a glass slide and amine test. The wet saline preparation was checked under the microscope for presence of pus cells, clue cells, yeast cells or hyphae and motile trichomonas vaginalis. The other swab; promptly put in Stuarts transport medium, the urine sample, the blood sample and the vaginal smear were transported to the central laboratory in Khartoum 12 kilometers from the site of collection. The swabs and the urine samples were transported in a cold box.

The vaginal smears were heat fixed, stained by Gram's stain and examined for pus cells, intracellular gram-negative diplococci; Neisseria gonorrhoea, clue cells, yeast cells or hyphae. The smear was then evaluated for the diagnosis of bacterial vaginosis by criteria set by Thompson and co-workers [14]. The swabs were inoculated 4-5 hours later into blood agar and heated blood (chocolate) agar; which was made selective by addition of vancomycin, colistin and nystatin; and Sabourauds agar slope. The first 2 media were used for the isolation of Neisseria and the last for candida. Urine deposit was treated as the swab. The inoculated plates were incubated at 37^{o} C and examined for significant growth after 24 and 48 hours. Incubation of suspected gonococcal infection was made in a moist atmosphere enriched with CO_2 in a candle jar.

Sera were separated from the clotted blood and screened for HIV antibodies by serodia HIV. Those reactive on repeat were further tested by HIV-check test and if still reactive on repeat

were then tested by ELIZA and thereafter considered positive for HIV. The sample was considered positive for HIV if only continued to be reactive for the three tests collectively. Screening for syphilis was done by venereal disease research laboratory (VDRL) and the reactive ones were confirmed by treponema pallidum haemoagglutination test (TPHA).

RESULTS

The rate of isolation of different STDs in the screened population is shown in table 1. Examination of the urine alone could have missed all the cases of gonorrhoea, 73.1% of trichomoniasis cases and 50% of the women with candidiasis. On the other hand examination of the swab alone failed to detect only 1 case (3.8%) of trichomoniasis and 7 cases (20.6%) of candida infection but none of the cases of gonorrhoea (Table 2).

Table 1. The prevalence of STD in 338 women in suburban Sudan

Disease	Number positive	Prevalence rate %
Bacterial vaginosis	58	17.2
Candidiasis	34	10.1
Trichomoniasis	26	7.7
Gonorrhoea	4	1.2
HIV	4	1.2
Syphilis	3	0.9

Table 2. Comparison of urine and vaginal swab as a specimen for diagnosis of Trichomonas vaginalis, candidiasis and gonorrhoea.

Organism	Total +ve	Urine examination		Vaginal swab examination	
		No. detected	No. missed	No. detected	No. missed
T. vaginalis	26	7	19	25	1
Candida spp.	34	17	17	32	2
N. gonorrhoea	4	0	4	4	0

+ve = positive test

Four women had HIV infection. One of them was found to harbour T. vaginalis and the other three had candida. Bacterial vaginosis was found to be associated with trichomoniasis in 6 subjects, candidiasis in 2 and gonorrhoea in one subject. T. vaginalis and candida were isolated together in two women.

Culture technique failed to detect one of the four cases of gonorrhoea diagnosed by smear method. Clue cells were detected in the vaginal secretions of 25 women with bacterial vaginosis of the 26 women who had secretions. Thirty four (31.2%) out of the 109 women with positive amine test fulfilled the criteria for the diagnosis of bacterial vaginosis. The sensitivity/ specificity and positive/negative predictive values for amine test were 58.6%/43.1% and 73.2%/99.6% respectively. The respective values for clue test were 31.9%/96.2% and 89.5%/89.4%. Only 32.8% of the cases with bacterial vaginosis were found to have significant number of pus cells (>10 HPF) in their vaginal wet preparation.

DISCUSSION

Urine examination is inferior to vaginal swab as a specimen for the diagnosis of trichomoniasis, candidiasis and gonorrhoea and at best both need to be checked. In contradiction to a previous report [3], culture technique was less sensitive than smear examination as a mean of diagnosing gonorrhoea in females. The long time spent in transport of specimens could probably have resulted in the death of the fastidious N. gonorrhoea.

The overall occurrence rates of trichomoniasis, gonorrhoea and candidiasis were comparable with the most recent study done in Sudan [9] but was lower than what was found earlier [3,6,7,8]. Our data was comparable with figures from nearby countries [10,11]. The widespread use of antibiotics and metronidazole is expected to have reduced the prevalence rates of gonorrhoea and trichomonas vaginalis, respectively. The previous studies have included a special group of women with vaginal discharge and this can explain the high rates of the diseases obtained.

Bacterial vaginosis although found to be the most prevalent STD in this study is up to now neglected both by the clinician and the laboratory personnel in our country. Vaginal discharge in bacterial vaginosis lacked pus cells in the majority of cases supporting the previous reports. The explanation was ascribed to the fact that anaerobic bacteria involved in the pathogenesis of the disease secrete succinate that inhibits chemotaxis [13]. The sensitivity of the amine test as a criterion for the diagnosis of bacterial vaginosis was found to be lower but its specificity was higher than what was found by Sonnex [12]. The sensitivity of clue cells test was much lower than the figure reported by Thompson et al [14] although its specificity, positive and negative predictive values were almost equal in both studies.

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