

Treatment of Vaginal Discharge

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Curriculum vitae

Dr Anvir Adam completed a BSc at UCT and then went to WITS where he obtained the MBBCh in 1964. After some GP experience, he wrote the MFGP (SA) in 1973. He has been in General Practice for 25 years with special interests in infectious diseases, diabetes and hypertension. In 1986 he obtained a DTM & H and in 1988 a DPH at Wits, which awakened interest in epidemiology, and he is currently engaged in epidemiological studies pertaining to primary and community health care.

Summary

Vaginal infections are not reportable in the RSA and the aetiology of excessive vaginal discharge amongst urban black patients unknown. This study was carried out to determine the microbiology of excessive vaginal discharge in order to give guidelines for appropriate treatment.

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Introduction

Excessive vaginal discharge, due to vaginitis and cervicitis, is a commonly encountered problem in practice. Many so-called broad-spectrum and over-the-counter vaginal preparations, sold in this country, are notoriously ineffective in treatment⁶ and can lead to distressing vulvovaginal irritation.

Vaginal infections are not reportable in South Africa and information on the microbiologic aetiology of excessive vaginal discharge amongst urban black patients has been inadequate. Specific therapy, based on a microbiologic diagnosis, would seem to have a higher chance of achieving cure. Therefore, a study was carried out in order to determine the microbiology of excessive vaginal discharge, so that appropriate treatment guidelines could be given for this condition.

Patients

The study population consisted of ninety-two non-pregnant, sexually

active women from the urban setting of Mamelodi. The age-range of the patients was between 17 and 46 years with an average (mean) of 29 years. Criteria for inclusion into the study were the presence of excessive vaginal discharge only, as complained of by the patient, or in some combination with vulvovaginal irritation, dysuria, dyspareunia and vaginal malodour. Patients were excluded from the study if they had received any form of antimicrobial therapy, including over-the-counter vaginal preparations, in the preceding two weeks.

Methods

Each patient was subjected to a general and gynaecologic examination. The urine was tested for glucose. Note was made of any malodour and the appearance (colour, consistency, etc) of the discharge was recorded. The cervix was exposed to observe the presence or absence of any mucopurulent exudate from the endocervix. The vaginal pH was measured with indicator paper (Whatman, narrow range, pH 4 to 6) dipped into the discharge.

The ectocervix was wiped clean with cotton wool and swabs were taken from the posterior fornix and the endocervix. All the chemical and microbiologic investigations were conducted by a team of microbiologists from the Medical University of Southern Africa (MEDUNSA).

Results

The incidence of the various vaginal and cervical infections diagnosed in this study is shown in Table 1. Bacterial vaginosis (BV) was diagnosed in 61% of the patients. In

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the absence of other pathogenic genital micro-organisms, BV was present in 25/92 (27%) of the patients. Of the 21 yeast isolates, 18 (86%) were identified to be *Candida albicans*, the rest were found to belong the genus *Torulopsis*. None of the *Neisseria gonorrhoea* strains was found to produce beta-lactamase.

Table 1: Incidence of bacterial vaginosis and genital micro-organisms in 92 patients with vaginal discharge.

Diagnosis	No	(%)
Bacterial vaginosis	56	61
T vaginalis	27	29
Yeasts	21	23
N gonorrhoea	3	3
C trachomatis	17	18

In 30 patients cervicitis was indicated by the presence of a mucopurulent endocervical discharge and/or 10 or more polymorphonuclear leucocytes (PMS's) per high power field on gram-stained cervical smears. The majority of these patients also had erythema and oedema of the cervix. Only one patient had cervical ulceration. *Chlamydia trachomatis* was

Table 2: Isolation of *Neisseria gonorrhoea* and *Chlamydia trachomatis* in patients with a normal cervix and with cervicitis

Organism	Normal cervix (n = 62)		Cervicitis (n = 30)	
	No	%	No	%
No gonorrhoea	0	-	3	10
C trachomatis	3	5	14	47

Table 3: Percentage distribution of mixed infections

	No of infections			
	1	2	3	4
Bacterial vaginosis (n = 56)	-	45	45	11
T vaginalis (n = 27)	-	19	59	22
Yeasts (n = 21)	-	38	43	19
N gonorrhoea (n = 3)	-	33	33	33
C trachomatis (n = 17)	-	23	65	12
All patients (n = 92)	13%	47%	34%	6%
			40%	

isolated from 47% and N gonorrhoea from 10% of these women (Table 2). In one of these cases both organisms were recovered and in 14 (47%) neither agent was isolated. The carriage rate of *C trachomatis* in the 62 women in whom the cervix appeared normal was 5%. *N gonorrhoea* was not recorded in this group.

The percentage distribution of the number of infections diagnosed in each patient is shown in Table 3. In 12 (13%) of the study population neither a genital pathogen nor BV was demonstrated. Ten of these women were adjudged to have a physiological increase in the amount

of vaginal discharge and the other two were found to have signs of cervicitis. Single infections were demonstrated in 47% and mixed infections in 40% of the patients. From Table 3 the percentage distribution of the various infections individually and when mixed can also be seen. In general, infections of the genital tract occurred more frequently when mixed with at least one other infection. In the 21 women in whom yeasts were found 6 (29%) had concomitant trichomoniasis together with active clinical candidosis, indicated by evidence of pseudohyphae in wet preparations.¹

Treatment Guidelines

Based on the findings of this study appropriate guidelines can be given with regard to therapy of urban black patients presenting with excessive vaginal discharge.

Trichomoniasis

Twenty seven (29%) of the ninety-two patients studied harboured

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Trichomonas vaginalis. Swabs were taken from the posterior fornix and diagnosis was made by direct visualisation of *T vaginalis* in normal saline wet preparations.

Either single dose or treatment over a period of five to seven days can be instituted. In cases where non-compliance would be a problem it is better to institute single-dose therapy.

Metronidazole is given either as:

2 g orally single dose, or

0,5 g (500 mg) orally 12-hourly over five days, or

0,25 g (250 mg) orally 8-hourly over seven days.

If treatment failure occurs, in which reinfection has been excluded, the patient should be given a single 2 g dose of metronidazole daily for three days.

Male sex partners of patients should be treated with either the single dose or the seven-day regimen. In this study only seven of the twenty seven patients were able to contact their sex partners and these were treated with the seven-day regimen.

Many so-called broad-spectrum and over-the-counter vaginal preparations are notoriously ineffective and lead to irritation

If repeated treatment failure occurs patients should be managed in consultation with an expert. Evaluation of such patients should include determination of the

susceptibility of *T vaginalis* to metronidazole.³

Vulvovaginal candidosis

Usually this is not considered to be a sexually transmitted disease. Sexual contact probably accounts for only a small proportion of cases of vulvovaginal candidosis. It is diagnosed in women presenting with signs involving the external genitalia.

Few of the sex partners could be contacted

Twenty one (23%) of the patients in the study had yeasts and some degree of oedema of the vulva. Fungal elements were observed in potassium hydroxide wet preparations. From the 21 yeast isolates, swabs were plated on Sabouraud's agar and sent to the laboratory for further identification which showed that 86% of the yeasts were *Candida albicans*.

It should be remembered that diabetes mellitus and treatment with broad-spectrum antibiotics predispose patients to the development of vulvovaginal candidosis.

Both single-dose and a three-day regimen have proved to be effective. Teraconazole (Terazol depot) as a single dose and clotrimazole as a three-day regimen were used.

Teraconazole is a synthetic triazole fungicide and is believed to interfere with triglyceride synthesis in the yeast cell wall. One teraconazole (160 mg) ovule must be inserted high into the vagina at bedtime once only, or

clotrimazole (Canesten) 100 mg 2 tablets, intravaginally at bedtime for three days.

Patients with frequent unexplained infections should be evaluated for predisposing conditions (especially HIV-infection, patients on steroid therapy and oral contraceptives, diabetes mellitus, hypocalcaemia and frequent antibiotic treatment) should be referred to an expert for care.

Treatment of sex partners is not necessary unless candidal balanitis is present.² In this study none of the patients brought their sex partners for treatment.

Bacterial vaginosis (BV) (formerly called Gardnerella-associated vaginitis) is the clinical result of alternations in the vaginal microflora. Diagnosis is made when three of four criteria are present (a thin homogeneous discharge, pH 4.5, presence of clue cells in gram-stained vaginal smears, positive amine odour test also called 'sniff-test' when vaginal discharge is mixed with a few drops of 10% potassium hydroxide on a glass slide.

Oral contraceptives may have an effect on vaginal physiology favouring the overgrowth of yeasts

Treatment consists of metronidazole 500 mg orally, 12-hourly for seven days.

No clinical counterpart of BV is recognised in the male, and treatment of the male sex partner has not been

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shown to be beneficial for the patient or the male partner.²

Mucopurulent cervicitis due to *Chlamydia trachomatis* was demonstrated in 17 (18%) of the study population. Culture and nonculture methods for diagnosis are not routinely carried out in practice. So, in clinical settings where testing for chlamydia is not routine or available, treatment often is instituted on the basis of clinical diagnosis or as co-treatment for gonorrhoea.

It is recommended that periodic surveys should be performed to determine local chlamydial prevalence in patients with gonorrhoea.²

Diagnostic criteria used in this study for mucopurulent cervicitis were the presence of endocervical discharge, which may appear yellow when viewed on a white cotton-tipped swab; or if there are ten or more polymorphonuclear leucocytes per high power field on gram-stained cervical smears.^{3,4}

The treatment recommended is doxycycline 100 mg orally 12-hourly for seven days, or tetracycline 500 mg

Tight-fitting, synthetic clothing increase the temperature and moisture in the perineal area

orally 6 hourly for seven days. An alternate regimen is erythromycin base 500 mg orally 6-hourly or equivalent salt for seven days.

Infection of the cervix with *Neisseria gonorrhoea* was demonstrated in 3 (3%) of the study population. This frequency of recovery is much lower

than in similar studies carried out in Durban.⁵ One reason for this low frequency is the higher average age of patients in this study (29 years). Gonorrhoea generally occurs more frequently in younger patients. The recommended treatment is influenced by trends such as

1) the spread of infections due to antibiotic-resistant *N gonorrhoea*, including penicillinase-producing strains (PPNG);

Tampons have a direct effect on vaginal mucosa

2) the high frequency of chlamydial infections in persons with gonorrhoea;

3) recognition of complications of chlamydial and gonococcal infections and

4) the absence of a fast, inexpensive, and highly accurate test for chlamydial infection.

Co-existing chlamydial infection has to be considered and so patients with gonorrhoea should also be treated for presumptive chlamydial infections. Generally, patients with gonorrhoea infections should be treated simultaneously with antibiotics effective against both *C trachomatis* and *N gonorrhoea*. Treatment instituted in this study consisted of doxycycline 100 mg orally 12-hourly for seven days.

Tetracycline may be given in place of doxycycline; however, compliance may not be so good since tetracycline must be given at a dose of 500 mg 6-hourly between meals whereas

doxycycline can be given without regard to meals (absorption is not affected by meals). Also, at current prices, tetracycline costs only a little less than generic doxycycline.

Two of the male sex partners of the three patients presented for treatment and they were treated presumptively with doxycycline.

Persistent symptoms after treatment may mean antibiotic resistance or re-infection. In the case of the former, *N gonorrhoea* should be tested for antibiotic sensitivity. However, treatment failure is commonly due to re-infection and indicates a need for improved sex-partner referral and patient education.

Mixed infections

Mixed infections were demonstrated in 40% of the study population (Table 3). The treatment instituted for mixed infections in this study consisted of metronidazole, tetracycline, and clotrimazole vaginal tablets. This form of therapy covered

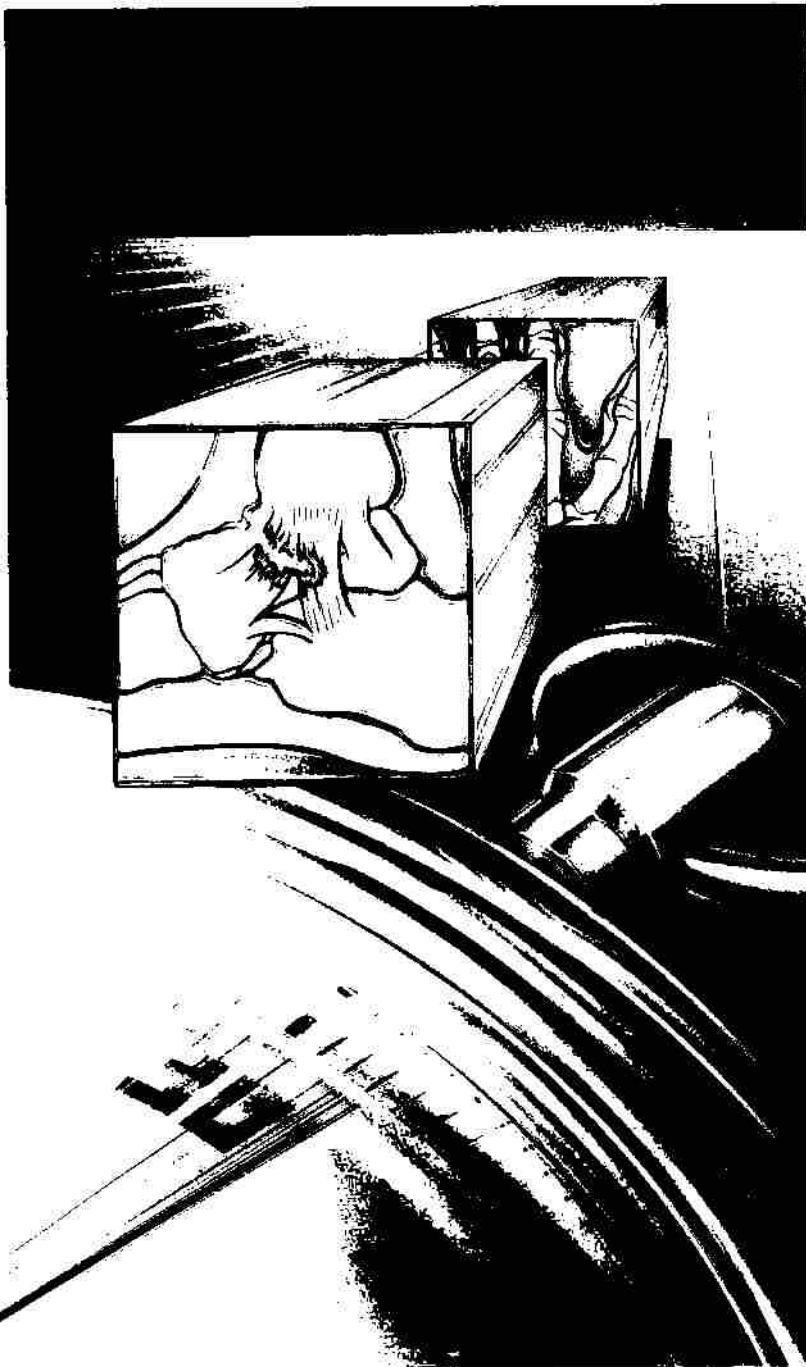
Every effort should be made to trace and treat the sex partner

bacterial vaginosis, infections due to *T vaginalis*, *C trachomatis*, *N gonorrhoea* and yeasts.

Discussion

Clinical experience indicates that excessive vaginal discharge appears to be increasing in urban blacks. The rising levels of sexual activity, the increasing percentage of the urban black population falling into the ages

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of peak sexual activity, increasing the risk of sexually acquired infections and technological advances have contributed to this condition. The use of oral contraceptives in place of barrier methods facilitates acquisition of pathogens. In addition, the oral contraceptives may have a specific effect on vaginal physiology favouring the overgrowth of yeasts.⁶ Much of the underwear and tightfitting clothing worn is composed of synthetic fibres and may play a significant role in vaginal infections by increasing the temperature and moisture in the perineal area.

Tampons appear to have a direct effect on the vaginal mucosa⁷ and have been implicated in vaginal infections with *Staphylococcus aureus* and the toxic shock syndrome.⁸ Other foreign matter in the vagina has been associated with alterations in the vaginal flora and overgrowth of anaerobic bacteria.

It is well to bear in mind that excessive vaginal discharge may also result from non-infective causes which include increased cervical mucus secretion at the time of ovulation, psychosomatic vulvovaginitis⁹ and physiological leucorrhoea¹⁰ and pregnancy.

These conditions, however, are not accompanied by vaginal malodour, dysuria or dyspareunia; and microscopic examination does not reveal any leucocytes per vaginal epithelial cell.

The problem of excessive pathological vaginal discharge during pregnancy has not been addressed here, but it should be remembered that both metronidazole and tetracycline are contra-indicated in pregnancy. Expert advice should be sought when treating these patients.

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Tracing the male sex partners of patients is often difficult in urban black practice. Living in temporary abodes, lack of sufficient health education and migrant labour systems may account for poor contact tracing and follow-up.

The efficacy of the penicillins is decreasing because of the increased frequency of penicillinase-producing gonococcus strains. In this study penicillin was not used for this very reason since surveys have shown an almost 10% treatment failure rate due to penicillinase producing organisms.

Even in clinical situations where it is difficult to make a definitive diagnosis due to lack of laboratory facilities, some treatment guidelines can be given emanating from this

It appears to be increasing in urban blacks

study. Treatment with metronidazole is recommended in view of the frequency of trichomoniasis and BV. Both these respond very well to this drug. Clotrimazole or teraonazole should be prescribed for patients presenting with features of vulvovaginal candidosis. Co-existent chlamydia trachomatis infections should be treated with doxycycline or tetracycline to eradicate the organism and prevent complications associated with both N gonorrhoea and C trachomatis infections.

Every effort should be made to trace male sex partners of the patients so that they can be treated where appropriate. Patients should be asked to return for follow-up after treatment.

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