SEXUAL BEHAVIOUR

High-risk sexual behaviour in men attending a sexually transmitted infection clinic in Durban, South Africa

N O'Farrell, L Morison, P Moodley, K Pillay, T Vanmali, M Quigley, A W Sturm

Sex Transm Infect 2007;**83**:530–533. doi: 10.1136/sti.2007.026716

Objectives: A study of men with genital ulcer disease (GUD) in Durban, South Africa, at the start of the local HIV epidemic in 1988/1989 found that 36% of men with GUD continued with sexual intercourse despite symptoms. The aim of this study was to determine whether this high-risk behaviour was still prevalent and to enquire about similar risk behaviours with other sexually transmitted infection (STI)-related problems.

Methods: 650 Men attending the main Durban STI clinic with a new complaint were enrolled. A standard questionnaire was administered. Polymerase chain reaction (PCR) tests were performed to diagnose genital herpes from ulcer specimens and gonorrhoea and chlamydia from those with urethral discharge and/or dysuria. Serology tests were performed for HIV, herpes simplex virus type 2 (HSV-2) and syphilis.

Results: Sex since the start of symptoms was reported by between 33.3% and 43.9% of men with GUD, herpetic ulcers, gonorrhoea and/or chlamydia or dysuria. The incidence of condom use was very low in all groups having sex despite symptoms. In 87 men with genital ulcers confirmed positive for genital herpes by PCR testing, 30 (34.4%) had had sex since the start of symptoms, 28 (93.3%) of whom had had unprotected sex.

Conclusions: There is a high level of risk behaviour in this group of men in whom genital herpes is the most common cause of GUD. This risky sexual behaviour could reflect disinhibition, possibly because so many have already been infected with HSV-2, lack of education or other unknown factors. Syndromic STI management should be strengthened with intensive health education to promote community awareness of both genital ulceration and genital herpes and their role in facilitating HIV transmission. The low level of condom use indicates that condom promotion programmes still have much to achieve.

See end of article for authors' affiliations

Correspondence to:
Dr Nigel O'Farrell, Pasteur
Suite, Ealing Hospital,
Uxbridge Road, London UB1
3HW, UK; nigel.o'farrell@
eht.nhs.uk

Accepted
24 September 2007

Very high rates of genital ulceration have been reported from countries worst affected by HIV.¹ The reasons for this are uncertain but could reflect low rates of male circumcision or some other behavioural factors not yet identified. At the start of the HIV epidemic in Durban, South Africa, a study of men and women with genital ulcer disease (GUD) in 1988/1989 found that 36% of men and 36% of women with GUD continued with sexual intercourse despite symptoms.² Syphilis and chancroid were the most common causes of GUD then, but subsequent studies have shown that the incidence of both these conditions has declined whereas genital herpes has increased significantly.^{3–4} Moreover, in a systematic review and meta-analysis, prevalent herpes simplex virus type 2 (HSV-2) infection was associated with a threefold increased risk of HIV acquisition among men and women in the general population, suggesting that in areas of high HIV-2 prevalence a high proportion of HIV is attributable to HSV-2.⁵

After the onset of the local HIV epidemic in the early 1990s in Durban, sexually transmitted infection (STI) treatment and care was decentralised so that primary care would deal with all but the most complicated or resistant STI cases. Although this strategy was expected to improve delays in treatment, it was uncertain whether staff in primary healthcare settings would be motivated to provide health education for the very high-risk practices outlined above and to counsel patients diagnosed with genital herpes.

The primary objectives of this study were to determine whether there were differences in the sociodemographic profile and sexual behaviour of men with and without genital ulcers and selected aspects of healthcare seeking and sexual behaviour in men with genital ulcers, genital herpes, gonorrhoea and/or chlamydia or dysuria.

METHODS

Study population

Consecutive men attending the Prince Cyril Zulu STI Clinic in Durban for a new STI-related problem between January and March 2004 were enrolled. Inclusion criteria for subjects were being sexually active, heterosexual, aged 16–75 years and with the potential ability to return in two weeks. Subjects were included even though they may have had antibiotics recently. Signed consent was obtained from all subjects. At enrolment, sociodemographic data were obtained and a sexual behaviour questionnaire was administered by a trained interviewer in a face-to-face interview. Clinical examination of the genital area was performed by a physician, and information was recorded on circumcision status. Inclusion in the study made no difference to STI management for the current problem. Cases were dealt with according to national STI syndromic guidelines.

Subjects were asked to return to the clinic after 14 days when they were interviewed using a structured questionnaire by the same interviewer as at enrolment about access to water in their current main abode and male genital cleansing practices.⁶

Comparison between proportions was done using the chi-square test and between means using *t*-tests. Ethical approval for the study was obtained from the ethics committees of the Nelson Mandela Medical School, University of KwaZulu-Natal, Ethekwini Municipality Health Department Research Committee, Durban, and the London School of Hygiene and Tropical Medicine.

Laboratory methods

Nucleic acid amplification tests for gonorrhoea, chlamydia and trichomoniasis were undertaken on urethral swabs from subjects with urethral discharge/dysuria, and swab tests for

HSV-2 from ulcers were performed using polymerase chain reaction (PCR) tests as described previously.^{7,8} Data from the questionnaires were anonymised and linked to the results of serological testing. HIV was diagnosed using Determine HIV 1/2 (Abbott Laboratories, Chicago, Illinois, USA). Positive results were confirmed with a second serological test (Capillus HIV1/2; Trinity Biotech, Berkeley Heights, NJ, USA). Serological testing for HSV-2 antibodies was by Focus HSV-2 (Focus Diagnostics, Cypress, California, USA) and for syphilis with the rapid plasma reagin test (Becton Dickinson, Cockeysville, Maryland, USA), and *Treponema pallidum* haemagglutination assay (Omega Diagnostics, Alva, UK).

RESULTS

A total of 650 men were enrolled. Data were collected for 165 with genital ulcers and 484 without ulcers.

Differences between ulcer and non-ulcer subjects

Sociodemographic features

The mean age in both groups was approximately 29 years (table 1). A higher proportion of those in the no-ulcer group were new patients to the clinic (54.1% versus 46.3%, $p = 0.084$). Subjects with genital ulcers were more likely to be uncircumcised (95.8% versus 90.0%, $p = 0.02$) and have limited education (21.2% versus 14.3%, $p = 0.035$) compared with those without ulcers.

Sexual behaviour

There were no significant differences in the numbers of sexual partners between those with and without genital ulcers. Reported contact with sex workers in the past three months was low in both groups. Always using condoms with casual partners was similar (41.5–42%) in both groups.

Sexual behaviour in men with genital ulcers

Fifty-five of the men (33.3%) had had sex since the start of symptoms, 51 (92.7%) of whom had had unprotected sex (table 2). Of 87 men with genital ulcers confirmed positive for genital herpes by PCR testing, 30 (34.4%) had had sex since the

start of symptoms, 28 (93.3%) of whom had had unprotected sex.

Differences between subjects with ulcers overall, HSV-2 identified from ulcers, gonorrhoea and/or chlamydia and dysuria

Sexual behaviour

Sex since current STI-related symptoms was admitted by 33.3–43.9% in the four groups (table 2) and the majority had not used condoms. The number of exposed contacts from unprotected sex per index case was 1.21–1.24. Reported contact with sex workers in the past three months was low in all groups but highest (4.4%) in those with gonorrhoea and/or chlamydia.

HIV and HSV-2 antibody status

The prevalence of HIV was higher in those with ulcers seen and ulcers with confirmed HSV-2 (126/164, 76.8%; and 67/87, 77%), respectively, compared with the other groups (208/374, 55.6%; and 114/194, 58.8%). Similarly, HSV-2 antibodies were detected in 71 out of 86 (82.6%) and 140 out of 162 (86.4%) of the former groups compared with 144 out of 194 (74.2%) and 285 out of 373 (76.4%) of the latter.

Previous STI treatment for current problem

Other public clinics were the most frequent source of treatment for the current STI-related problem before the current attendance, followed by traditional healers, with the relative proportions attending either being similar across the four groups. The proportion of those who had received antibiotics in the previous two weeks was similar (8.5–9.8%) in the four groups.

Genital hygiene

Genital hygiene-related factors appeared to be similar between the four groups.

DISCUSSION

We found a high level of risk behaviour in men with STI-related symptoms in Durban, similar to that of 15 years ago despite the

Table 1 Sociodemographic features, sexual behaviour and HIV, HSV-2 and syphilis antibodies in STI clinic attenders with and without genital ulcers

	Ulcers n = 165 (%)	No ulcers n = 484 (%)	p
Sociodemographic features			
Age (years)	29.9 SD 7.8	29.2 SD 7.3	0.329
New patient	76/164 (46.3%)	262 (54.1%)	0.084
No education or primary education only	35 (21.2%)	69 (14.3%)	0.035
Married	12 (7.3%)	40 (8.3%)	0.685
Living with partner	50 (30.3%)	140/483 (29.0%)	0.748
Uncircumcised	158 (95.8%)	431 (90.0%)	0.022
Serology			
HIV positive	126/164 (76.8%)	236/320 (49.2%)	<0.001
HSV-2 antibody positive	140/162 (86.4%)	347/480 (72.3%)	<0.001
Positive syphilis serology (TPHA + RPR)	17/164 (10.4%)	29/481 (6.0%)	0.062
Sexual behaviour			
Lifetime no. of sex partners	159, mean 14.2 SD 11.0	475, mean 15.1 SD 12.3	0.483
No. of partners in past 3 months	164, mean 1.71 SD 0.9	482, mean 1.87 SD 1.4	0.180
Current no. of partners	160, mean 1.36 SD 0.9	477, mean 2.06 SD 1.34	0.140
Sex worker contact in past 3 months	0/103 (0%)	8/313 (2.6%)	0.209*
Always uses condoms with casual partners	51/123 (41.5%)	144/343 (42.0%)	0.920

HSV-2, Herpes simplex virus type 2; RPR, rapid plasma reagin; STI, sexually transmitted infection; TPHA, *Treponema pallidum* haemagglutination assay.

*Fisher's exact test.

Table 2 Sexual, healthcare seeking, and genital hygiene behaviour, HIV and HSV-2 status in men with selected STI and related signs and symptoms

Behavioural attributes and HIV and HSV-2 status	GUD with ulcers seen	HSV-2 PCR-positive ulcer	GC and/or chlamydia PCR positive	Dysuria (spontaneous and/or direct complaint)
	N = 165 (%)	N = 87 (%)	N = 194 (%)	N = 378 (%)
Sex since symptoms	55 (33.3)	30 (34.5)	74 (38.1)	166 (43.9)
Unprotected sex since symptoms	51 (30.9)	28 (32.2)	58 (29.9)	140 (37.0)
No. of exposed contacts in above	n = 51, mean 1.23, SD 0.68 = 28, mean 1.21, SD 0.79n = 58, mean 1.22, SD 0.50 = 140, mean 1.24, SD 0.53			
Sex worker contact in past 3 months	0/103	0/51	6/135 (4.4%)	5/235 (2.1%)
HIV positive	126/164 (76.8)	67/87 (77.0)	114/194 (58.8)	208/374 (55.6)
HSV-2 positive	140/162 (86.4)	71/86 (82.6)	144/194 (74.2)	285/373 (76.4)
Previous treatment for current problem				
Public clinic	24	13	29	62
Private doctor	6	3	7	18
Traditional healer	10	4	11	22
Informal source	2	1	3	3
Left over pills	1	1	0	0
Other	0	0	0	2
Antibiotics in past 2 weeks	14/164 (8.5)	8/87 (9.2)	19/194 (9.8)	36/377 (9.6)
Genital hygiene factors*				
Access to water	97/125 (77.6)	49/62 (79.0)	117/139 (84.2)	231/277 (83.4)
Frequency of washing $\leq$ 1 per day	55/125 (44.0)	25/62 (40.3)	62/139 (44.6)	134/277 (48.3)
Wash after sex	37/125 (29.6)	18/62 (29.0)	35/139 (25.2)	84/277 (30.3)

GC, Gonorrhoea; GUD, genital ulcer disease; HSV-2, herpes simplex virus type 2; PCR, polymerase chain reaction; STI, sexually transmitted infection.

*In those who returned after 14 days.

emergence of a severe HIV epidemic.² There were, however, some differences between the two studies in the sociodemographic profile of the men. For example, men in the earlier study were younger (mean age 25.6 versus 29.9 years) and were more likely to be new attenders at the clinic (62% versus 46.3%).⁹ Although the site of the STI clinic had moved two miles away from the one in the earlier study, these differences probably reflect more cases with recurrent HSV-2 ulcers attending in 2004.

Since the earlier study, genital herpes has emerged as the most common cause of GUD, but more than a third of men confirmed with genital herpes in the latter study had had sex despite symptoms, and in 28 out of 30 (93%) of these contacts condoms were not used. As HIV-1 virions can consistently be detected in genital ulcers caused by HSV-2, sexual intercourse in the presence of lesions must constitute a significant risk of HIV-1 transmission in men.¹⁰ In women, genital HSV-2 infection is associated with increased cervicovaginal and plasma HIV-1 RNA among co-infected women with genital ulcers, highlighting the close interaction between these viruses and the role of HSV-2 as a co-factor for the sexual transmission of HIV-1.¹¹

The reasons for the particularly high-risk sexual behaviour in our study are unclear but could reflect disinhibition or fatalism,

possibly because so many are already infected with HSV-2 and HIV,³ a lack of availability of treatment for both conditions although a self-diagnosis of genital herpes did not affect treatment-seeking or sexual behaviour in Uganda,¹² poor education,⁶ health being a low priority or other unknown factors. Another possibility is that couples with both HIV and HSV-2 and aware of their partners' status might have chosen not to abstain from sex when symptomatic. Qualitative research is required to explore this area further.

The low level of condom use indicates that condom promotion programmes still have much to achieve. Although condom use had increased with casual partners compared with 1988, unprotected sex in those with ulcers and confirmed genital herpes was frequent. This may reflect a lack of understanding about genital herpes or an unwillingness for index cases to admit to partners that they had a problem. In most communities the occurrence of sores in one partner in a stable relationship might be construed as unfaithfulness. For some, the alternative to informing their partners about HSV-2 infection is to carry on as though nothing abnormal had happened, as reported elsewhere in Uganda.¹² Further community-related research is required to identify how best to limit onward HSV-2 transmission through changes in behaviour. STI management could be strengthened to include patient-initiated antiherpes treatment and prophylaxis, and also intensive health education to promote community awareness of genital ulceration and genital herpes in particular, and their role in facilitating HIV transmission. If this trend in very unsafe sex could be reversed, a considerable degree of HIV prevention benefit could be achieved given the fact that genital herpes is likely to be a recurrent problem in many of these HIV-positive men.

We found evidence of very high rates of sex despite symptoms in all groups selected. Whether previous STI symptoms alter current risk behaviour is unclear.^{13 14} We therefore believe that all individuals attending the STI clinic should receive intensive health education as an essential component of basic STI care. This message is reinforced by recent preliminary data suggesting that newly circumcised HIV-positive men who resumed sexual activity before certified wound healing were more likely to transmit HIV than those who waited until complete wound healing.¹⁵

Key messages

- More than a third of men attending an STI clinic with STI-related symptoms had sexual intercourse despite symptoms. Condom use was uncommon in these men.
- Similar results were found in a previous survey in men with genital ulceration attending the same municipal STI clinic 15 years previously.
- Syndromic STI management should be strengthened to include health education about the specific risks of sex in the presence of symptoms and the potential health benefits of abstaining from sex until ulcers have healed completely.

Although sex despite bleeding was reported earlier in Durban,² we did not enquire about this behaviour as the prevalence of the most vascular causes of GUD, donovanosis and chancroid, had decreased recently. Elsewhere in South Africa, however, coital bleeding is still thought to be common.¹⁶

Reported contact with sex workers was infrequent. This finding emphasises the difficulties in identifying groups at high risk of STI and HIV. Given the high HIV prevalence in this group, it would seem that all uncircumcised men with poor hygiene continue to be one of the highest risk groups since their initial identification at the start of the HIV epidemic.¹⁷

Other public clinics were the most frequent source of treatment for the current STI-related problem before the current attendance followed by traditional healers, with the relative proportions attending being similar across the four groups. These possible management failures might reflect difficulties in the clinical treatment of herpes in the absence of antiherpes agents or the failure of first-line treatment for gonorrhoea with ciprofloxacin, which was standard treatment at the time of the study.¹⁸ It is interesting to note that traditional healers were still favoured by a significant minority, although they are not permitted to dispense antibiotics or antiviral agents.

Although the first report of HIV in South Africa among indigenous heterosexuals was in this STI clinic population in 1987,¹⁹ the anticipated national response to target these high-risk groups never materialised. Indeed, political acceptance both of HIV as an infectious disease and as a significant cause of mortality in the country has been limited until very recently. Most STI-related efforts for HIV prevention appear to have focused on the syndromic management of STI, with an emphasis on the provision of treatment for bacterial STI to the neglect of promoting behaviour change. The likelihood of changing high-risk behaviour in men will require a clear message about the health gains of avoiding HIV infection. Our study suggests that significant changes in the community perception of the importance of STI-related symptoms among Zulu men must be accomplished if the current high rates of HIV are to be reversed. It is disappointing that HIV prevention efforts appear to have made little impact on this behaviour some 15 years since the initial study.²

ACKNOWLEDGEMENTS

The authors would like to acknowledge the help of Mark Colvin and Salim Abdool Karim in logistics, Simi Chanderman and Adrian Smith for data entry, Prathna Bhola for collecting data and examining patients, Gladys Nzimande for enrolling patients and all other staff from the Department of Medical Microbiology and the Prince Cyril Zulu STI Clinic involved in facilitating the study.

Authors' affiliations

N O'Farrell, Pasteur Suite, Ealing Hospital, London UB1 3HW, UK

L Morison, M Quigley, Infectious & Tropical Diseases, London School of Hygiene & Tropical Medicine, London WC1, UK

P Moodley, K Pillay, T Vanmali, A W Sturm, Department of Medical Microbiology, Nelson Mandela School of Medicine, University of KwaZulu-Natal, Durban, South Africa

Funding: The study received some funding from the UK Department for International Development.

Competing interests: None declared.

Contributions: NO'F, LM, PM, MQ and AWS designed the study and contributed to the final manuscript. NO'F, KP and TM participated in the implementation of the study and data collection. PM and AWS were responsible for laboratory testing. LM and NO'F undertook the data analysis.

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