Cervical cytology screening in a sexually transmitted diseases clinic for the first time in Sri Lanka

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SUMMARY A prospective study of cervical cytology was carried out on 350 consecutive female patients attending the central venereal diseases clinic (CVDC) in Colombo, Sri Lanka. The main objective was to assess the proportion of abnormal cervical smears to emphasise the need to introduce routine cervical cytology screening in the sexually transmitted diseases (STD) clinics in Sri Lanka. Data about each woman's age, sexual history, method of contraception, number of pregnancies, genital infections, and previous cervical smears were collected to compare the findings in patients with normal smears with findings in those with abnormal smears. Smears reported as showing koilocytic atypia, dyskaryosis, carcinoma in situ, or invasive carcinoma were considered to be abnormal.

Forty seven (13.4%) women in the study sample had abnormal smears, and 32 of these were aged under 35. None of the 350 patients had had a cervical smear taken previously. Women who had had five or more pregnancies, compared with those who had had four or fewer pregnancies, and women with trichomoniasis, compared with no genital infection, had significantly higher incidences of abnormal than normal smears. Higher proportions of abnormal than normal smears were also found in women whose sexual partners had been surgically sterilised. These findings suggest a serious need for cervical cytology screening in STD clinics.

Squamous cell neoplasia of the uterine cervix is the cancer that most commonly affects women in the developing countries.¹ Worldwide, cervical cancer is the second most common cancer in women, breast cancer being the commonest.

Carcinoma of the cervix is now considered to be a sexually transmitted disease (STD). Recent research indicates that a sexually transmissible virus, the human papillomavirus (HPV) is probably the oncogenic agent.²⁻⁵ The oral contraceptive pill⁶ and smoking⁷ are two other non-sexually transmitted possible cofactors. In 1842 Rigoni-Stern noted that cervical cancer was rare in nuns.⁸ Since then many epidemiological studies have confirmed that the risk factors associated with carcinoma of the cervix are related mostly to coitus.⁹⁻¹¹ Women attending STD clinics commonly share two of the major risk factors, early age at first coitus and multiple sexual partners, which places them at high risk for developing cervical cancer.

Cervical cytology screening is a well established procedure that is carried out routinely in STD clinics in the developed countries, where it has been shown to be effective in reducing mortality from and incidence of the disease.¹²⁻¹⁴ Although cervical cancer screening of patients attending STD clinics is carried out in some developing countries, Sri Lanka is not one of them. There is also no national cervical cancer screening programme on the island. Taking all these factors in to consideration, I carried out a prospective study of cervical cytology screening in women attending the central venereal diseases clinic (CVDC) in Colombo. The objectives of the study were (1) to assess the proportion of cervical smears that show abnormal cytology results, and (2) to compare data about age, sexual history, contraceptive methods, number of pregnancies, genital infections, and previous cervical smears in patients with normal smears compared with those with abnormal smears.

Patients and methods

I screened 350 consecutive female patients attending the CVDC, Colombo from 2 July to 30 September

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1986. New patients as well as those attending for follow up were included because time and financial resources available for carrying out the study were limited.

Data about each patient's age, date of last menstruation, age at first coitus, number of sexual partners, number of pregnancies, method of contraception, and previous cervical smears were noted on a structured precoded questionnaire before she was examined. A cervical smear was taken from the squamocolumnar junction with an Ayre's spatula, spread on a glass slide, and fixed immediately in a solution of 95% alcohol. The smears were sent to the pathology laboratory at the Faculty of Medicine of the University of Colombo for staining and examination. (Routine cervical swabs were taken after the cytology smear.) Abnormal cytology results were reported using the terms koilocytic atypia, dyskaryosis (mild, moderate, or severe), carcinoma in situ, or invasive carcinoma. For the purpose of this study, smears reported as showing squamous metaplasia or inflammatory change (due to trichomoniasis, candidiasis, genital herpes, or gonorrhoea) were considered to be normal. Each patient with an abnormal smear had a repeat smear taken four weeks later.

Results

Of cervical smears taken from 362 patients who attended the CVDC during the period under study, 12 (3.3%) had to be excluded because of clerical errors (mislabelling of slides and cytology request forms). Of the remaining 350, 47 (13.4%) had abnormal cytology results (table 1). Mild and moderate dyskaryosis accounted for most (36/47, 76.6%) of the abnormal smears. One patient's smear showed carcinoma in situ changes. None of the 350 women had had a previous cervical smear.

The mean age of the 350 women was 29 (range 15 to 62) years. The mean age of the 47 with abnormal smears was 32 and that of the 303 with normal smears was 29. Table 2 shows the ages of the 47 women with

Table 1 Results of cervical smears from 350 patients

Cytology results	No (%) with given result
Koilocytic atypia	5 (1.4)
Mild dyskaryosis	18 (5.1)
Moderate dyskaryosis	18 (5.1)
Severe dyskaryosis	5 (1.4)
Carcinoma in situ	1 (0.3)
Inflammatory cells	126 (36.0)
Normal cervical cells	177 (50.6)

abnormal cytology results according to the type of abnormality.

The mean (SEM) age at first coitus in the women with normal smears was 19.7 (0.26) compared with 18.7 (0.66) in those with abnormal smears, which was not a significant difference.

Occasional difficulties arose in obtaining accurate estimates of the numbers of sexual partners of women who were engaged in prostitution. In those instances approximate figures were taken. Most women, however, (68% (32/47) of those with abnormal smears and 65% (198/303) of those with normal smears), had had only one sexual partner. I grouped the women according to the numbers of their sexual partners (1, 2, 3-100, 101-500, 501-1000, or more than 1001) to compare those with normal smears and those with abnormal smears, but no significant difference could be found.

Of the 350 women in the study, 100 voluntarily stated that they were engaged in prostitution. Of these, 87 had normal and 13 abnormal smears. Ten of the prostitutes were also addicted to heroin.

Table 3 shows the smear statuses of patients according to their numbers of pregnancies. Women who had had five or more pregnancies had a significantly ($p < 0.01$) higher proportion (27.6%, 16/58) of abnormal smears than did those who had had four or fewer pregnancies (10.6%, 31/292).

Surgical sterilisation (by tubal ligation) of women was the most common method of contraception found in the 350 women. The youngest patient with tubal ligation was aged 19 and engaged in prostitution. In

Table 2 Ages of 47 patients with abnormal cytology results according to type of abnormality

Age (years)	Type of abnormality				Total
	Koilocytic atypia	Mild dyskaryosis	Moderate dyskaryosis	Severe dyskaryosis	
15-19	1	0	1	0	2
20-24	1	4	0	0	5
25-29	3	5	4	2	14
30-34	0	4	5	2	11
35 and over	0	5	8	2*	15
Total	5	18	18	6	47

*Includes one patient with carcinoma in situ changes.

Table 3 Smear statuses of 350 patients according to numbers of pregnancies

No of pregnancies	No	Normal smears	Abnormal smears
4 or fewer	292	261 (89.4)	31 (10.6)
5 or more	58	42 (72.4)	16 (27.6)

*Student's *t* test, *t* = 2.76; 2 df; *p* < 0.01.

fact, 72% of the prostitutes were permanently sterilised. Table 4 shows the smear status of each of the 350 patients according to her method of contraception. Women whose sexual partners had had a vasectomy had a higher proportion of abnormal (8.5%, 4/47) than normal (2.3%, 7/303) smears.

Table 5 compares women with normal and those with abnormal smears according to their diagnoses. The incidence of genital herpes and genital wart virus (human papillomavirus (HPV) infection did not differ appreciably between patients with normal smears and those with abnormal smears. Patients who had koilocytic atypia did not have any visible genital warts. Of patients with trichomoniasis, however, 11.3% more had abnormal than normal smears compared with 9.2% more normal than abnormal smears in

Table 4 Smear statuses of 350 patients according to their methods of contraception

Contraceptive method	No (%) with:	
	Normal smears (<i>n</i> = 303)	Abnormal smears (<i>n</i> = 47)
Natural	8 (2.6)	0
Oral contraception	12 (4.0)	3 (6.4)
Intrauterine device	7 (2.3)	0
Medroxyprogesterone acetate	11 (3.6)	3 (6.4)
Condom	12 (4.0)	1 (2.1)
Tubal ligation	87 (28.7)	16 (34.0)
Vasectomy of partner	7 (2.3)	4 (8.5)
None	135 (44.6)	15 (31.9)
Pregnant	24 (7.9)	5 (10.6)

Table 5 Smear statuses of 350 patients according to the infection diagnosed

Infection diagnosed	No (%) with:	
	Normal smears (<i>n</i> = 303)	Abnormal smears (<i>n</i> = 47)
Genital warts	14 (4.6)	2 (4.3)
Genital herpes	15 (5.00)	2 (4.3)
Syphilis	22 (7.3)	3 (6.4)
Gonorrhoea	30 (9.9)	5 (10.6)
NSGI	82 (27.1)	14 (29.8)
Candidiasis	28 (9.2)	2 (4.3)
Trichomoniasis	43 (14.2)	12 (25.5)
Scabies	9 (3.0)	2 (4.3)
No infection	60 (19.8)	5 (10.6)

NSGI = non-specific genital infection.

*Student's *t* test, *t* = 2.177; 2 df; *p* < 0.01 (difference between normal and abnormal smears in patients with trichomoniasis and in those with no infection).

patients with no infection, a significant (*p* < 0.01) difference. The infection most commonly diagnosed was non-specific genital infection.

Discussion

Primary prevention is the ideal strategy to control cervical cancer. As it has easily recognisable early stages (pre-invasive disease stages), cervical cancer should theoretically be possible to control by exfoliative cervical cytology, a simple, sensitive, inexpensive and a non-invasive method, which makes detecting preinvasive disease relatively easy.

Cervical cancer is still difficult to control, however, as women at high risk of contracting it are not usually amenable to being screened. Women attending STD clinics belong to the high risk category, and screening this group of the population should be effective in terms of numbers detected and cost. In this study 13.4% of smears were abnormal, which confirms that patients attending STD clinics are at high risk of developing cervical neoplasia. This figure does not represent the true picture, however, as fewer than one third of people with STD seek treatment at STD clinics in Sri Lanka.¹⁵ Most seek treatment privately, and the exact numbers of private patients are not known. The figure of 13.4%, however, reflects a trend, which can be used in identifying the magnitude of the problem.

In this study, of the 303 normal smears, 126 were reported as showing inflammatory change (table 1). Toon *et al* recommended that patients with inflammatory changes should be investigated with care and be paid the same amount of attention as those with dyskaryotic smears.¹⁶ They need to be tested for specific diseases, such as trichomoniasis, candidiasis, gonorrhoea, and HSV infection, and their smears should be repeated at regular intervals because evidence shows that up to one fifth of patients with recurrent inflammatory smears may have underlying cervical intraepithelial neoplasia. More than a third of the patients in this study had inflammatory smears, which is another indication to introduce routine cytology screening in STD clinics.

Relatively few reports about cervical cytology screening in STD clinics have been published.¹⁷⁻²¹ In a study from New Zealand, the incidence of abnormal smears was found to be 14.6%.²² The incidence of dysplasia and carcinoma in situ in that study was 6.6% (33/500). Briggs *et al* of Seattle, United States of America, also reported an incidence of 11.4% for dysplasia and carcinoma.²³

The high proportion of cervical dyskaryosis in patients attending STD clinics was consistent with the view that squamous cell carcinoma of the cervix is an STD related to first coitus in early life, promiscuity, and prostitution. In this study, the mean age at first

coitus in those with abnormal smears was 18.7 years, which was higher than the corresponding ages in the New Zealand²² and American²³ studies. That may be due to the sociocultural background in Sri Lanka, where arranged marriages are still prevalent and a Sri Lankan woman's first experience of coitus is usually within marriage. Her western counterpart is free from such cultural ties and tends to experience sex before marriage and at an earlier age.

A previous study has shown that prostitutes are at high risk of developing cervical carcinoma and therefore need to be screened regularly.²⁴ Of the 100 prostitutes in this study, 10 were addicted to heroin. Without heroin they could not carry on with their profession, and without work they could not purchase heroin, thus creating a vicious circle from which there was no escape. The CVDC in Colombo receives many referrals from magistrates to investigate prostitutes and vagrants, who account for about 23% of the new patients attending the CVDC's clinic for women each year. This is yet another factor in favour of introducing cervical cytology screening to the STD clinics in Sri Lanka.

Patients who had had five or more pregnancies had a significantly higher proportion of abnormal smears than those who had had four or fewer pregnancies. This finding confirms those of a previous epidemiological study,¹¹ which showed that the prevalence of cervical cancer was found to increase steadily with increasing numbers of pregnancies.

Although oral contraceptives have been shown to have certain effects on the development of cervical carcinoma,⁶ the present study did not show any correlation. Few women, however (less than 5%) in the study group used oral contraceptives. The most commonly practiced method of contraception was tubal ligation, possibly to a large extent because the government of Sri Lanka offers a financial incentive to those undergoing voluntary surgical sterilisation. Another factor to be considered is that the study group contained a high percentage of prostitutes, who resort to a permanent method more often for obvious reasons. A higher percentage (8.5%) of abnormal than normal (2.3%) smears was found in women whose sexual partners had had a vasectomy. The men who were permanently sterilised may have been more promiscuous, which would have rendered their female sexual partners vulnerable to infection with sexually transmitted oncogenic agents. That is a subject that needs further investigation, as vasectomy is as popular as tubal ligation as a contraceptive method in Sri Lanka.

Many reports support the view that HPV and, to a lesser extent, herpes simplex virus play an important part in the aetiology of cervical neoplasia.^{2-5 25-27} Surprisingly though, no significant difference could be

found between patients with abnormal smears and those with normal smears in women with genital herpes or genital wart virus infections in this study. Genital warts are not often seen in women with STD in Sri Lanka. During 1986 only 2% of new female patients attending the CVDC had genital warts. HPV can, however, infect the cervix without condylomata being present macroscopically.^{28 29} In this study, none of the five women who showed koilocytic atypia in their cervical smears had visible genital warts. Perhaps HPV infection may present in this way in women in this country. It is unfortunate that colposcopy is not available in our STD or gynaecology clinics, as colposcopically directed tissue sampling of atypical areas of the uterine cervix would undoubtedly give valuable information in addition to the cervical smear results.

At the CVDC in Colombo, vaginal trichomoniasis was the second most common STD diagnosed in female patients. It was very common in the prostitutes, either alone or in combination with gonorrhoea. Most episodes of trichomoniasis are due to repeat infections, as it is almost impossible to get the sexual partners of infected patients to attend for investigation and concurrent treatment. Trichomonads have been suggested as a possible carcinogen associated with coitus,³⁰ and in this study significantly ($p < 0.01$) more abnormal than normal smears were seen in patients with this infection than in those with no genital infection.

The high yield of cervical smear abnormalities in patients attending an STD clinic as shown by the findings in this study indicates an urgent need for cervical cytology screening in these clinics in Sri Lanka. As the country is a developing one, with limited financial resources, a screening service designed to fit in with existing medical facilities such as STD, antenatal, and family planning clinics would be more cost effective than developing a separate vertical screening programme.

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