

# SCREENING FOR CERVICAL CANCERS IN PROSTITUTES

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## SYNOPSIS

Screening for cervical carcinomas has been done annually since 1979 for prostitutes attending the out-patient clinic of Middle Road Hospital, Singapore for STD screening. A retrospective analysis of the results of cytologic screening in prostitutes for the years 1981—1984 was conducted in an attempt to determine the importance of the number of sexual partners as an indicator of high risk for cervical carcinoma. A total of 1282 smears were evaluated during this period, out of which 7 smears (0.5%) were cytologically suspicious for carcinoma-in-situ or invasive carcinoma. Of these 7 cases, 5 had histologic confirmation of cervical carcinoma. 3 had carcinoma-in-situ, 2 had invasive squamous carcinoma and 2 were lost to follow-up.

The results of cytologic screening and further investigation in these prostitutes were compared with those of the Family Planning Clinic population which represented a "normal" sexually active population. The incidence of abnormal cervical cytologies (Papanicolaou classes III—V) for 1981—1984 was 0.5% in the prostitute population and 0.2% in the Family Planning Clinic population ( $X^2 = 5.39$ ;  $p < 0.05$ ). Similarly, the cancer pick-up rate for the same period was 3.9—5.46/1000 smears in the prostitute population compared to 0.96/1000 in the Family Planning Clinic population ( $X^2 = 8.13$ ;  $p < 0.01$ ).

Our results suggest that multiple sexual consorts is an important epidemiologic risk factor for cervical carcinoma, and that cervical carcinoma behaves like a sexually transmitted disease.

## INTRODUCTION

The concept of cervical carcinoma as a sexually transmitted disease (STD) has long been appreciated. A higher incidence of cervical carcinoma in prostitutes (1-3) compared to a very low incidence in nuns (4,5) suggests that a history of multiple sexual consorts increases the risk for cervical carcinoma whereas celibacy protects against it.

Since 1976, prostitutes in Singapore have been invited to participate in a fortnightly screening programme for gonorrhoea and annual Papanicolaou smears were also offered from 1979. These prostitutes represent a group of extremely promiscuous women who have frequent sexual intercourse with multiple partners. In contrast, women attending the Family Planning Clinics (FPCs) can be considered representative of the "normal" sexually active female population. We felt that a comparison of the results of cytologic screening in these two populations, would provide some insight into the importance of the number of sexual consorts as a risk factor for cervical carcinoma. A retrospective analysis of the cervical cytologies of prostitutes between 1981 and 1984 was, therefore conducted.

## MATERIALS AND METHOD

A retrospective analysis of the results of cervical smears of female prostitutes between 1981 and 1984 was performed. Cytological material in these cases were obtained with an Ayre-type spatula by gently applying it to the external cervical os and rotating through 360°, smeared on a glass slide and fixed in 95% ethanol. The slides were then transported to a central cytology laboratory where they were stained with Papanicolaou's method and read by trained technicians.

Smears were graded according to Papanicolaou's classification, ie:-

- Class I = Absence of atypical or abnormal cells.
- Class II = Atypical cytology but no evidence of malignancy.
- Class III = Cytology suggestive of, but not conclusive for malignancy.
- Class IV = Cytology strongly suggestive of malignancy.
- Class V = Cytology conclusive of malignancy.

Papanicolaou classes III—V were classed as abnormal in this study. The results of these smears were compared with those obtained in the Gynaecological Clinics of 3 major hospitals and those obtained by the Family Planning Clinics.

## RESULTS

The results of cervical cytological screening in the 3 populations are shown in Table I. For the 1981—1984 period, 7 (or 0.55%) of 1,282 cervical smears from prostitutes were abnormal compared to 195 (or 0.21%) of 94,309 smears from women attending the Family Planning Clinics (FPCs). The difference was statistically significant ( $\chi^2 = 5.39$ ;  $p < 0.05$ ). If smears for 1982 were disregarded because the total numbers were small, then the rate of cervical cytological abnormalities ranged from 0.4—0.7% in prostitutes as opposed to 0.1—0.3% in women attending the FPCs.

Five of the seven prostitutes with abnormal smears have had smears done at least two years previously and were normal. Five prostitutes were also available for further assessment. Three prostitutes had carcinoma in situ and 2 had invasive squamous cell carcinoma. The cancer pick-up rate in prostitutes for the 1981—1984 period, therefore ranged from a known minimum of 3.9/1000 smears to a possible maximum rate of 5.46/1000 smears, had all 7 prostitutes been assessed. However, even the minimum pick-up rate of 3.9/1000 smears is significantly higher than the 0.96/1000 smear pick-up rate in women attending the FPC ( $\chi^2 = 8.13$ ;  $p < 0.01$ ). Again if 1982 results were disregarded, the cancer pick-up rate ranged from 3.5—4.8/1000 smears in prostitutes compared to 0.4—1.9/1000 smears in women attending the FPCs (see Table II).

The clinical, cytological and histological details of the prostitutes with abnormal cervical cytologies are shown in Table III. 5 of 7 prostitutes with abnormal smears underwent further assessment. Of these, 3 were found to have carcinoma-in-situ (CIS) and 2 had invasive squamous cell carcinoma.

The age of starting prostitution, duration of prostitution, parity and infection rate with gonorrhoea in prostitutes with abnormal cytologies were compared with 100 randomly selected prostitutes with normal cervical cytological smears (Table IV). There was no significant difference between these two populations for the parameters mentioned.

TABLE 1: ABNORMAL CERVICAL CYTOLOGIES

	1981	1982	1983	1984	1981—4
Pros.	2/421 (0.5%)	0/52 (0%)	4/577 (0.7%)	1/232 (0.4%)	7/1282† (0.55%)
FPCs* (0.1%)	34/23948 (0.2%)	48/22469 (0.2%)	50/25398 (0.3%)	63/22494 (0.21%)	195/94309†
Gynae.** Clinics	117/24138 (0.5%)	136/25453 (0.5%)	148/20658 (0.7%)	127/18173 (0.7%)	528/88422 (0.60%)

†  $\chi^2 = 5.39$ ;  $p = 0.05$

\* Statistics from the Annual Report of the Singapore Family Planning and Population Board.

\*\* Statistics from the Annual Report of Kadang Kerbau Hospital.

**TABLE II: INCIDENCE OF CERVICAL CARCINOMA (CANCER PICK-UP RATE)\***

	1981	1982	1983	1984	1981—4
Pros.	2/421 (4.8)	0/52 (0)	2/577 (3.5)	1/232 (4.3)	5/1282† (3.9)
FPCs*	9/23948 (0.4) (0.8)	19/22469 (0.8)	21/25398 (1.9)	42/22494 (0.96)	91/94309†
Gynae.** Clinics	79/24138 (3.3)	67/25453 (2.6)	39/20658 (1.9)	65/18173 (3.6)	250/88422 (2.83)

\* Cancer pick-up rate is expressed as the number of histologically proven cases of carcinoma/1000 smears.

†  $X^2 = 8.13$ ;  $p < 0.01$

\*\* Statistics from the Annual Report of the Singapore Family Planning and Population Board.

\*\*\* Statistics from the Annual Report of Kadang Kerbau Hospital.

**TABLE III: CLINICAL DETAILS OF 7 PROSTITUTES WITH ABNORMAL CERVICAL SMEARS**

Case No.	Age	Years of Prostitution	Total Pregnancies	Smear Class	Biopsy Report
1	43	8	2	III	Lost to follow-up
2	32	5	1	III	Carcinoma-in-situ
3	40	4	3	IV	Invasive squamous cell carcinoma
4	29	1	5	III	Lost to follow-up
5	41	7	4	IV	Invasive squamous cell carcinoma
6	37	2	3	III	Carcinoma-in-situ
7	38	8	2	III	Carcinoma-in-situ

**TABLE IV: AGE OF STARTING PROSTITUTION, DURATION OF PROSTITUTION, PARITY AND GONORRHOEAL INFECTION RATE (MEAN VALUES)**

	Prostitutes with abnormal smears	Prostitutes with normal smears
Age of starting Prostitution	32.1 yrs	32.7 yrs
Duration of prostitution	5 yrs	5.98 yrs
No. of pregnancies	2.86	3.13
Gonorrhoeal infection rate*	7.2%	8.9%

\* Gonorrhoeal infection rate (%) =  $\frac{\text{No. of positive cultures for GC}}{\text{Total No. of GC cultures taken}} \times 100$

## DISCUSSION

It is now widely accepted that invasive cervical carcinoma is usually preceded by carcinoma-in-situ which is itself preceded by lower grades of cervical intra-epithelial neoplasia (CIN). The latter term is used as a substitute for preinvasive cervical neoplasia and combines dysplasia with carcinoma-in-situ.

The benefits of cytologic screening have already been proven (6-8). In contrast, uncertainty still exists as to which epidemiological factors were high risk for cervical carcinoma. The difficulty in determining the importance of these factors, individually, stems from the fact that they are closely interrelated and difficult to separate. A random survey of 100 prostitutes attending our clinic in 1984 showed that the mean age of starting prostitution was 32.7 years. The late entry into the profession may be explained by the fact that many did so as a result of personal tragedies such as divorce or separation or death of spouse. One can reasonably assume that before adopting prostitution, their sexual activities, including age of first intercourse were no different to those of the general female population. This population, therefore, allowed us to evaluate the importance of multiple sexual partners as a risk factor for cervical carcinoma.

In this study we also compared the rate of abnormal cervical cytology and carcinoma in prostitutes with women attending the FPCs. We did not specially compare the rates with those in women attending the Gynaecological Clinics since that population was likely to be selected and include referred cases with cytologic smear abnormalities requiring further investigation.

Our results showed that prostitutes were more likely to have abnormal cervical cytologies than the "normal" sexually active women attending the FPCs. The rates of cervical cytological abnormalities were 0.55% and 0.21%, respectively. Similarly, the cancer pick-up rate was also significantly higher in prostitutes (3.9—5.46/1000 smears) compared with 0.96/1000 smears in women attending FPCs. The rates of cervical cytologic abnormalities and carcinoma in prostitutes were very similar to those in women attending the Gynaecological Clinics. However, it is difficult to comment on this since the latter population is highly selected.

Five of the seven prostitutes with abnormal smears have had previous cytologies which were normal. Thus, in these cases, we can be reasonably certain that they had developed the abnormalities whilst actively engaged in prostitution. This hypothesis together with the observation of higher rates of cytologic abnormalities and a higher cancer pick-up suggest that multiple sexual exposures in the course of prostitution, is an important risk factor for the cervical carcinoma. This finding differs from those reported by Sebastian et al (9) in a study of Taiwanese prostitutes in 1978. They found a low yield of abnormal smears and postulated that early coital activity was a more important epidemiological risk factor for the development of cervical carcinoma. Our findings are in

agreement with those of a recent study which suggests that the number of sexual partners, but not the age of onset of intercourse, was correlated with the risk of cervical dysplasia (10).

In the prostitute population studied, we did not observe any correlation between age of starting prostitution, duration of prostitution, parity and gonorrhoeal infection rate. It is likely that there are other factors like race and genetic make-up which predispose certain but not all individuals to develop cervical carcinoma even when exposed to the same epidemiological risk factors. The large numbers of sexual consorts increases the risk of acquiring a sexually transmissible agent which may also have an oncogenic potential. The human papilloma virus and the herpes simplex virus are two agents which may play a role in cervical carcinogenesis (11,12). Thus, cervical carcinoma behaves like a sexually transmitted disease and can be "contracted" through sexual intercourse. The risk of this occurring increases with the number of sexual partners.

The higher incidence of cervical cytological abnormalities and carcinoma in prostitutes emphasize the need for continuing annual cervical smears in this population.

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