

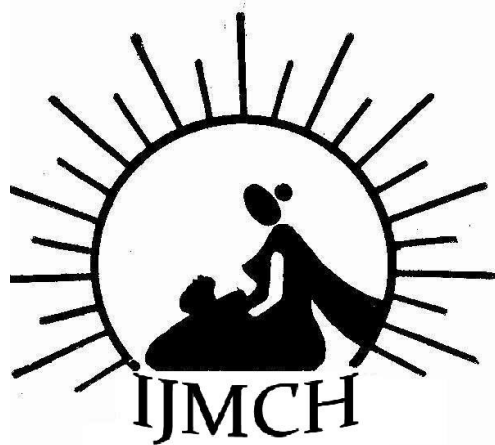
A Case-Control Study Of Risk Factors For Cervical Cancer In Women Attending Two Large Tertiary Care Hospitals In Mumbai.

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1. Is there an association of cervical cancer with socio-demographic factors, obstetrical, gynaecological factors, genital hygiene practices, addiction to tobacco, sexual factors
2. If so, what is the strength of association?

A Case-Control Study Of Risk Factors For Cervical Cancer In Women Attending Two Large Tertiary Care Hospitals In Mumbai.

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Abstract

Research questions:

3. Is there an association of cervical cancer with socio-demographic factors, obstetrical, gynaecological factors, genital hygiene practices, addiction to tobacco, sexual factors
4. If so, what is the strength of association?

Settings: Two tertiary care hospitals, Mumbai.

Study Design: Case-control.

Participants: Cases were selected from the Gynaecology Oncology General Outpatient Department of Tata Memorial Centre, Mumbai. Controls were selected from patients attending the Gynaecology Outpatient Department of Lokmanya Tilak Municipal General Hospital, Sion, Mumbai.

Methodology: Exposure information was obtained by interview method.

Results: On univariate analysis, exposure variables such as low economic status, early age at marriage, multiparity, poor genital hygiene, hygiene related to coitus were found to be risk factors. Previous Pap smear screening and use of condom proved to be protective factors.

Keywords: *Cervical cancer, Cases, Controls.*

Introduction

Cancer cervix is the commonest cancer in developing countries. 80% of cervical cancer cases are incurable at the time of detection as they present in advanced stages. ⁽¹⁾ In India cervical cancer constitutes 26.9% of all female cancers. ⁽²⁾ Yeole et al (1989) studied the cervical cancer trends .The data showed decline in incidence rates restricted to the two decades of 1960's and 1970's. The incidence has plateaued and has not declined in 1980's and 1990's. ⁽³⁾ The rates are still high, particularly in the rural areas. ⁽⁴⁾ Western studies have emphasized the importance of sexual factors and smoking. Culture and sexual values of Indian women differ from those of western women. Therefore the topic of cervical cancer was undertaken in order to ascertain importance of various exposure factors.

Materials and methods

Cases (women with confirmed histopathological diagnosis of cervical carcinoma) were selected from the Gynaecology Oncology General OPD of Tata Memorial Centre, Mumbai. Controls (women with negative Papanicolaou smear test) were selected from patients attending the Gynaecology OPD of Lokmanya Tilak Municipal General Hospital , Sion , Mumbai . Data collection was done from March 2004 to May 2005.Exposure information on risk factors was obtained by face-to-face interview method . The respondents were assured regarding the confidentiality of the interview. Information was obtained regarding socio-demographic factors, obstetric history, gynaecologic history, genital hygiene practices, history of tobacco addiction, prior pap smear examination, history of multiple sexual partners , circumcision status of the husband, history of penile cancer in husband and history of cervical cancer in husband's previous wives. Grading was done for genital hygiene. ⁽⁵⁾ Each exposure variable was operationally defined. From ethical point of view, controls were explained about the concept of cytological screening at the end of the interview.

Sample size was calculated using the formula. ⁽⁶⁾

$$n = [Z\alpha \sqrt{2 \times P^{\text{bar}} \times q^{\text{bar}} + Z\beta \sqrt{p_1q_1 + p_0q_0}}]^2 / [(p_1 - p_0)^2]$$

Where $\alpha = .05$ $\beta = .10$. Optimum sample size of 200 (per group) was selected for study. Data was analysed using SPSS (11.5 version) and Epi info (3.2.2 version) packages.

Observations

Group matching was done for age.

Table I: Comparison of cases and controls according to age

Age (years)	Cases		Controls	
	N	(%)	N	(%)
<40	24	(12.0)	30	(15.0)
40-49	66	(33.0)	77	(38.5)
50-59	71	(35.5)	60	(30.0)
≥ 60	39	(19.5)	33	(16.5)
Total	200	(100.0)	200	(100.0)

% calculated column wise Chi square value=2.94 df: 3 p value=0.40

Table II: Distribution of cases and controls according to their demographic characteristics.

Variables	Cases N	%	Controls N	%
Education				
Illiterate	113	56.5	109	54.4
Primary	21	10.50	26	13.0
Secondary	44	22.0	52	26.0
SSC	16	8.0	8	4.0
HSC & above	6	3.0	5	2.5
Total	200	100.0	200	100.0
	Chi-square value=4.03 df:4 P value=0.40			
Marital status				
Married	146	73.0	145	72.5
Widow	52	26.0	52	26.0
Separated	2	1.5	3	1.5
Total	200	100.0	200	100.0
	Chi-square value=0.01 df:1 P value=0.91			
Economic status				
I	6	3.5	8	4.6
II	15	8.8	23	13.3
III	30	17.5	50	28.9
IV	41	24.0	66	38.2
V	79	46.2	26	15.0
Total	171	100.0	173	100.0
	Chi-square value for linear trend=20.319 df:3 p value=0.00 29 cases and 27 controls did not know monthly income so excluded from analysis.			
Religion				
Hindu	181	90.5	162	81.0
Muslim	15	7.5	32	16.0
Christian	4	2.0	6	3.0
Total	200	100.0	200	100.0
	Values in the last two rows clubbed. Chi-square value=7.39 df:1 p value=0.00			

181 (90.5%) cases had squamous cell carcinoma and 19 (9.5%) cases had adenocarcinoma.

Table III: Exposure Variables associated with Cervical Cancer: Univariate Analysis

Exposure variables	levels	Cases		Controls		OR	95% CI	S/ NS
		N	%	N	%			
Age at marriage	<18yrs	134	67	113	56.5	1.56	1.02-2.40	S
	≥18yrs	66	33	87	43.5			
Age at first pregnancy	<18yrs	75	38.3	59	29.8	1.46	0.94-2.27	NS
	≥18yrs	121	61.7	139	70.2			
Age at first coitus	<18yrs	123	61.5	103	51.5	1.50	0.99-2.28	NS
	≥18yrs	77	38.5	97	48.5			
*Parity	>3	134	68.37	111	56.06	1.69	1.10-2.61	S
	≤3	62	31.63	87	43.94			
Clean genitals	No	22	11.0	6	3.0	4.00	1.52-12.29	S
	Yes	178	89.0	194	97.0			
Washing genitals after coitus	No	75	37.5	30	15.0	3.40	2.05-5.67	S
	Yes	125	62.5	170	85.0			
PastH/O VD	Yes	52	26.0	49	24.5	1.08	0.67-1.74	NS
	No	148	74.0	151	75.5			
Ever use of OC pills	Yes	11	5.5	8	4.0	1.40	0.51-3.90	NS
	No	189	94.5	192	96.0			
Ever use of condoms	Yes	16	8.0	6	4.0	0.36	0.11-0.99	S
	No	184	92.0	194	97.0			
Previous Pap smear test	Yes	10	5.0	23	11.5	0.41	0.17-0.92	S
	No	190	95.0	177	88.5			
Tobacco user	Never	117	58.5	109	54.5	0.67	0.43-1.06	NS
	current	57	28.5	79	39.5			
Lifetime no of sex partners	Yes	2	1.0	4	2.0	0.49	0.04-3.50	NS
	no	198	99.0	196	98.0			
Circumcision status of husband	Yes	15	7.5	32	16.0	0.43	0.21-0.85	S
	No	185	92.0	168	84.0			

* 4 cases and 2 controls were nulligravidae excluded from analysis.

VD :Vaginal discharge S: Significant NS: Nonsignificant

On univariate analysis exposure variables such as low economic status, early age at marriage (<18yrs), multiparty (≥3), poor genital hygiene, hygiene related to coitus were found to be risk factors. Previous Pap smear screening and use of condom proved to be protective factors. (Table III).

Discussion

As can be observed from table III the odds of age at marriage being <18 years among the cases was 1.56 times more as compared to that among the controls with 95% CI 1.02 – 2.40. A study carried out by Capalash et al (1999) in North Indian population found that women marrying below 18 years of age were at 5.88 times higher risk than those marrying at 18 years or above.⁽⁷⁾ In the present study the odds of age at first pregnancy was 1.46 times more in cases as compared to controls with 95% CI of 0.94-2.27. With respect to age at first coitus the result differs from that of Sierra-Torres et al (2003). It observed that the initiation of sexual activity before the age of 18 years was a significant risk factor. (OR: 4.7, 95% CI: 1.62-13.7).⁽⁸⁾ The odds of parity ≥ 3 among cases was 1.69 times more as compared to that among the controls. The study findings were consistent with that of Gawande et al (1998) which found that multiparity (≥ 3) was significantly associated with cervical cancer. (OR: 2.24 with 95% CI 1.63-3.61).⁽⁹⁾ The odds ratio was high for grade IV of genital hygiene as compared to that of other grades (OR: 4.26). A Study conducted by Col. P.K. Dutta et al (1990) found that the chances of developing cancer cervix among women with poor genital hygiene condition (Grade III and lower) was 2.5 times more as compared to those with better standard (Grade II and above) ($p < 0.05$).⁽⁵⁾ Past history of vaginal discharge was not found significant. This finding differs from that of Shashi Sharma et al (2004) which found that estimated relative risk for women with past history of vaginal discharge was 2.5 with 95% CI of (1.0-9.1).⁽¹⁰⁾ Ever-users of oral contraceptive pills were very few. Study findings were similar to Wang PD et al (1996) conducted in Taiwan where a protective effect of condom was observed (OR: 0.38).⁽¹¹⁾ Condom acting as physical barrier may stop the transmission of the sexually transmissible agents reducing the cervical exposure to infective agents. Very few women had undergone Pap smear screening. This reflects a lack of awareness about screening. (OR: 0.41 with 95% CI 0.17-0.92). Herrero R et al (1990) found that the relative risk associated with no prior screening was approximately 3.⁽¹²⁾ The odds ratios for categories of current and ex users of tobacco were not significant. Sasson et al (1983) demonstrated the cotinine levels found in cervical mucus were similar to those found in serum.⁽¹³⁾ Study findings as per lifetime number of sex partners differ from that of Torres Sierra et al (2003) which found significant relationship between having >2 lifetime sex partners and cervical cancer . (OR:4.7, 95% CI: 1.7-13.1).⁽⁸⁾ Only a few proportion of the husbands of the study participants were circumcised. None of the respondent's husbands had history of penile cancer.

Conclusion

The risk factors for cervical cancer viz. age at marriage, economic class, multiparity, genital hygiene are modifiable. Factors like use of condom, Pap smear screening proved to be protective. Strategies to control cervical cancer need to be taken up. Women should be made aware about signs, symptoms of cervical cancer and that it is curable if detected in early stages. Health education strategies emphasizing 1) the role of genital hygiene 2) use of condom 3) concept of cytological screening and motivation for same need to be taken up. Multiparity proved to be a risk factor. This reflects the need to strengthen the existing family planning services. There is a need for a policy for including cervical cancer screening program on a regular basis.

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