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Original Article

A study of association between cervical cytology and period of co-habitation with husbands in the wives of serving soldiers

Parikshit Sanyal^{a,*}, R. Kunwar^b, P.J. Borpujari^c,
Sanghita Barui^d

^a Graded Specialist (Pathology), 165 Military Hospital, C/o 99 APO, India

^b Col Health, HQ 3 Corps, C/o 99 APO, India

^c Classified Specialist (Pathology), 162 Military Hospital, C/o 99 APO, India

^d Medical Officer, 4003 Field Hospital, C/o 99 APO, India

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ABSTRACT

Background: The wives of serving soldiers constitute a special demographic cohort, as they spend variable amount of time in co-habitation with their husbands. The present study aims to find if any independent association, adjusted for age, exists between the time spent living together with the husband and findings on cervical smear.

Methods: Over a period of one year, cervical smears were taken from subjects at two different hospitals. The approximate length of co-habitation with husbands in the last 10 years was elicited through a questionnaire.

Results: Among 262 subjects, majority of smears showed normal findings (82.06%). 17.93% of the smears displayed abnormality, the maximum proportion of cases with abnormal findings were seen in the group who have spent 61–90 months, in the last ten years. Age adjusted chi square statistics failed to show statistically significant association between period of co-habitation and abnormal Pap smear. Odds' ratio (OR) for each age stratum varied from each other and was also different from the overall (crude) OR, suggesting that age is an effect modifier. Variation in epithelial cytology did not appear to be an effect of duration of cohabitation but was because of the increasing age.

Conclusions: Cervical cytology does not show association with length of cohabitation with husbands in this study. However, age is seen to be an effect modifier.

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* Corresponding author.

E-mail address: cmacus@gmail.com (P. Sanyal).

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Introduction

The cervical smear is a commonly used screening test for early detection of cervical cancer. In this era of health awareness, women are increasingly undergoing cervical smear examination, and the trend has caught on in the Armed Forces too. It has been proven by several studies that cervical cancer is a phase in the natural history of genital Human Papillomavirus (HPV) infection,¹ and the duration of sexually active life correlates directly to risk of cervical cancer.² In Indian population, the duration of sexual activity is usually taken to be the years since marriage. However, the Armed Forces differ significantly from the civil population in one important aspect: the wives of serving soldiers do not stay continuously with their husbands after marriage. This is because soldiers are often deployed in non family station, causing a hiatus of months to years in the conjugal life of husband and wife. The present study ventures to find whether the age matched risk of cervical cancer in wives of serving soldiers correlates with their actual period of co-habitation with husband.

There is no available study in India which addresses the special cohort of military wives, who have spent varying amounts of time in co-habitation with their husband post-marriage. The present study was carried out to find association, if any, between period of co-habitation with husband, and cervical smear cytology, in wives of serving soldiers.

Material and methods

The study was carried out as a part of Cervical Cancer Screening Program in the Army Wives of a large geographical area. The approval of Institutional Ethical Committee was obtained. All the participants were explained about the purpose and method of the program, and were given the option to opt out if not willing. A cross sectional analytical study design was chosen. All the families of serving personnel, undergoing screening at two different hospitals, were included in the study. However, known cases of cervical cancer undergoing follow up smear examination after treatment were excluded. Conventional cervical smears taken between 01 Jan 2016 and 31 Dec 2016 were studied. The smears examined after Papanicolaou staining; reporting was done according to the 2001 Bethesda system.³ Reports were categorized in two strata:

1. All the smears which were Negative for intraepithelial lesion or malignancy (NILM), with or without any reactive changes were placed in the group 'Normal'.
2. Atypical squamous cells (ASC), low grade/high grade intraepithelial lesions (LSIL/HSIL) and Atypical glandular cells (AGC) were placed in the group 'Abnormal'.

In addition, history from the cases were collected through a questionnaire regarding demographic date of the subject and approximate stay with husband in the last 10 years. The results were stratified as: ≤30 months, 31–60 months, 61–90 months and 91–120 months. The resultant data was statistically analyzed with OpenEpi statistical software.

Results

Of a total 262 cervical smears, more than half (135) belonged to women less than 35 years of age, and a further 110 smears to women between 36 and 45 years of age (Table 1). All inclusive, 17.93% cases turned out to have an abnormal smear cytology. Proportionately, abnormal results were commonest in the above 45 age group (29%).

When analysing for the association between length of co-habitation with husband in the last 10 years (Table 2), abnormal results were most frequently met in the group who have stayed together for 61–90 months (25%). However, majority of these patients were also in the age group 35 and above. The result is explained by age being a known confounding factor. As the patients increase in age, there is also a corresponding, but not proportional, increase in their period of co-habitation with husband.

Table 3 shows normal and abnormal results, as per age group, sorted by period of cohabitation either more or less than 5 years. The Odds ratio (OR) (all ages included) for development of abnormal cervical cytology after more than 5 years of cohabitation is 1.63, with a confidence limit of 0.78–3.64. However, the OR in different age groups differ significantly: in the age bracket of under 35 years of age, the OR is 1.94 with 0.61 and 7.37 as upper and lower confidence limits, which includes the null value and hence is not statistically significant. Different ORs are obtained for the age group 36–45 (0.91) and above 45 years (1.92); however the confidence interval of the OR is always found to be inclusive of the null value.

All patients with atypical results were advised cervical biopsy. Biopsy was done in 16 cases who were available for follow up within the study period; two (2) turned out to have Cervical Intraepithelial Neoplasia grade 2 (CIN2); eight (08) biopsies showed only koilocytic changes in the epithelium;

Table 1 – Distribution of cases by age and categories of cervical smear.

Age range (years)	Normal (%)	Abnormal (%)	Total
≤35	119 (88.14)	16 (11.85)	135
36–45	84 (76.36)	26 (23.63)	110
>45	12 (70.58)	5 (29.41)	17
Total	215 (82.06)	47 (17.93)	262

Table 2 – Distribution of cases by cervical smear status and length of stay with husband.

Range of stay with husband in last 10 years (in months)	Abnormal	Normal	Total
≤30	2	26	28
31–60	8	40	48
61–90	17	51	68
91–120	20	98	118
Total	47	215	262

Chi square 4.65, $p = 0.19$.

Table 3 – Distribution of cases by age, cervical smear status and duration of cohabitation with husband in last 10 years.

Duration of cohabitation	Abnormal	Normal	Total	Chi square (df)	p value (Mid p exact)	Stratum specific odds' ratio (95% CI)
Stratum 1 (age ≤ 35 years)						
>5 years	12	72	84	1.261 (df = 1)	0.1388	1.949 (0.6119, 7.373)
≤5 years	4	47	51			
Total	16	119	135			
Stratum 2 (age 36–45 years)						
>5 years	21	69	90	0.025 (df = 1)	0.4238	0.9138 (0.3024, 3.102)
≤5 years	5	15	20			
Total	26	84	110			
Stratum 3 (>45 years)						
>5 years	4	8	12	0.302 (df = 1)	0.3280	1.925 (0.1652, 61.16)
≤5 years	1	4	5			
Total	5	12	17			
All ages						
>5 years	37	149	186	1.662 (df = 1)	0.1001	1.636 (0.7823, 3.643)
≤5 years	10	66	76			
Total	47	215	262			

rest of the biopsies showed only chronic cervicitis. Simple endometrial hyperplasia was seen in four (4) cases reported to have atypical glandular cells on cytology.

Discussion

The results of screening cervical smears vary with the sample at hand. In one of the largest studies⁴ of 5590 cases, 261 (5%) were identified as abnormal. In India, a study⁵ of 560 Pap smears, 6.92% cases were reported to have epithelial cell abnormality. Another study from Gujrat⁶ reported that out of 995 patients studied 5.5% patients showed atypical lesions, predominantly in the 30–50 year of age group. In the present study 17.93% were found to have an atypical result in cervical smear; this is higher than the average reported in literature (5%). The increased prevalence of atypical results might be attributed to the relatively small sample size of the study as well as the relative infrequency of the under 25 age group. The maximum prevalence of atypical smears were seen in the 36–45 age group, which is in keeping with other studies in India.

The association between age at first sexual activity and cervical smear findings has been shown in many studies^{7–10} including developing countries with a similar demographics as India.¹¹ However, it is difficult to elicit a proper sexual history, thus marriage has been accepted as a surrogate marker for commencement of co-habitation, like other studies in developing countries.¹² Army wives provide a special group where the duration of marriage is not the same as the period of cohabitation. The present study makes a novel effort to compare the cervical cytology with the actual period of cohabitation, rather than duration of marriage. Whether the higher prevalence of abnormal results found in our study was a result of intermittent cohabitation needs to be verified by a larger study.

Age is a known confounding factor and hence a stratified analysis based on age was carried out. As can be seen from the stratified analysis, OR for each age stratum is not only different

from each other, but also different from the crude OR. This indicates that age is not only a confounding factor but also an effect modifier.

Conclusion

The present study shows that there is no overall association between age adjusted risk of abnormal Pap smear and period of co-habitation with husband, and that age acts as an effect modifier. We feel the need of a larger multicentric study to verify our findings.

Conflicts of interest

The authors have none to declare.

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