Global Journal of Medicine and Public Health
www.gjmedph.org

Reproductive factors in relation to breast cancer: A hospital based case control study in Jammu, India

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ABSTRACT

Research Question: To Study the risk factors of Breast cancer , Setting:All the newly registered cases of Breast cancer in one year from Ist May 2004. Study Design:A Hospital based case control study. Methodology:Data was collected by a face to face interview using the prestructured Questionnaire after taking informed consent. Results: 100 cases of Breast Cancer and 100 controls were analyzed. Mean age of breast cancer cases was 50.20 ± 12.49 years. Income (p >0.39), Educational Status (p>0.35) Age at Marriage (p>0.36) Age at First pregnancy (p>0.32) Total No of live Birth (p>0.09) Duration of Breast Feeding (P>0.07) Showed no statistically significant relationship to the risk of Breast Cancer. Dietary History (p<0.001) Smoking History (p<0.04) Physical Activity (p<0.001) Age at Menarche (p<0.002) History of Breast Feeding (p<0.04) History of Abortion (p<0.003) were shown to be Statistically Significant to the risk of Breast Cancer . Conclusion : The risk factor which are often implicated in the risk of Breast Cancer may not hold true in our settings.

Key Words:Breast Cancer, risk factors, cumulative duration of Breast Feeding.

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Funding: None

Conflict of interest: None

Introduction

In the year 2000, breast cancer counted for 22% of all new cancers in women making it by far most common cancer in females. In high income countries, in the year 2000 the incidence of breast cancer in women was at least twice that of any other cancer in women, cancer of breast was also commonest tumor among women in low income region, with 470,000 new cases per year[1]. Breast cancer causes 376000 deaths in a year worldwide[2]. Out of six population based cancer registries in India, two have reported it as leading cancer site among women and the rest four as the second commonest cancer[3]. In spite of this, statistical data related to risk factors of Breast cancer is limited and available only from few centers. This study was carried out to identify the risk factors of Breast cancer in this part of country.

Material and Methods

All the newly registered cases of Breast cancer in Government Medical College Jammu during one year period from 1st May 2004 were included in the study. For every case of Breast cancer one control was selected from among women admitted in the hospital for non neoplastic or non hormone related diseases and matched for age (taking interval of two years) and residence (urban/rural). Data was collected by a face to face interview using a prestructured pretested questionnaire which was modified and adapted from American Cancer Society[4] after taking informed consent. Some of the elements of the questionnaire were not considered like Ethnicity etc. In place of ethnicity, religion was considered. The study variables included general information, menstrual and reproductive factors, obstetric history, family history and clinical history of breast cancer, diagnostic criteria included microscopic confirmation, evidence obtained at operation or clinical diagnosis. Institutional ethical committee clearance was obtained before starting the study.

The information collected was analyzed using computer software SSPS version 12.0 and Epi – Info version 6.0. Univariate analysis was undertaken to evaluate the relationship of demographic and reproductive factors with breast cancer and results were reported as Crude OR along with 95% confidence interval. Statistical significance of the relationship was ascertained by Chi square test (with yates correction). Multivariate logistic regression was

employed in a stepwise manner to evaluate the independent and joint effect of the factors found significant on univariate analysis. A p value of <0.5 was considered as statistically significant unless specified otherwise. All p values reported are two tailed.

Results

A total of 103 patients of Breast cancer were registered during one year period. 2 Patients could not be contacted and one male patient was excluded from final results. Final analysis was done on 100 cases and 100 controls. Mean age of breast cancer cases was 50.20 +/_ 12.49 years. 77% cases had infiltrating duct carcinoma. Past history of breast lump /pain was present in 22% of cases and 8% of cases gave a family history of breast / ovarian cancer. The proportion of women in different income categories (p>0.39) and in various educational categories (p>0.35) did not differ significantly. Those who took non vegetarian diet (p<0.001) and had sedentary life style (p<0.001) were at statistically highly significant risk of breast cancer. Those attaining menarche after 13 years of age were at lower risk of breast cancer (p<0.002) than those attaining before 13 years of age (Table 1). Age at marriage did not seem to bear any statistically significant relationship to cancer risk (p>0.36). In both cases and controls one fourth of women (25%) became pregnant for the first time after they were 24 years of age. However the proportion in three age categories did not differ significantly (p>0.32).

Table 1 : Univariate analysis of Reproductive factors in relation to breast cancer

Reproductive factor	Cases (%)	Controls (%)	OR (95%CI)	P value
Age at menarche in years				
<13	25(25)	11(11)	1.00(Ref)	
13-14	45(45)	36(36)	0.55(0.22-1.36)	<0.002
15 & above	30(30)	53(53)	0.25(0.25-0.62)	
Age at marriage in years				
<18	34(34.69)	33(33.33)	1.00(Ref)	
18-23	48(48.97)	56(56.56)	0.83(0.45-1.54)	>0.36
24+	16(16.32)	10(10.10)	1.55(0.62-3.91)	
Age at first pregnancy in years*				
<18	15(15.95)	9(9.18)	1.00(Ref)	>0.32
18-23	55(58.51)	65(66.32)	0.51(0.21-1.25)	
24 & above	24(25.53)	24(24.48)	1.00(0.31-3.22)	
*6 cases & 2 controls did not become pregnant				
Total no. of live births				
0	8(8)	2(2)	1.00(Ref)	
1-2	28(28)	24(24)	0.29(0.06-1.5)	>0.09
3+	64(64)	74(74)	0.22(0.04-1.06)	
Cumulative duration of breast feeding (months)				
Never	10(10)	3(3)	1.00(Ref)	>0.07
Upto 12	1(1)	1(1)	0.30(0.01-6.38)	
12-23	8(8)	3(3)	0.80(0.13-5.09)	
>=24	81(81)	93(93)	0.26(0.07-0.98)	
Number of abortions				
0	61(61)	80(80)	1.00(Ref)	
1	20(20)	12(12)	2.19(0.93-5.19)	<0.003
2+	19(19)	8(8)	3.11(1.19-8.37)	
History of menopause				
Yes	58(58)	57(57)	1.00(Ref)	0.8
No	42(42)	43(43)		

Total number of live births showed no relation to the risk of Breast cancer (p>0.09). Regarding breast feeding, those who had breast fed were at lesser risk of breast cancer (p<0.04). Lactation for more than 24 months was observed to lead to reduced risk of breast cancer. However this relationship failed to achieve statistical significance (p>0.07). 80% of women in controls and 61% of women with breast cancer had no history of abortion. Women, who had undergone

abortion once, were at twice the risk but this difference was not statistically significant. Women with multiple abortions were at higher risk (3 fold) compared to those without abortion history ($p<0.003$). Almost equal number of women in both the groups had attained menopause. Those attaining menopause at the age 45 - 49 were at slightly higher risk of breast cancer ($p=0.007$)

Discussion

Majority of the cases (30%) were in the age group of 45 - 54 years with mean age of 50± 12.49. The peak age around 50 years has been reported in some studies[5, 6]. The 16th Annual report of Hospital cancer registry of Tata Memorial Hospital mentions the lowest age as 19 years and maximum as 86 years with an average age of 48 years which is almost in accordance with our study[7]. No significant association was observed for income and literacy with breast cancer. Few authors have given similar finding[6] and some have given opposite results [8, 9, 10]. High fat diet and obesity have been often implicated in the development of Breast cancer. A study conducted by Ingram DM Etal[11] has shown that consuming Red meat, savoury meals and starches caused high risk. A statistically significant difference in dietary habits was found among cases and controls in our study. The findings of smoking history and Breast cancer by Fergus J Couchetal[12] are also found in our study. Frisch etal [13] in their study on college athletes concluded that long term athletic training establishes a life style which somehow lowers the risk of breast cancer and cancer of the reproductive system. Yu-Tang etal [14]have studied the physical activity among 1459 cases and 1556 controls, where they have observed that physical activity has the bearing on cancer breast and the results were significant, which is in accordance with this study.

In this study the comparative data of age of Menarche shows that in term of risk, those attaining after 13 years of age were at lower risk of breast cancer than those attaining before 13 years of age. Our findings are in accordance with their studies which shows that age at menarche was inversely associated with risk of breast cancer [9,14,15,16]

Age at marriage did not seem to bear any statistically significant relationship to risk of cancer in this study. There are contradictory finding in the literature, where some studies show significant relationship with breast cancer and others are not in agreement [6,16,17,18]

No significant results were found when analyzed for age at first pregnancy among cases and controls in our study. In a study of 6705 and 5492 controls, La Vecchia etal [15] concluded that there was no significant interaction between age at menarche, or age at diagnosis, parity and age at first birth. As far as total number of live births in relations to risk of breast cancer is concerned, the findings are similar to those of some authors. [14,15]

A study conducted by Ramon JM etal [19] is in conformity with our findings of duration of lactation and breast cancer, however Zheng T etal [20] and Becher etal [21] in their study state that, risk of breast cancer decreases with increased duration of life time lactation experience. In a case control study, Rao DN etal [6] did not find a significant relationship between abortion and cancer breast. These findings were contradictory to our results.

In the present study those attaining menopause at age 45-49 years were at slightly higher risk of breast cancer. Although it was statistically insignificant. Similar finding have been observed by few m other authors [14, 16]

Multiple logistic regression was performed and the variables found significant on univariate analysis lost significance. The results could possibly be explained on the basis of lesser power of study owing to small sample size, inadequate measurement of certain variables including age at menarche due to recall bias and deliberate misinformation about the number and type of abortions. All these results point to the need of more rigorous study particularly in the light of contradictory results available from various studies regarding risk factors of breast cancer. [22]

Conclusion

The menstrual and reproductive factors associated with breast cancer were not found to be significant in our study. To further evaluate the association and the influence of these factors on the temporal trend of breast cancer incidence, there is a need to conduct a longitudinal population based case control study.

References :-

1. WHO: International Agency for research on cancer, IARC handbooks on cancer prevention, breast cancer screening IARC press, Lyon, 2002; vol.7: 1 – 3
2. WHO (1997): The world health report 1997: Report of the Director WHO. In park K. textbook of Preventive and Social Medicine 18th edi. Jabalpur : Banarsidas Bhanot, 2005:308
3. Govt. of India, (2001-2002): Annual Report, Ministry of Health and Family Welfare, New Delhi: in Park Text book of Preventive and Social Medicine 18th Edition. Jabalpur : Banarsidas Bhanot, 2005:303

4. American Cancer Society, Risk factors for breast cancer questionnaire; Available from : http//www.cancer.org/acs/groups/cid/documents/web content/003090-pdf.pdf
5. Gupta P, Sharma RG, Verma M: Review of breast cancer cases in Jaipur region. J.Indian Medical Association 2002 May;100(5):282-3, 286-7
6. Rao DN, Ganesh B, Desai PB: Role of Reproductive factors in breast cancer in a low risk area: a case control study. British J.Cancer.1994 July;70(1):129-32
7. Dinshaw K.A; Rao D.N; Ganesh B: Hospital based cancer registry Annual Report 1999, Tata Memorial Hospital Mumbai. Division of Epidemiology and Biostatistics Tata Memorial Hospital Mumbai 2003
8. Hella Dano. Otto Anderson, Marianne Ewertz, Jorgen Holm Peterson and Elsebeth Lynge: Socio-economic status and cancer in Denmark. Int.J.Epidemiology 2003;32:218
9. Tavani A, Gallus S, La Vecchia C, Negri E, Montella M, Dal Masol, Franceschi S: Risk factors for breast cancer in women under 40 years. Eur.J.Cancer 1999 Sep; 35 (9):1361-7
10. Yeole BB and KURKURI A.P:An epidemiological assessment of increasing incidence and trends in breast cancer in Mumbai and other sites in India, during the last two decades. Asian Pac.J.Cancer Prev.2003 Jan-Mar;4(1):51-6
11. Ingram D.M, Wattage E, Roberts T: The role of diet in the development of breast cancer, benign epithelial hyperplasia and fibrocystic disease of the breast. British J.Cancer 1991;64:187-191
12. Fegus J.Couch, James R.Crehan, Robert A.Vierkant, Dawn M.Grabrick, Terry M.Therneau.Cigarrette smoking increases risk of breast cancer in high risk breast cancer families. Cancer epidemiology, Biomarkers and prevention. 2000 April:10:327-332
13. Frisch RE, Wyshack G, Albright NL, Albright TE,Schiff T, John KP etal. Lower prevalence of breast cancer and cancers of the reproductive system among former college athletes compared to non athletes. British J.Cancer. 1985;52:885-891
14. Yu-Tang Gao, Xiao-OU SHU, Qi Dai, John D.Potter, Lousie A.Brinton etal: Association of Menstrual and reproductive factors with breast cancer risk: Results from the Shangai breast cancer study. Int.J. cancer 2000:87:295-300.
15. La Vecchia C, Negri E, Bruzzi P, Dardanoni G, Decarli A, Franceschi S etal: The role of age at menarche and at menopause on breast cancer risk: combined evidence from four case-control studies. Ann Oncol. 1992 Sep;3(8):625-9
16. Talamini R, La Vecchia C, Franceschi S, Colombo F, Decarli A, Grattoni etal: Reproductive and hormonal factors and breast cancer in a Northern Italian population. Int.J.Epidemiology. 1985 March; 14(1):70-4
17. Gajalakshmi CK, Shanta V, Risk factors for female breast cancer. A hospital based case-control study in Madras, India. Acta Oncol. 1991;30(5):569-74
18. Jussawalla DJ, Yeole BB, Natekar MV, Histological and Epidemilogical features of breast cancer in different religious groups in greater Bombay. Surg Oncol. 1981:18(3):269-79
19. Ramon JM, Escriba JM, Casas I, Benet J, Iglesias C etal, Age at full term pregnancy lactation and parity and risk of breast cancer: a case control study in span. Eur.J.Epidemiology.1996 Oct;12(5):449-53
20. Zheng T, Holford TR, Mayne ST, Owens P.H.Zhang Y etal: Lactation and breast cancer risk: a case control
21. study in conneticut. British J. Cancer 2001, 84(11):1472-1476
22. Becher Heiko, Schmidt Solke and Chang-Claude Jenny: Reproductive factors and familial predisposition for breast cancer by age 50 years. A case control family study for assessing main effects and possible gene-environmental interaction. Int. J. Epidemiology. 2003; 32:38-48.
23. Mac Mohan B, Lin TM, Lowe CR, Mirra AP, Ravnihar B. Lactation and cancer of the breast. A summary of an international study. Bull world health organ. 1970; 42(2):185-94.