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Original Research Article

Elucidative epidemiological study in female cancer patients

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ABSTRACT

Background: As cases of cancer in women are increasing day to day, it is mandatory to assess risk factors associated with female cancer patients. Our study is designed to elucidate different reproductive factors associated with female cancer patients attending hospital.
Methods: 200 female patients who attended the hospital with cancer are studied by asking questions directly to patients following a standard questionnaire regarding reproductive factors like age at menarche, age at first child birth, age at first sexual intercourse, breastfeeding, age at menopause. It was a Retrospective study analyzed via MS Excel calculations.
Results: In this study it explains that in female cancer cases, mostly patients were seen having early menarche, also women were in menopause stage mostly, and mostly lactating mothers with breast feeding frequency up to 1-2 years are seen. It also explains that in female cancer cases, women mostly had young maternal age at first child, with carcinoma of cervix and carcinoma of breast reported mostly.
Conclusions: In this study we conclude that in females who have early menarche, women with early age at first sexual intercourse, age at first pregnancy, are strongly interrelated and have increased risk of carcinoma. The changes which result in relative risk of cancer associated with menopause are believed to be due to increase in body mass index (BMI), which makes adipose tissue the main site of estrogen production after menopause. Hence, identifying these factors which may be associated with the process of carcinogenesis development in females.

Keywords: Cancer, Lactation, Reproductive factors, Menarche, Menopause

INTRODUCTION

Neoplasm, is defined as "a mass of tissue formed as a result of abnormal, excessive, uncoordinated, autonomous and purposeless proliferation of cells even after cessation of stimulus for growth which caused it.

Malignant tumors are collectively referred as cancers, i.e., "they adhere to any part that they seize in an obstinate manner".[1]

Reproductive profile

Breast cancer is a heterogeneous and complex malignancy, which occupies first place in women in terms of incidence around the world.[2] Reproductive and hormonal factors contribute most of the time for development of breast cancer.[3] Early age at menarche i.e. age at or below 12 years before the first menstrual cycle, nulliparous, late age at first birth, late menopause, prolonged interval between menarche and late first full term pregnancy, repeated

abortions, no/less breastfeeding is major associated risk factors for breast malignancy.[4-9] The changes in relative risk of breast cancer associated with menopause are believed to be due to the cessation of cyclical ovarian hormone production at menopause, the concentration in postmenopausal women increases with body mass index (BMI), largely because adipose tissue becomes the main site of estrogen production after menopause.[5] Breastfeeding is associated with high prolactin levels, decreased estrogen levels production, and carcinogens flushing out during lactation, hence acting as protective factor.[10] Termination of pregnancies during first trimester increases risk of breast cancer.[11] Women who did not have a first full term pregnancy (FFTP) until age 30 may already have cells that undergone early stages of malignant transformation, and pregnancy could have stimulated the growth of these mutated cells.[12] Each birth reduces risk of breast cancer, and the oldest age at first birth was at higher risk than the youngest age at birth.[5,13]

Ovarian cancers can be classified into three large groups: epithelial, germ cell, specialized stromal cell tumours.[14,15] The incessant ovulation suggests that rupture and repair of ovarian surface epithelium, is thought to drive metaplastic changes.[16] Menstrual cycles occurring between ages 25 and 39 are more likely to be ovulatory and pregnancies occurring between these ages have a greater potential to interrupt ovulatory cycles. Thus, later ages at first, last birth provides support to hypothesis regarding incessant ovulation or ovarian inflammation. The gonadotropin hypothesis proposes that excessive gonadotropin secretion, follicle-stimulating hormone (FSH) and luteinizing hormone (LH) in absence of estrogen release, leads to proliferation and malignant transformation of ovarian epithelium.[17] Cervical cancer is the growth of abnormal cells in the lining of the cervix.[18] It has been speculated that increased risk of HPV is because of biological predisposition of the immature cervix during adolescence that may be more susceptible to persistent human papillomavirus (HPV) infections and therefore have a greater risk of cancer development.[19] When this oestrogen-stimulated metaplastic transformation occurs in presence of HPV, the probability of cell transformation increases, resulting in neoplastic changes.[20] Endometrial cancer is the cancer that begins in lining of uterus. Endometrial cancer is detected in early stages, as it frequently produces abnormal vaginal bleeding.[21,22] Infertility associated with progesterone deficiency with exogenous estrogens or anovulatory cycles is associated with a relative risk of endometrial cancer.[23] Hormonal imbalance also occurs due to excess supply of estrogen from exogenous hormone intake or from excessive conversation in adipose tissue of androstenedione to estrone.[22] Parturition may be a protective factor, as the endometrium undergoes mechanical exfoliation of its surface cells, thus potentially eliminating any cells in stages of abnormal growth.[22] Fallopian tube cancer is a rare malignancy of the female genital tract.[23] Most fallopian tube cancers are seen in postmenopausal women, and these are frequently involved secondarily, from other primary sites: mostly ovaries, endometrium, gastrointestinal tract, and breast. A fivefold higher occurrence of primary fallopian tube carcinoma (PFTC) is seen in infertile patients than in fertile patients.[24] Vaginal cancer is usually rare tumor of all gynaecological malignancies, mostly associated with HPV infection.[24] Early age sexual intercourse, more sexual partners, first pregnancy before 17 years age, is associated risk with vaginal cancers.[25] Most vaginal cancers are seen in postmenopausal or elderly women.[26]

Aim

A female body is always exposed to different types of oestrogens i.e. estradiol (seen in childbearing age), estriol (seen in pregnancy), and estrone (produced after menopause) in blood circulation, which when has abnormal levels, is associated with much cancer risk. Each of the above explained reproductive factors, is associated with changes in circulating estrogen and progesterone levels, and is mostly controlled by exogenous hormone treatment, such as oral contraceptive pill (OCP) and hormone replacement therapy (HRT).[27,28]

Hence this study was done in order to identify the above proposed reproductive factors risk in carcinogenesis and mutations in female body.

METHODS

Study was conducted at St. Ann's Cancer and General Hospital, Kazipet, Warangal, Telangana, India. It is a retrospective study, done for 6 months (March 2018-August 2018). It includes Female cancer patients of age above 20 years. Lactating and Pregnant women were not included. Based on interviewed and gathered data, the study population was finalised as 200 sample size and those were divided on the basis of risk factors. Based on reported data from the patients, it was entered in MS excel database and analyzed using basic mathematical calculations. This retrospective study was approved by institutional human ethics committee with approval number–BIPS/IEC/2018/P1.

RESULTS

In Table 1 it explains that in female cancer cases 123 (61.5%) women where in menopause.

In Table 2 it explains that in female cancer case, mostly 126 (63%) patients were seen having menarche at the age 11-13 years.

In Table 3 it explains that in female cancer case mostly women where 190 (97.9%) where seen as lactating mothers.

In Table 4 it explains that in female cancer case mostly women have 154 (77%) more than more than one child.

In Table 5 it explains that in female cancer case 63 (36.4%) have first child at 13-16 years and 69 (39.8%) women had first child at 17-20 years.

Table 1: Menopause status comparison among cases.

Menopause status	Number
Menopause women	123
Non menopause women underwent hysterectomy	47
Non menopause women	30
Total	200

Table 2: Age at menarche comparisons among cases.

Age group of age at menarche (years)	Number
11-13	126
14-16	71
17-19	3
Total	200

Table 3: Comparison of breast feeding among cases.

Breast feeding status	Number
Lactating mother's	190
Non lactating mother's	10
Total	200

Table 4: Comparison of number of births among cases.

Number of births	Number
One child	19
More than one child	154
Nulliparous	27
Total	200

Table 5: Comparison of age at first child birth among cases.

Age at first child birth (years)	Number
13-16	63
17-20	69
21-24	15
25-28	17
29-32	4
33-36	5
37-40	0
Total	173

In Table 6 it explains that in female cancer case 46 (28.04%) women had their last child at age 20-23 years, 43 (26.2%) women had their last child at age 24-27 years.

In Table 7 it explains that in female cancer 62 (34.8%) women had lactation for 1-2 years, 49 (27.52%) women had lactation for 2-3 years.

Table 6: Comparison of age at last child birth among cases.

Age group of age at last child birth (years)	Number
16-19	15
20-23	46
24-27	43
28-31	37
32-36	17
39-43	5
44-50	1
Total	164

Table 7: Breast feeding frequency comparison among cases.

Breast feeding frequency age group (years)	Number
0-1	23
1-2	62
2-3	49
3-4	7
4-5	29
5-6	5
6- 7	3
7-8	0
Total	178

In Table 8 it explains the occurrence of different cancers in studied women in this study, which explains that carcinoma cervix and carcinoma breast is seen mostly in studied sample.

Table 8: Incidence of cancer.

Types of cancers	Number
Carcinoma-cervix	80
Carcinoma-breast	70
Carcinoma-ovary	40
Carcinoma-endometrium	5
Carcinoma-vagina	4
Carcinoma-fallopian tube	1
Total	200

DISCUSSION

In Table 2 it explains that in female cancer cases, mostly patients were seen having menarche at the age 11-13 years. In justification with Ali, younger age at menarche is associated with high risk of cancer.[29] In Table 4 it explains that in female cancer cases, mostly women have more than one child. In justification with Ali, infertility, null parity, age at first child, are found to be associated with increased risk of endometrial cancer.[31] In justification with Ali, women with parity, increased parity are associated with increased risk of cancer.[29] In Table 5 it explains that in female cancer cases, women mostly had first child at 17-

20 years. In justification with Mogren et al young maternal age is a developed risk for cervical cancer, endometrial cancer, ovarian cancer, breast cancer.[30] In justification with Louie et al concluding that early age at first sexual intercourse (AFSI), age at first pregnancy, are strongly interrelated and have increased risk of invasive cervical carcinoma.[31] In Table 6 it explains that in female cancer cases, women had their last child at age 20-23 years. In justification with Ali, women who gave birth relatively late in reproductive lives are associated with increased risk of cancer.[29]

Limitations

This study was completed in 6 months with 200 sample size who were observed with the above explained risk factors. Large sample size retrospective studies may be needed to explain accurate relation between reproductive factors and their risk in female cancer. As large sample size studies will elaborately explain the risk of each individual reproductive factors risk in carcinogenesis development.

CONCLUSION

In this study, we conclude that in females who have menarche at age group 11-13 years are at risk of cancer. Younger age at first child birth is seen with exposure of immature cervix to mutagenic changes leading to carcinogenesis.

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