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Case Study

Institution-based survey on the etiological factors of breast cancer in females

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ABSTRACT

To identify the dominant etiological factors that lead to breast cancer in female patients for prevention & control on the occurrence of this cancer, by performing an analysis on the female breast cancer patients of Kiran, Karachi Institute of Radiotherapy and Nuclear Medicine, Karachi, Pakistan. Survey done on the basis of a questionnaire, filled by the breast cancer patients of Kiran. At present no national level of breast cancer registry program exists in Pakistan and the data available from different sources, necessary for incidence, prevalence, morbidity/mortality, and etiological assessment of breast cancer and its control programs, are from hospital or institutional databases. Karachi Institute of Radiotherapy and Nuclear Medicine (KIRAN) is a comprehensive healthcare facility for diagnosis, treatment and research of all cancers. In females, breast cancer is the most common cancer accounting for 38.2% of all cancers & is occurring at rates almost highest in Asia. In this survey we did an analysis of the most prevalent etiological factors that lead to breast cancer in female patients. The age of the females was between 30-60 years respectively. The different etiological factors of breast cancer & their prevalence have also been discussed.

Keywords: Breast, Cancer, Etiological factors

INTRODUCTION

Breast cancer is a cancer that develops from breast cells. A malignant tumor can spread to other parts of the body. Signs and symptoms of breast cancer may include: A breast lump/ thickening which feels different from the surrounding tissue. Symptoms included bloody discharge from the nipple any change in the size/shape of a breast. Changes of skin over the breast, such as dimpling, inverted nipple, peeling, flaking or scaling of the nipple. It is difficult to say why one person develops the disease while another does not. There are some risk factors can impact on a woman's of developing this cancer [1].

Age - The older a woman gets the higher risk of developing cancer so can say age is a risk factor. Over 80% of all female breast cancers occur among women aged 50+ years (after the menopause).

Genetics - women who have a close relative who has/had breast or ovarian cancer are more likely to develop breast cancer. If two close family members develop the disease, it does not necessarily mean they shared the genes that make them more vulnerable because breast cancer is a relatively common cancer.

Previous history of breast cancer - women who have had breast cancer are more likely to develop the disease again by compared to women who have no history of the cancer.

Having had certain types of breast lumps - women who have had some types of benign (non-cancerous) breast lumps are more likely to develop cancer later on. Examples include atypical ductal hyperplasia or lobular carcinoma in situ.

Estrogen exposure - women who started periods earlier or entered menopause later than usual time have a higher risk of breast cancer. This is because their bodies have been exposed to estrogen for longer and estrogen exposure begins when periods start and drops during the menopause.

Obesity - There are higher levels of estrogen in obese menopausal women, which may be the cause of the higher risk.

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Radiation exposure - undergoing X-rays and CT scans may raise a woman's risk of developing breast cancer slightly.

HRT (hormone replacement therapy) - both forms, combined and estrogen-only **HRT** therapies may increase a woman's risk of developing breast cancer slightly. Combined HRT causes a higher risk [2-5].

Diagnosis: Women are usually diagnosed with breast cancer after a routine breast cancer screening, or after detecting certain signs and symptoms and seeing their doctor about them. diagnostic tests and procedures for breast cancer which are used breast examine in which the physician will check both the patient's breasts, looking out for lumps and other possible abnormalities, such as inverted nipples, nipple discharge, or change in breast shape.

X-ray (mammogram) commonly used for breast cancer screening. If anything unusual is found, the doctor may order a diagnostic mammogram. By the use of breast ultrasound scan may help doctors to decide whether a lump or abnormality is a solid mass or a fluid-filled cyst. Another test is Biopsy - a sample of tissue from an apparent abnormality is surgically removed and sent to the lab for analysis. It the cells are found to be cancerous will also determine what type of breast cancer it is, and the grade of cancer (aggressiveness). Another important test is Breast

MRI (magnetic resonance imaging) scan - a dye is injected into the patient and this type of scan helps the doctor determine the extent of the cancer.
The main breast cancer treatment options may include: Radiation therapy (radiotherapy),Surgery, Biological therapy (targeted drug therapy), Hormone therapy, Chemotherapy.Our survey showed that for the treatment of breast cancer 80% of surgery,80% of radiotherapy & 25% of chemotherapy is carried out [6-10].

RESULT:

The results obtained from the survey revealed that the Genetic predisposition is the major dominant cause of breast cancer in Karachi constituting about 50% of all breast cancer cases, of which 55% breast cancer patients had previous history of a relative with breast cancer while 45% didn't have any previous history, late first pregnancy is the 2nd most prevalent cause constituting 30% of cases, followed by early menarche constituting 10% of cases, absence of breastfeeding & contraceptive pill induced breast cancer, with a lower incidence constituting about 5% of cases. Breast cancer is most prevalent in the age group of 40-50 yrs. Our survey also showed that 85% of women were ignorant about breast cancer while a small percentage of only about 15% of women, who were highly educated, knew about breast cancer & benefited from early diagnosis of their condition by mammography.80% of surgery & radiotherapy whereas only 25% of chemotherapy is used for the treatment of breast cancer in KIRAN.

DISCUSSION

In Pakistan, the data available regarding the etiology of breast cancer is very limited. We have conducted this study in order to gain insight about the major etiological factors of breast cancer that are prevalent in Karachi & if we know the reasons & major risk factors for its occurrence then how can we educate women of our society for preventing it. Although the etiology of breast cancer has been studied more extensively in the west & many risk factors have been established such as family history of breast cancer, specific benign breast disease that may lead to breast cancer, race, early menarche, late menopause, late 1st pregnancy, obesity, use of contraceptive pills etc.

According to our survey Genetic predisposition is the most dominant cause of breast cancer constituting about 50% of breast cancer cases in Karachi. This is because women who have a first-degree relative (mother, sister, daughter) diagnosed with breast cancer have an increased risk of the disease. Having more than one first-degree relative with breast cancer further increases that risk, especially if the cancer was diagnosed at a younger age. Women who have a second-degree relative (aunt, niece, grandmother, granddaughter) diagnosed with breast cancer also have a higher risk of breast cancer. The father's (paternal) side of the family should also be considered and has the same effect as the mother's (maternal) side when evaluating family history. Mutations (changes) to the breast cancer genes 1 or 2 (*BRCA1* or *BRCA2*) are linked to an increased risk of breast cancer. Our survey also showed that 55% of breast cancer patients had a previous history of relatives with breast cancer while 45% had no previous history.

A woman's risk of developing breast cancer depends on several factors, some of which are related to her natural hormones. Hormonal and reproductive history factors that increase the risk of breast cancer include factors that may allow breast tissue to be exposed to high levels of hormones for longer periods of time, such as the following:

- Beginning menstruation at an early age
- Experiencing menopause at a late age

- Later age at first pregnancy
- Not having children at all
- lactation may have an independent protective effect against breast cancer in premenopausal women. Absence of breastfeeding inturn increases the risk of breast cancer.

These factors have 2nd most prevalence in Karachi constituting about 30% of late first pregnancy breast cancer cases,10% of early menarche cases & 5% of cases of both breast cancer due to absence of breast feeding & use of contraceptive pills.

Contraceptive pills contain female hormones & there is a link between these widely used contraceptives and breast cancer risk since naturally occurring estrogen and progesterone have been found to influence the development and growth of some cancers. However breast cancer due to contraceptives has a lower incidence in Karachi.

Obesity is also associated with an increase in risk, probably because of the greater rate of conversion of androstenedione to estrone in the adipose tissue of obese women and the lower levels of sex hormone-binding globulin in obese than in nonobese women.

Most women of Karachi believe that any kind of possible injury to the breast can cause breast cancer although there is no such proof of injury being an etiological factor for breast cancer. This however reflects the lack of education of the women of our society pertaining to breast cancer as our survey also showed that 85% of women were ignorant about breast cancer while a small percentage of only about 15% of women, who were highly educated, knew about breast cancer & benefited from early diagnosis of their condition by mammography.

CONCLUSION:

There is a real need for the establishment of systems that monitor the most prevalent etiological factors of breast cancer in our society as well as comprehensive health education programmes should be designed that focus on breast cancer awareness in Pakistan, in which women of our society should be educated about all the major risk factors that may lead to breast cancer, as PREVENTION IS BETTER THAN CURE.

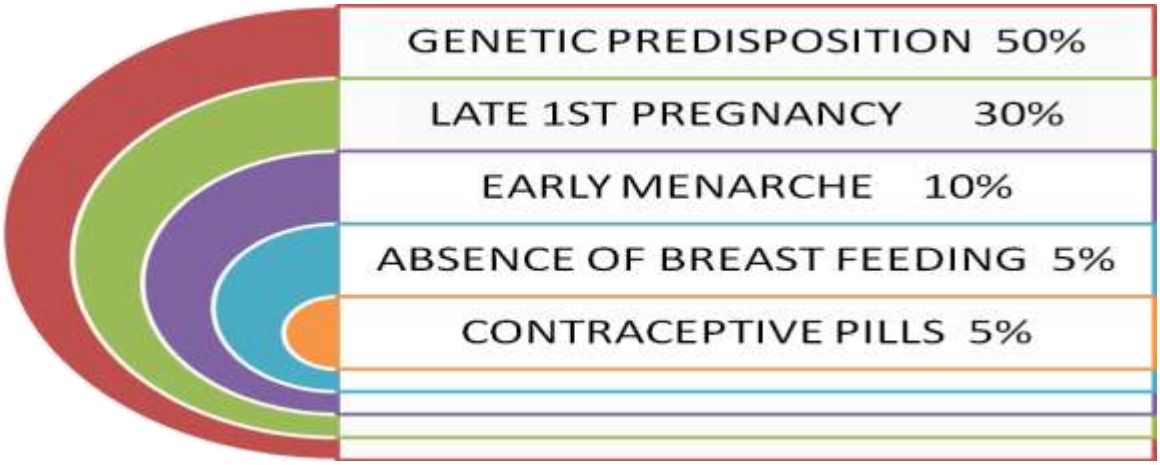

Figure 1: Factor associated with breast cancer

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