Trends and Patterns of Cancer Incidence in Women - A Single Center Experience

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Abstract

Objective: To determining the common malignancies affecting our female population.

Materials & Methods: The Study design was descriptive and cross-sectional. Study was conducted over a period of one year (January 2022 to December 2022) Citilab and Research Center, Lahore. The study was approved by the ethical committee of the organization (Letter No. CRC/MISC/958) and was based upon malignancies diagnosed in female patient population during the year 2022. All specimen(s) from female patients above 16 years of age were included. All the patients being diagnosed with a malignant tumor for the first time were included in this study. Patients who have already been receiving some therapy for previously diagnosed malignancies were excluded. Histological diagnosis by a competent Histopathologist and verified by another consultant Histopathologist was taken as confirmatory diagnosis. The collected data was analyzed with SPSS version 25.

Results: During a period of twelve months, a total of 264 cases of malignant tumors from female patients were studied. Maximum number of cases (75) 28.4% belonged to the age group of 51 to 60 years followed by 41 to 50 years of age that constituted 23.8%. Most frequent tumor found in the study group was Breast carcinoma (112.) It constituted 42.4% of total cases, followed uterine carcinoma (28) that constituted 10.6 %. Cervical (15) and Ovarian (15) cancers contributed equally to cancer burden in this study population each constituting 5.7% of total.

Screening and early diagnosis can help precancerous lesions and reducing the burden of invasive malignancies.

Conclusion: Breast carcinoma is the most common malignancy diagnosed in our female population followed by gynecological malignancies. Most of the patients belong to 51-60 years of age. Media campaigns regarding the risk of malignancy, its early diagnosis and high possibility of treatment, importance of self-examination and easy availability of screening programs can contribute to decreasing the incidence and improving life expectancy in our female population.

Key words: Female, Malignancies, Cancer burden, Pakistani population, Breast, Gynecological

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Introduction

Cancer has become a leading cause of death during last two decades, in both the advanced world as well as underdeveloped and developing countries. According to the International Agency for Research on Cancer (IARC) 1 in 5 people develop cancer during their lifetime.[1] Although there is demographic variation in cancer distribution, it affects both sexes. The 2020 Global Cancer Observatory has reported that one out of every six women develops cancer during their lifetime, and one out of every 11 women succumbs to the disease.[1]

Additionally, females constitute approximately 47.8% of the total global cancer incidence rate, as breast cancer presents world's most prevalent cancer. Although cancer incidence is increasingly growing in developed countries, cancer related deaths are much higher in low- and middle-income countries.[2]

Cancer burden of different malignancies is variable worldwide. A study about cancer burden among Arab world females have determined following cancers in descending order, breast, lung, cervix and thyroid[3]. Countries with Low Human Development index (HDI) had triple the incidence of cervical cancer compared to those with very high HDI, while mortality rates were six times higher in low HDI countries compared to very high HDI countries.[4]

Cancer incidence and its outcome show a complex interaction between inherited factors, lifestyle, and genetics difference in tumor biology, socioeconomic and environmental factors.[5] Among modifiable factors, education of female population helps in creating awareness about health care and decreasing invasive cancer load. In rural areas of developing countries, women are not getting formal education and they lack access to diagnostic and health care facilities.[6]

Among other factors contributing to the increase in cancer prevalence worldwide, obesity is another one.[7] The rapid global increase in obesity prevalence is alarming. Around 51% of newly diagnosed cancers in women are related to obesity, including endometrial, breast, ovarian, and cervical cancers.[8] Prolonged exposure to high blood concentrations of estrogens, insulin, and insulin-like growth factor 1 has been connected to these female malignancies. Obesity also complicates the screening, diagnosis, and treatment of these cancers. Further investigation is necessary to develop new preventive and therapeutic approaches, such as the potential role of bariatric surgery.[8]

Material & Methods

The cross-sectional study was conducted over a period of one year (January 2022 to December 2022) at Citilab and Research Center, Lahore., Pakistan after approval from the Institutional Review Board (Approval No. CRC/MISC/958).

Sampling: Non-probability convenient sampling was employed. Sample size was calculated using the formula $n = (Z^2 P (1-P)/e^2$.

Inclusion Criteria: All specimen(s) from female patients above 16 years of age received in the Laboratory during the year 2022 from different cities in Pakistan were included. All those patients who were being diagnosed with a malignant tumor for the first time were included.

Histological diagnosis made by a competent Histopathologist and verified by another consultant Histopathologist was taken as confirmatory diagnosis.

Data Analysis: Collected data was entered and analyzed through the utilization of the Statistical Packages for Social Sciences (SPSS) software version 25. The results were compiled and tabulated. Qualitative variables were expressed as frequencies and percentages.

Results

Our study included a total of 264 cases (histological specimen) all belonging to female patients of variable ages, ranging from 18 years to 76 years. The largest percentage of cases (28.4%) belonged to the 51-60 age group, with 75 cases, followed by the 41-50 age group, which constituted 23.8%. Frequency distribution of different age groups is shown in figure I. Percentages of various cancers were variable in different age groups; however, breast carcinoma was the commonest among each group as shown in Figure II. Maximum number of breast carcinoma were diagnosed in the age group of 51-60 years.

Most frequent tumor found in the study group was breast carcinoma (112.) It constituted 42.4% of total cases, followed uterine carcinoma (28) that constituted 10.6 %. Cervical (15) and ovarian (15) cancer contributed equally to cancer burden in this study population each constituting 5.7% of total. The subtypes and differentiation of these tumors are summarized in Table I. Carcinomas of female genital tract constituted the largest group. Head and neck carcinomas also made up a large group constituting 27 (10.2%). Amongst these, Squamous cell carcinoma was the commonest subgroup constituting 42%.
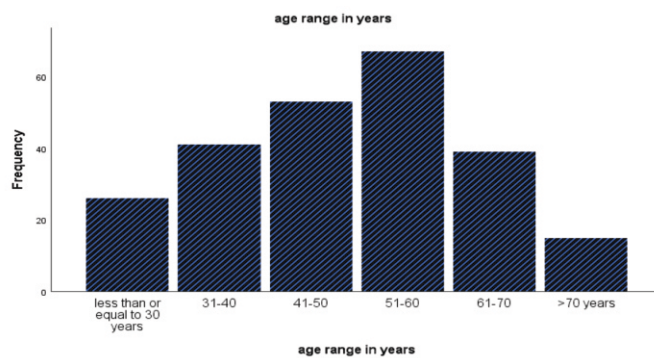

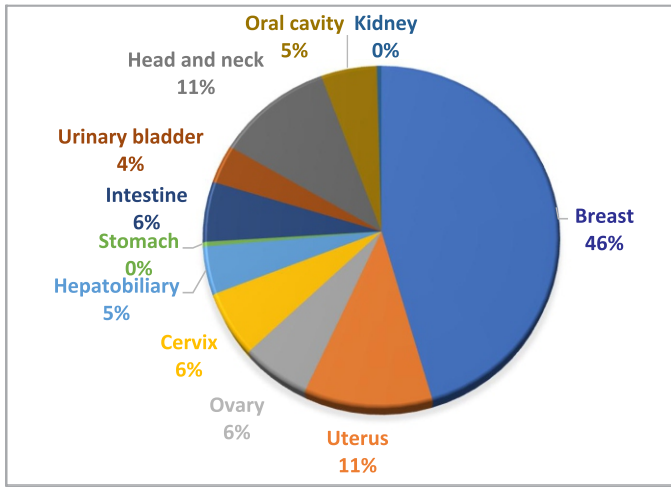**Figure-1:** *Frequency distribution of affected age groups*

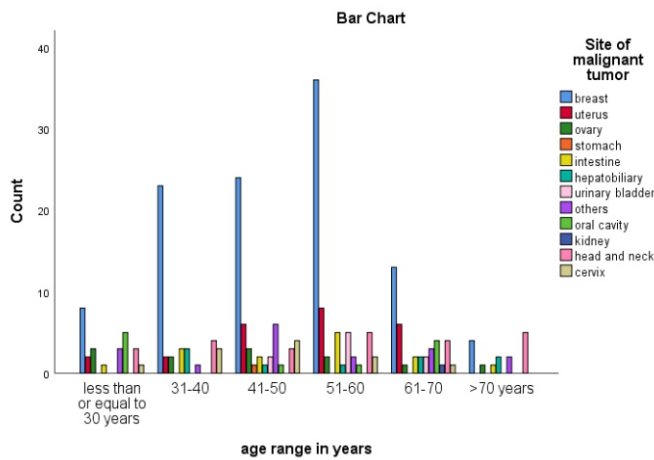**Figure-2:** *Frequency Distribution of Malignancies*

Figure-3: *Age Wise Distribution of Various Malignancies*

Discussion

Breast carcinoma accounts for 23% of all cancer cases diagnosed in women[9]. It is followed by colorectal, liver, thyroid, cervical and others in different percentages among different populations. Survival of breast cancer for at least 5 years after diagnosis ranges from more than 90% in high-income countries, to 66% in India and 40% in South Africa (WHO). This is explainable with the factors including late diagnosis, inaccessibility to screening programs and advanced treatments. Mass screening programs in western world have indeed been helpful in reducing the incidence of certain malignancies like cervical cancer and breast cancer, however due to financial restraints these screening programs cannot be utilized in low economic countries. Socioeconomic factors are of prime importance in many female cancers including cervical cancer, as the incidence decreases with improving socioeconomic status. Decline in fertility rates and lower parity have also contributed to decreasing cervical cancer incidence in some developed countries[4]. Education of female population helps in creating awareness about health care. A study conducted in Bangladesh also highlighted the same[6]. Though this study didn't cover the whole country, it represents the exact scenario of developing country women. It is evident that some factors such as education, residential area, and socio-economic status are the main obstacles to being aware about cancer. In rural areas, women are not getting formal education and diagnostic or health care facilities are out of their reach. The results of our study showed that among our female patient population suffering from cancer, breast cancer remains on the top constituting nearly half of total female malignancies 42.4%. This finding is like the data received and witnessed in multiple studies conducted worldwide[2,5,7]. The incidence of breast carcinoma is increasing in Pakistan, with an estimated probability of one in nine women being susceptible to its development[10]. We found maximum number of breast cancer in 51-60 years; however, this result is different from the one in a study that highlighted the increase in breast cancer incidence in

Table 1: *Commonest Carcinomas & their subtypes with frequencies*

Tumor site	Frequency	Subtype with percentage	Differentiation
Breast	112	Infiltrating Ductal carcinoma (63%) Invasive lobular carcinoma (23.8%) Others (13.2%)	Well differentiated (23%) Moderate - poorly differentiated (77%)
Uterus	28	Endometrioid Carcinoma (91%) Serous carcinoma (6.2%) Others (3.8%)	Well differentiated (12%) Moderate - poorly differentiated (88%)
Cervix	15	Squamous cell carcinoma (91%) Adenocarcinoma (9%)	Well differentiated (34%) Moderate - poorly differentiated (66%)
Ovary	15	Serous carcinoma (84%) Others (16%)	Well differentiated (9%) Moderate - poorly differentiated (81%)

less than 50 years in many countries[2].

Fortunately, the most common female malignancy can be picked up very early in ideal scenarios. However, lacking knowledge and awareness about breast cancer along with unavailable diagnostic and treatment facilities are the major reason for cancer-related deaths in less developed countries like Pakistan. Much is needed to be done for female health.

Frequently organizing public educational programs on cancer awareness throughout rural and urban areas would surely lead to early detection and diagnosis, therefore, will improve the odds of survival and cure with simpler and more cost-effective treatment.

After breast cancer, the prevalence of other cancers affecting the female population is variable among various ethnic groups. In our study, it is followed by carcinomas of uterus, head and neck malignancies, ovarian and cervical cancers. It reflects that ovarian cancer is the third most common gynecological malignancy and this finding is similar to the study which concluded Ovarian cancer as the third most common gynecological cancer globally in 20208. However, results from data compiled in a study Cancer burden among Arab females in 2020, concluded colorectal carcinoma being commonest after breast cancer followed by uterine cancer and cervix[3] and another study reported cervical cancer has second most common cancer among females in developing countries[5,11]. The age ranges for cervical cancer varies from 18 years to 76 years in our study population that is very close to the findings conducted on Bangladeshi females[6]. However, the maximum numbers of patients in their study were between 26–35 years while we found maximum number among 51-60 years.

Percentages of various cancers were variable in different age groups; however, breast carcinoma was the commonest among each group like other national and international studies. As, outcome of disease is strongly linked to early detection and timely treatment, this demands extensive focus on media campaigns related to screening programs, early detection of malignancies and up-to-date modern therapies. Different diagnostic modalities can be helpful in this regard like Magnetic Resonance Spectroscopy (MRS) radiological technique that can be used to detect early-stage breast cancer[12].

Conclusion

Breast carcinoma is the commonest malignancy in our female population followed by gynecological malig-nancies. Most of these tumors are diagnosed at a late stage leading to poor prognosis. Creating awareness about these malignancies, better chances of treatment and survival if diagnosed at an early stage, importance of self-examination and easy availability of screening methods are warranted to improve the life expectancy of our patients.

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Authors Contribution
AB, AS: Conceptualization of Project
AB, F, ZS: Data Collection
AS, AB: Literature Search
RJ, ZR: Statistical Analysis
F, SZ: Drafting, Revision
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