**Relationship between Age and the Risk of Diseases after Chemotherapy for Patients with Breast Cancer**

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Abstract

Breast cancer is a common health problem that attacks women in the World, it is one of the most known malignancies with 23% of all types of cancers, with over one million new cases detected per year Roughly 4.4 million women are living with breast cancer and more than 400,000 died annually from the disease. This disease recorded 14% of all cancer deaths. It is the most common cause of female death in industrialized countries.

Small tumors are more treated successfully by early detection, Delayed detection of breast cancer is correlated with danger clinical stages and low survival percentage .Reports in developed countries indicated that the median time to the consultation was 21- 90 days. Delayed detection of breast cancer for more than few months before physician checking can lead to the occurrence of breast cancer mortality rates are higher than in developing countries.

Mortality rates are higher in Africa than in richer world regions and improved access to known effective therapy, efficiently delivered, would, therefore, save lives. They also reports that breast cancer also occurs in medium age Libyan women more than in other parts of the world

**Keywords: Breast cancer, Risk Factors, Libya, Treatment, Age**

Introduction

Breast cancer is rising within the lower socio-economic groups in Africa and may in the medium term become a problem for the African population. Although treatment is often considered to be connected to primary prevention, it has been estimated that between 2000 and 2020 approximately 10 million patients will die of cancer in Africa. Mortality rates are higher in Africa than in richer world regions and improved access to known effective therapy, efficiently delivered, would, therefore, save lives. They also reports that breast cancer also occurs in medium age Libyan women more than in other parts of the world [1].

Breast cancer is a common health problem that attacks women in the World, it is one of the most known malignancies with 23% of all types of cancers, with over one million new cases detected per year [2]. Roughly 4.4 million women are living with breast cancer and more than 400,000 died annually from the disease. This disease recorded 14% of all cancer deaths. It is the most common cause of female death in industrialized countries [3].

The second most common cause in the world and the third most common in developing countries The protection from disease is by getting an early physical exam which makes therapy more beneficial. Despite development in the strategies for disease treatment, advanced breast cancer remains incurable and the goals of therapy range from symptom palliation to extending survival.

Breast cancer is the uncontrolled development of cells in the breast. It mostly, the disease affects females, but males also suffer from the disease. Different factors can indicate the occurrence of disease. The most important factor associated with breast cancer is a family history (Inheritance). Other risk factors that can lead to the occurrence of breast cancer are food, environment demographics, marital status, health condition, breast feeding, menarche, menopause, age and a number of children. The ratio of breast cancer in different areas differs based on specific factors. Similarly, mortality rates are decreased and increased in different regions; in industrialized countries, the mortality rate is lower than in developing countries [4].

Small tumors are more treated successfully by early detection. Delayed detection of breast cancer is correlated with danger clinical stages and low survival percentage.Reports in developed countries indicated that the median time to the consultation was 21 - 90 days. Delayed detection of breast cancer for more than few months before physician checking can lead to the occurrence of breast cancer mortality rates are higher than in developing countries [5].

Risk factors by demographics

Gender has been found to be the most significant risk factor for breast cancer; while men can also develop breast cancer, women account for over 99% of cases.

The lifetime risk of breast cancer for a woman is typically estimated to be one in eight, but it does increase with age. In addition, the probability levels vary over the lifespan range, with one in 233 being between 30 and 39 years old and one in 27 being between 60 and 69 years old.

One of the few cancers that a ffects the wealthier social classes more frequently is breast cancer Breast cancer is rising within the lower socio-economic groups [6].

MATERIAL AND METHODS

The study viewpoint was conducted over a 12 months period from Januray -December 2023. For the purpose of the study a descriptive design had been employed. The participants included in this study were 540 women of Libyan nationality between the ages of 25-85 years.

- Sampling

A sample size of 540 Patient was estimated using a single there was samples collection from oncology centers in the study area. Sampling was used to select the study from the various ages and different to ensure representativeness the number of patients selected from oncology enter

- Patient Study

This study was conducted randomly on (540) women with breast cancer aged 25 - 85 years

- Statistical Analysis

Described the distribution of chemotherapy use by patient characteristics, including the median and inter quartile range (25th–85th percentile) for follow-up end time December 01, 2023).

We then used Cox proportional hazards regression to calculate hazard ratios (HRs) with 95% (CIs) for HF/CM associated with time-varying chemotherapy exposures. Each participant began accruing person-time on the date of chemotherapy initiation and stopped accruing person-time at the time, health plan disenrollment, death, or December 01, 2023. We used day 540 patient after diagnosis as a proxy for the index date for unexposed women. Using time-varying exposures allowed us to account for changes in chemotherapy use. For example, women were considered Adriamycin - 50 mg- based-only users until they started taxotere therapy 80 mg.

Data collection:

Data includes 540 patients diagnosed with one of the danger clinical stages of breast cancer. It collected between Januray 2023 and December 2023 from the same place (Oncology Centre) based on the psychology and physical aspects. Eight input variables will be predicted according to the clinical stages.

Age is a numerical variable between 25 and 85 years old with mean 44.1 and standard deviation 10.325. Menopausal status divided into two distinct, perimenopause 84 patients with a percentage of 64.61% and post-menopausal 46 patients with a percentage of 35.38%. Tumor size is between 1.9 and 34, the mean is 13.88 and a standard deviation of 7.605.Table 1.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Characteristics | Gender (Female) | | Number of patients | Percentage % |
| Gender | | Female | 540 | 100% |
| Tumor Size | | T1 | 155 | 28.5 % |
|  | | 12 | 280 | 51.5% |
|  | | T3 | 56 | 10.5% |
|  | | T4 | 12 | 2.5% |
|  | | Tx | 37 | 6.5 % |
| Stage | | I | 66 | 12% |
|  | | II | 168 | 31.5% |
|  | | III | 287 | 53.5% |
|  | | IV | 19 | 3 % |

Table1. Distribution of patients according on tumor size and clinical stages

Moreover, the clinical stage represents the response variable to predict all data by using data mining, it divided into four stages. Stage I with 66 patients and percentage 12%, stage II with 168 patients and percentage 31.5%, stage III with 287 patients and percentage 53.5% and stage IV with 19 patients with percentage 3 %. Figure -1

Figure 1. Patients' numbers categorized by tumor stage

Result and Discussion

Accounting for almost 26% in 2023 of all cancer cases, breast cancer is the most common cancer in Libya then second place colomn cancer and lung cancer is thirth place. Its incidence increases with age.

Less than 10% of newly diagnosed breast cancer in the arabic countries of Mediterranean Region, compared to 30% in Western societies, are diagnosed in women 40 - 60  years or older (The Global Burden of Disease , 2015).This group of older breast cancer patients remains underrepresented in clinical trials. their treatment plan is less clear and have poor outcomes.

Pathological features and clinical presentation among older patients with breast cancer are not the same as younger ones. With aging, the percentage of human epidermal growth factor receptor 2 (HER-2) positive disease decreases while estrogen receptors (ER) and progesterone receptors (PR)-positivity increases.Such features, though implicate a better prognosis, are not reflected in real clinical outcomes.

Many previously published studies have shown that older patients are more likely to receive non- standardized care and usually depends more on physician’s preference.

Compliance to planned treatment is always an issue with increasing age.

The poor outcome observed among older patients can also be attributed to comorbidities and its associated medications. Such comorbidities have the potential to affect the mortality of older women regardless of their breast cancer or its treatment [7].

Women with early-stage breast cancer and comorbid conditions, are likely to die from causes other than breast cancer. In one study, using Surveillance, Epidemiology, and End Results (SEER).These comorbid conditions include cerebrovascular disease, paralysis, dementia, chronic obstructive pulmonary disease, chronic renal failure, myocardial infarction, congestive heart failure, peripheral vascular disease, diabetes, liver disease, previous cancer, rheumatoid arthritis, and ulcers. A total of 540 patients with breast cancer diagnosed at a median age of 55 years were included. The 540 individual comorbid conditions were associated with decreased overall survival and increased mortality [8].

To date, the consequences of treatment disparities, particularly the under treatment of the older patients, have been poorly assessed in population like ours. In this research, we describe clinical presentations, tumor characteristics, treatment modalities and outcomes among older Libyan patients with breast cancer. The mean age of patients with breast cancer at the time of diagnosis is 50 years old within the study period.

Comparing the results between different patients shows a great difference regarding the mean age at diagnosis time med zone ofLibya with mean of 40 ±10.47) which indicate that each Oncology Institute in Libya should evaluate and compare independently.

And this research it is the showed the higher age case at diagnosis in breast cancer patients (ranging from 50 to 69 years old).Table 2.

|  |  |  |
| --- | --- | --- |
| 25 - 29 | 30 | 5.5% |
| 30 - 39 | 45 | 8.5% |
| 40 - 49 | 87 | 16% |
| 50 - 59 | 123 | 22.5% |
| 60 - 69 | 185 | 34.5% |
| 70 - 79 | 50 | 9.5% |
| ≥ 80 | 20 | 3.5% |

Table – 2- Distribution of patients according to the age

Conclusion

Breast cancer came first with 26% (540 patients), also significantly higher than the 13.0% quoted for the rest of the world, that is, 33.3% more frequent breast cancers in med zone of Libya. Colorectal cancer was second in the study, with 19.3% (83 patients), significantly higher by 40% than the 11.5% reported worldwide. Respectively, and reported 11.2% and 9.6%, respectively, for colorectal cancers. 9 It is likely that both breast and colorectal cancer rates may have been offset by the potential underestimation of lung cancer rates; for all we know, the country has no screening policies or cancer awareness programmes for breast, colorectal, or otherwise.

In med zone of Libya, cancer incidence stands at 71.7 per 100 000 population with 540 cases during the 12 month survey period (January 2023–December 2023). This incidence rate is at least an underestimate, with differences in distribution by type populations. Furthermore, a single centre cancer registry is an unreliable alternative to a national or regional cancer registry that collects information from all healthcare facilities in the region. All the above should support strategic planning and decision‐making in developing cancer care in the country.

The number of cancer case files registered in med zone of Libya from 2004 to 2023 is 14,689 cases.

The cumulative number of cancer cases reached 13,549 new cases.

The proportion of females is 55% of the total new cases recorded.

The service provided to residents of the central region represented only 20% of the total services, and the rest was for the western regions, 51%, the eastern regions, 16%, and the southern regions, 13%.

Finally,The largest age group affected by breast cancer in 2023 was between 50 and 69 years.

And breast cancer represents the most common type of cancer in Libya at a rate of 26%, followed by colorectal cancer and lung cancer.

Waste time from the patients without early detecting disease on breast cancer,The risk of death increases, especially if the patient neglected herself without getting treatment or taking ineffective medicine.

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The average diagnosis in Libyan women 50 - 69 years .This patients of older breast cancer patients remains underrepresented in clinical trials and their treatment plan is less clear and have poor outcomes.

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