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Mortality Rate of Cancer in Patients attending Mayo Hospital Lahore, Pakistan

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Abstract:

This retrospective study was conducted to determine the mortality rate of cancer in patients attending Mayo Hospital Lahore, Pakistan. The data was obtained from the medical record of the hospital for a period of 2 years that is from 2016 to 2017. All data were collected using standardized data collection Performa and analyzed by using SPSS-20. During the study period, a total of 3610 patients were registered in the hospital. One thousand seven hundred and fifty-seven (48%) were male while one thousand eight hundred and fifty-three (52%) were female. The mortality rate of cancer was high, a total of 206 patients expired at the hospital while most of the patients leave the hospital at the most serious stage of the disease. The mortality rate of cancer was slightly higher in males as compared to females, there were 111 (53.88%) males and 95 (46.11%) females out of 206 patients who were expired as a result of cancer. The highest mortality rate was observed in the patients with breast cancer (15%) followed by blood cancer (10.6%), lymphoma (9.7%), the cancer of oral cavity (7.76%), liver cancer (6.31%), lung cancer (6.31%), bone cancer (5.82%), ovarian cancer (4.36%), and tongue cancer (4.36%), of total cancer mortalities in last two years. The delay in diagnosis associated with high-stage cancer can result in a higher mortality rate. The study concluded that the incidence rate of breast cancer was highest among all cancer types during the study period. Further investigation should be done to determine the cause of cancer deaths so that better prevention should be done to reduce the mortality rate.

Keywords: Cancer mortality rate, breast cancer, blood cancer, liver cancer, ovarian cancer.

INTRODUCTION

Cancer is the leading cause of death in economically developed countries and the second leading cause of death in developing countries (Are *et al.*, 2013; Fidler *et al.*, 2018; Torre *et al.*, 2016; Wild, 2019). Cancer cells can propagate to other parts of the body through the blood and lymph system (Hamid *et al.*, 2016). Cancer is a disease that involves changes or mutation in the cell genome or DNA structure of the cell (Ali *et al.*, 2015; Irfan *et al.*, 2016). The burden of cancer is increasing in economically developing countries as a result of the increase in population and growth as well as, increasing risk factors (Amjad *et al.*, 2020; Are *et al.*,, 2013; Bray *et al.*, 2012). About 18.1 million cancer cases and 9.6 million cancer deaths are estimated to have occurred worldwide (Ferlay *et al.*, 2019; Irfan *et al.*,, 2016). Breast cancer in females and lung cancer in males are the most frequently diagnosed cancers and the leading cause of cancer death for each sex in both economically developed and developing countries (WHO, 2017).

Cancer was estimated to account for about 7 million deaths (12% of all deaths) all across the world in 2000. Mortality is preceded by cardiovascular diseases (30 % of all deaths), and by infectious and parasitic diseases (19%) (WHO, 2001). Attempts have been made to quantify the global burden of cancer, and estimate site-specific cancer mortality and morbidity (Ferlay *et al.*, 2010). More recently, it has been documented that there would have been 22.5% fewer cases of cancers in the developing world in 1990, if infections with hepatitis B virus, hepatitis C virus, human papillomaviruses, EBV, HTLV-I, HIV, *Helicobacter pylori*, Schistosoma, and liver flukes had been prevented (Parkin *et al.*, 1999). Another estimate suggests that 230,000 deaths (4.4% of all cancer deaths) from liver cancer could have been avoided with only immunization against hepatitis B (Mathers *et al.*, 2001).

While the need for reliable estimates of cancer burden is clear, much more work is still needed to improve their reliability. Parallel to the development of national systems of death registration, there is a need to develop new methodologies to help improve the accuracy of the current estimates, based on existing data (Wingo *et al.*, 1998).

According to an estimate in 2012, in the EU-27 over (n=700,000) men and (n=550,000) women were estimated to have died of cancer. These numbers are marginally higher than those recorded for 2007 are (increase in 1.5% in men and 2% in women). The age-adjusted cancer mortality rates are expected to significantly improve between 2007 to 2012 from 153.5/100,000 men in 2007 to 138.7/100,000 men in 2012 (a drop of 9.6%) and from 90.6/100,000 women to 84.7/100,000 women (a drop of 6.5%) (Bosetti *et al.*, 2012).

The main aim of this study was to investigate the mortality rate of cancer in patients attending Mayo Hospital Lahore, Pakistan.

MATERIALS AND METHODS

The present study was conducted at the Oncology department of Mayo Hospital Lahore which included cancer cases registered during the year 2016-2017. In the proposed study duration February 2018-June 2018 case files of n=3610 patients were analyzed. Both qualitative and quantitative data collection methods were used to evaluate the reported data.

The record room maintains the data from 1973. Files are arranged in descending order according to the file number. There were about 4600 patients reported with diagnosed cancer in the last two years from 2016-2017, but the data of only n=3610 patients were available (Table 1). So the rate of cancer and mortality rate was determined from the remaining n=3610 files.

Table 1. Distribution of reported cases.

Year	Reported cases	Data available
2016	2337	1820
2017	2300	1790
Total	4637	3610

Statistical analysis

After the collection of data, SPSS-20 was used to analyze data statistically. Tables and graphs were drawn to give the graphical presentation of data for better understanding.

RESULTS

During the study period, among the 3610 patients registered in the hospital, One thousand seven hundred and fifty-seven (48%) were male while one thousand eight hundred and fifty-three (52%) were female. A total of 206 patients expired at the hospital while most of the patients leave the hospital at the most serious stage of the disease. The mortality rate of cancer was slightly higher in males as compared to females, there were 111 (53.88%) males and 95 (46.11%) females out of 206 patients who were expired as a result of cancer (Table 1).

The highest mortality rate was observed in the patients with breast cancer. Thirty-one (15%) mortalities were reported for carcinomas of the breast (100% female and 0% male) (Figure 1). Twenty-two (10.6%) mortalities were reported for blood cancer (41% female and 59% male). Lymphoma was responsible for the death of twenty (9.7%) patients (25% female and 75% male) (Table 1).

Among other cancer types, sixteen mortalities (7.76%) were reported by the cancer of the oral cavity, followed by liver and lung cancer (6.31% each), bone cancer (5.82%), and ovarian and tongue cancer (4.36% each) of total cancer mortalities in last two years. The delay in diagnosis associated with high stage cancer can result in a higher mortality rate (Table 1).
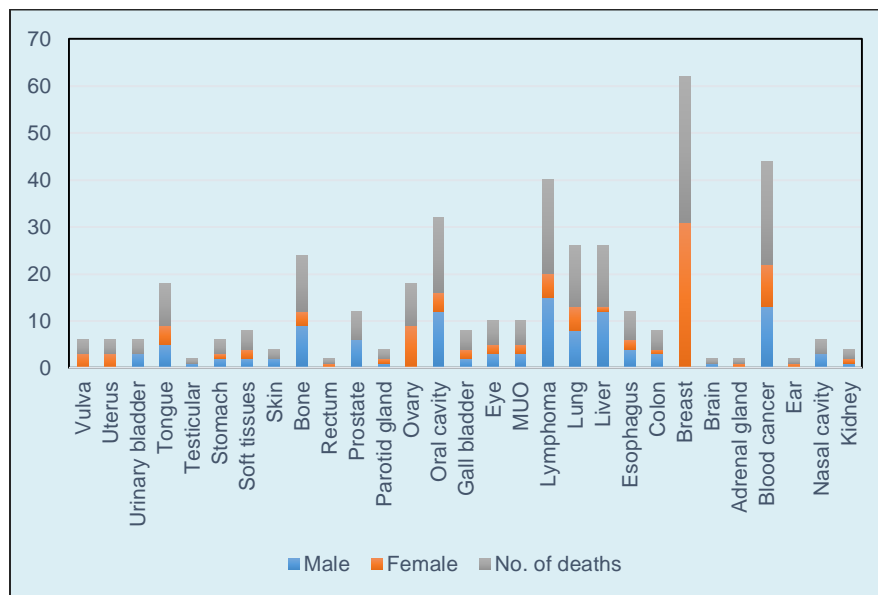

Fig. 1. The mortality rate of different cancer types in 2016-17.

Table 1. The mortality rate of cancer at Oncology department of Mayo Hospital Lahore in 2016-17.

Sr. No.	Cancer type	No. of deaths			
		Male	**Female**	**Total**	**Total %age**
1	Vulva	0	3	3	1.4
2	Uterus	0	3	3	1.4
3	Urinary bladder	3	0	3	1.4
4	Tongue	5	4	9	4.36
5	Testicular	1	0	1	0.48
6	Stomach	2	1	3	1.4
7	Soft tissues	2	2	4	1.9
8	Skin	2	0	2	0.97
9	Bone	9	3	12	5.82
10	Rectum	0	1	1	0.48
11	Prostate	6	0	6	2.91
12	Parotid gland	1	1	2	0.97
13	Ovary	0	9	9	4.36
14	Oral cavity	12	4	16	7.76
15	Gall bladder	2	2	4	1.9
16	Eye	3	2	5	2.42
17	MUO	3	2	5	2.42
18	Lymphoma	15	5	20	9.7
19	Lung	8	5	13	6.31
20	Liver	12	1	13	6.31
21	Esophagus	4	2	6	2.91
22	Colon	3	1	4	1.9
23	Breast	0	31	31	15
24	Brain	1	0	1	0.48
25	Adrenal gland	0	1	1	0.48
26	Blood cancer	13	9	22	10.6
27	Ear	0	1	1	0.48
28	Nasal cavity	3	0	3	1.45
29	Kidney	1	1	2	0.97
30	Total no. of deaths	111	95	206	100%

DISCUSSION

Results of the mortality rate of cancer from the Oncology department of Mayo hospital Lahore was high but the data of only 206 patients were available from the hospital because most of the people leave the hospital and go back to their homes at the last stages, they prefer to die at their homes instead of hospitals. Data of cancer mortality rate showed

that the highest mortality rate of cancer was observed in the patients of breast cancer, 15% of the total cancer mortalities. A recent study documented that breast cancer was responsible for the highest deaths (n = 16232, 16.1%) of the total = 101,113 deaths in the Pakistani population (Sarwar and Saqib, 2017). Another study reported a 6% mortality rate of breast cancer (Ferlay *et al.,*, 2010). Similarly, 6.6% of deaths were documented by breast cancer (Mathers *et al.,*, 2001) which is comparatively low than our findings.

The blood cancer was responsible for about 10.6% of total cancer mortalities. Previous findings have shown a 3.8% mortality rate of leukemia (Mathers *et al.,*, 2001). Another study reported a 3.4% mortality of blood cancer (Ferlay *et al.,*, 2010). The low mortality rate in these studies did not coincide with our findings. The mortality rate of lymphoma was also high in the last two years which accounts for 9.7% of total cancer mortalities. A previous study has reported a death rate of 4.2% in lymphoma patients (Mathers *et al.,*, 2001), which is lower than our findings.

The mortality rate of lung and liver cancer account for 6.31% each. The mortality rate of bone cancer was 5.82%, while the mortality rate of tongue cancer and ovarian cancer was 4.36% each of total cancer mortalities. The death rate of eye cancer was 2.42%. The mortality rate of prostate gland cancer was 2.91% of total cancer mortalities in Mayo hospital which is much closer to the global mortality rate of the prostate gland which was 4.9%.

Major causes of the high mortality rate are ignorance of cancer at early stages, lack of facilities. High burden of patients on the limited resources of hospitals. There are very few cancer hospitals in Pakistan while the number of cancer patients is increasing day by day in every region of Pakistan. Results of global research on cancer mortalities showed that cancer of the respiratory system is 10th leading cause of death in the world. Smoking is estimated to be responsible for another 20% of all cancer

deaths, all of which are preventable (Pisani *et al.*, 1999). In elderly women, lower serum 25 (OH) D concentrations appear to be an independent risk factor for cancer-specific mortality, but not a risk factor for the development of cancer (Wong *et al.*, 2015).

There is overwhelming evidence that lifestyle factors affect cancer risk. Various risk factors contribute to cancer incidence and mortality: tobacco use, physical inactivity, overweight and obesity, poor diet, and alcohol use. Some other lifestyle factors such as sun exposure, sexual practices, and exposure to infected blood also contribute to cancer incidence (Council, 2003). Numerous researchers have also documented that positive changes in these lifestyle factors can reduce a good proportion of the national cancer burden and hence reduce the cancer mortality rate (Council, 2003).

CONCLUSION

Our understanding of cancer development and progression in recent decades has led to improvements in screening and treatment, and in turn greater numbers of survivors after diagnosis. Cancer survivorship is an increasingly important public health concern, as this rapidly growing population faces the risk of recurrence as well as elevated risks of physical and psychosocial-related comorbidities. Early detection and advancements in treatment have improved survival rates. There should be awareness about the early detection of cancer that may result in low mortality rates.

Road, Lahore 54000, Pakistan for access to equipment.

CONFLICT OF INTEREST

The authors declare that they have no conflict of interest.

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