Mortality from Cancers – A Tertiary Level Multi-Specialty Centre Experience.

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ABSTRACT

Background: Cancers remain a major cause of morbidity and mortality all over the world. In all major institutions, admissions due to cancers contribute to a large percentage of the inpatient deaths. The objectives of the study were to find out the pattern of deaths caused by cancers in a tertiary level care hospital over a 5 year period and also to find the admission pattern of cancers at the institution. **Methods:** This was a retrospective study, conducted on patients admitted to all the wards of Government Medical College, Trivandrum, over a 5 year period. The medical records of patients admitted with various cancers were analyzed and the corresponding mortality data were collected. **Results:** Of the 1545 deaths due to cancers over this 5 year period, the maximum deaths were seen in patients with cancer of the lung, followed by the liver, stomach and breast. In males, cancers of lung, larynx and stomach formed the major bulk of admissions while in the females, breast, ovary and rectum were the most common sites. **Conclusion:** As per the present study, it is concluded that cancer of the lung forms the major bulk of deaths from cancers in both genders in our institution. Cancer of lung in males and breast in females form the major bulk of morbidity in our population. It is very important to audit mortality data on a regular basis as this can have implications on cancer epidemiology reporting and may positively lead to changes in health policies by the governments.

Keywords: Admission, Cancer, Causes of death, Inpatient, Mortality

INTRODUCTION

Reliable information on causes of death is essential to the development of national and international health policies for prevention and control of disease and injury. World Health Organization (WHO) maintains a mortality database that includes detailed annual tabulations of deaths from the death registration systems of its member states, where causes are classified in most cases according to the International Classification of Diseases (ICD).[1] Along with improvement of hygiene and the subsidence of infectious diseases, cancers have emerged as the leading cause of death in the developed world and the second most common cause of death in developing countries. It is expected that cancers will continue to hold this dominant position as the population of the world continues to age gradually and lifestyle-related factors (tobacco use, sedentary lifestyle, unhealthy diets, etc.) prevail. Cancer is still the leading cause of mortality in the developed world and the second leading cause in the developing world.[2]

In low-income countries, the dominant causes are infectious and parasitic diseases and neonatal causes. Whereas in the high-income countries, 9 out of the 10 leading causes of death are non-communicable conditions, including the four major types of cancer. In the middle-income countries, the 10 leading causes of death are again dominated by non-communicable conditions; which also include road traffic accidents.[3] According to the last report of the Globocan project, eight million (57%) new cancer cases, 5.3 million (65%) cancer deaths, and 15.6 million (48%) of the 5-year prevalent cancer cases occurred in the less-developed regions.[4] In other words, the developing world is bearing more than half of the worldwide cancer burden.

Kerala occupies a unique position among the Indian states in having the major health parameters comparable to developed nations. This is mostly attributed to better primary healthcare which imparts services such as vaccination, direct medical care for infectious diseases, and peri-natal and child care, besides raising general health awareness. Though, there have been some attempts to study the pattern change in mortality in Kerala in the recent past, there is no high volume data on this.[5] Government Medical College Trivandrum is the biggest healthcare facility in the public sector in the state, catering to maximum number of patients. Due to the availability of almost all specialities and super-

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specialities on a day-to-day basis, this institution is approached by patients with almost all sorts of health issues. The primary block of our hospital admits patients to all specialty and super specialty departments except Obstetrics and Gynaecology, Paediatrics and Ophthalmology.

The mortality statistics of the medical patients at our tertiary care hospitals are sparse and lacking. The pattern of mortality at this institution would be a significant indicator of the disease burden in the community itself. Hence a detailed analysis of the mortality pattern due to cancers related causes at this institution can provide deeper insights into the changing patterns in disease burden. With this background, this study intended to analyze the mortality pattern attributed to cancers at our institution. For this study, patients admitted in all the wards of our institution with a diagnosis of cancer, who satisfied the inclusion criteria, were included.

MATERIALS AND METHODS

The study was carried out in the in-patient wards of Government Medical College, Trivandrum. Our institution is a referral centre with oncology along with palliative care services. All services regularly treat patients on inpatient basis. The inpatient deaths are recorded in a mortality register and the medical records of all deaths are maintained in the records section.

The current study was designed as a Retrospective study. The primary objective of the study was to find out the pattern of deaths caused by cancers in our hospital over the 5 year period from 2005 to 2009. The secondary objective was to find the admission pattern of cancers at the institution. The study protocol was vetted by the Institutional Review committee of the institution and approved by the Human Ethics committee. Study population included patients admitted with any documented malignancy, during the study period of 5 years. All consecutive patients who satisfied the inclusion criteria within the study period were recruited into the study.

Inclusion criteria: Patients who expired while being in-patients due to various cancers and their complications, at Government Medical college, Trivandrum, during the study period of 5 years.

Exclusion criteria: Patients with cancers, but who died while being in patients, in the study setting, due to causes other than those directly linked to the cancer or its complications, during the study period of 5 years.

Data was collected from the case sheets and directly entered in to excel database. The major variables collected included the number of male and female patients admitted with malignancies during this period. From these data, the number of deaths among these patients were also recorded. Proper precautions were taken to safeguard against missing values and data collection error. After the cleaning

the data, analysis was done with CDC 'Epi Info' software. Data is being presented as mean ± standard deviation and proportions as appropriate. The case with a p value less than 0.05 was considered to be statistically significant as and when relevant.

RESULTS

The current study was conducted over a 5 year period at a tertiary level health care institution with an aim to assess the mortality pattern from cancers. All patients who died of malignancy related causes were included for analysis. From 2005 to 2009, 14906 male patients and 11508 female patients got admitted with diagnoses of cancers in our institution. Among the male patients, the largest number of admissions were seen in patients with cancers of the lung, larynx, stomach, urinary bladder and rectum[Table 1]. In females, cancers of the breast, ovary, rectum, lung and thyroid gland formed the most common sites of primary[Table 2]. Over this 5 year study period, there were 1545 deaths in our institution directly attributed to cancers. The maximum deaths were seen in patients with cancer of the lung followed by the liver, stomach, breast and the pancreas[Table 3].

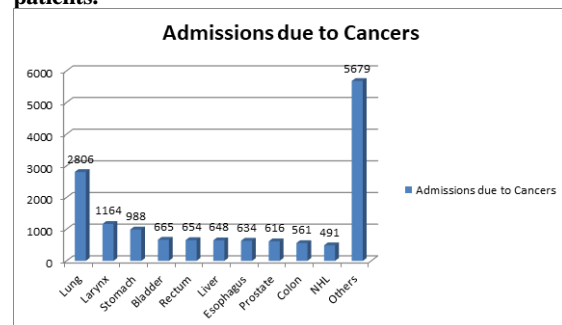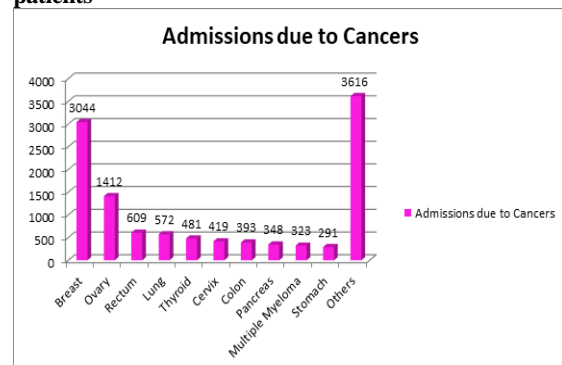**Table 1: Pattern of admissions due to cancers in male patients.**

**Table 2: Pattern of admissions due to cancers in female patients**

DISCUSSION

In industrially advanced countries, the three leading causes of death in people above 65 years are heart

diseases, malignant neoplasms, and cerebro-vascular accidents.[6] However, recently, there have been reductions in mortality by cardio-vascular diseases(CVD), which has been accompanied by a rise in the average age at death and a decline in the proportion of all deaths attributable to these diseases.[7] On the other hand, death rates due to cancers at the older ages have risen in several countries, suggesting that at least some of the patients "saved" from dying from CVD are now succumbing to cancer. The principal site of the disease for which mortality in males between the ages of 35 to 74 years rose in most countries substantially is lung cancer, which accounts for the vast majority of the overall rise in cancer mortality where it has occurred.

Table 3: Pattern of deaths due to cancers in all patients.
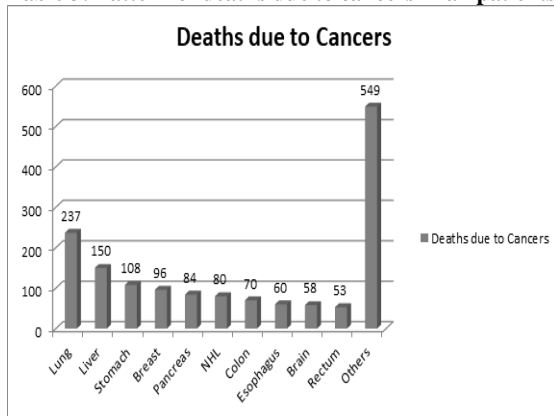
Accurate statistics on cancer occurrences and outcome are essential, for the purposes of research and planning as well as evaluation of programs for cancer control. The International Agency for Research on Cancer (IARC) has published regular estimates of the world wide incidence and mortality from cancer. Recently the IARC has started publishing country level data through its GLOBOCAN series.[8] The most commonly diagnosed cancers are that of lung (1.35 million), breast (1.15 million), and colorectal (1 million). The most prevalent cancer in the world is breast cancer (4.4 million survivors up to 5 years following diagnosis). The most common causes of death among cancers are lung cancer (1.18 million deaths), stomach cancer (700,000 deaths), and liver cancer (598,000 deaths). Cancer caused about 6 million deaths in 1990, 3·4million in men.[9] As early as 1990, there were already 50% more cancer deaths in less developed countries than in developed countries. The American Cancer Society (ACS), the Centre for Disease Control and Prevention (CDC), the National Cancer Institute (NCI), and the North American Association of Central Cancer Registries (NAACCR) collaborate each year to produce a report to their nation on the current status of cancer in the United States. In the Europe, the European

Network of Cancer Registries (ENCR), housed in the IARC is the main consortium which seeks to improve the quality, comparability and availability of cancer data, promote their use in cancer control, healthcare planning and research, as well as provide regular information on the burden of cancer. Currently, the ENCR has a membership of 152 population-based cancer registries, who regularly submit information on the incidence and mortality of cancer in their catchment areas to the ENCR secretariat. These data are then formatted and included in the latest version of the EUROCIM software package.[10] The EUROCIM provides ENCR members with resources to compare their own incidence and mortality datasets with data from other European cancer registries.

All over the world, lung cancer (trachea, bronchus, and lung) is the leading site of worldwide cancer deaths. Stomach cancer is the next most important site of cancer mortality, followed by liver, colon and rectum, oesophagus, and breast. As per other major studies, the highest cancer incidence and death rates for each racial and ethnic population continue to be for cancers of the prostate, lung, and colon and rectum among men and for cancers of the breast, lung, and colon and rectum among women.[11] Among men, cancer incidence rates increased during the recent years for melanoma of the skin and cancers of the prostate, kidney and renal pelvis, and oesophagus, but decreased for cancers of the lung and bronchus, colon and rectum, oral cavity and pharynx, stomach, and larynx. Among women, cancer incidence rates increased during the most recent segment for leukaemia, non-Hodgkin lymphoma, melanoma, and cancers of the breast, thyroid, urinary bladder and kidney. Female breast cancer incidence rates increased by 0.4% per year from 1987 through 2002, a slower rate of increase than in the previous time period. The cancer incidence rates decreased for cancers of the colon and rectum, ovary, cervix uteri, oral cavity, and stomach.

In India, the Medical Certificate of Cause of Death provides information for deaths in the urban India. Additionally, an SRS(Sample Registration Survey) has successfully collected data on rural mortality and fertility, since 1965, through continuous recording by resident enumerators as well as retrospective half yearly population surveys. During the early years of the twenty first century, the methods used in the SRS in India were substantially revised as part of the Million Deaths study (MDS). Since 2002, causes of death have been ascertained using a verbal autopsy (VA) method, with re-sampling and double coding by physicians centrally. Data for a nationally representative sample of 62553 deaths in 2001–2003 was earlier released.[12] The MDS has been following the lives and deaths of 1.1 million households throughout India until 2014. A recent Indian study about the audit of the autopsy data from

the armed forces showed that infectious diseases were the commonest cause of death.[13] Another study analyzing the patterns of mortality in cancer patients showed a higher rate of infectious causes as the leading cause of mortality.[14]

Our study is confronted with a number of limitations. A drawback of our study is that this is a single centre data and mortality trend may be influenced by hospital admission policy. Another major limitation is the absence of nation-wide cancer survival and prevalence data for comparison. Survival and prevalence estimates are typically included in nation-wide cancer epidemiology studies, yet this information is not available for India. Such estimates would require frequent follow up on patient cohorts, which, due to financial and geographical constraints, would be nearly impossible in India nowadays. Also, mortality data have lower validity than registry statistics, mainly because of the difficulties in ascertaining and certifying the cause of death, and a lack of comparability in coding the underlying cause.[15]

CONCLUSION

However this study does reflect current situation of cancer mortality from developing part of the world. The maximum deaths in our institution were seen in patients with cancer of the lung, followed by the liver, stomach and breast. In males, cancers of lung, larynx and stomach formed the major share of admissions whereas in the females, breast, ovary and rectum were the most common sites. In light of these findings, we believe that better control of known risk factors should lead to positive change in Indian cancer epidemiology. This study highlights the importance of medical audits, and their role is improving health care in the concerned hospital and thereby throughout the nation. As more and more regions undergo the epidemiological transition, cancer deaths, particularly among adults will increasingly become a major public-health concern. Surveillance systems and research methods to reliably measure and monitor adult mortality must anticipate this trend.

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