Morbidity and mortality trend and pattern of cancer in newly started cancer unit of tertiary care hospital in Bilaspur, Chhattisgarh

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ABSTRACT

Background: Cancer affects all communities worldwide. Approximately 12.7 million people were diagnosed with cancer and more than 7.6 million died in world during 2012. Cancer has become one of the 10 leading causes of death in India. Hence, this study was conducted in newly started cancer unit with seven inpatient department beds and no radiation facilities to use this statistic for infrastructure development of department. **Objective:** (i) To generate the basic statistics of cancer in newly started cancer unit and (ii) find out the type of treatment/procedures perform on patient. **Materials and Methods:** A cross-sectional hospital-based observational study was conducted. Semi-structured format was used to collect data from the outpatient departments (OPDs) and inpatient departments registers of the department of radiotherapy to inquire about registration of cancer, their sociodemographic profile, also inquire about various type of treatment and procedure perform on patients. Analysis was done by Epi-info 7 software version 7.2.2.2. **Results:** Cancer patient contributes 0.23% of total OPD registration in MRD. The most common three registered cancers were 1st oral cancer 24 (18.18%), 2nd breast cancer 23 (17%), and 3rd colon and rectum 14 (10.60%). Maximum cancer cases were belonging to the age group of 26–50 years 57 (43.18%), rural area 90 (68.18%), and low socioeconomic class 99 (75%). Chemotherapy received by 96 (72.72%), surgery by 37 (28.03%), and 27 (20.45%) referred. No mortality was recorded in the study period. **Conclusion:** In our observation, some differences of cancer pattern and trends are seen. Incidence of cancer cervix was low and it ranked 5th among overall cancer that strongly implicates the need, to be developed more accurate and appropriate screening strategy at hospital level. Rashtriya Swasthya Bima Yojana scheme is good initiative for poor patient, 86 (65.6%) patient benefited by it.

KEY WORDS: Hospital-based Cancer Registry; Population-based Cancer Registry; International Classification of Disease-10, Rashtriya Swasthya Bima Yojana

INTRODUCTION

Cancer affects all communities worldwide, approximately 12.7 million people are diagnosed with cancer and more than 7.6 million died of disease during 2012.[1] Large variations in both cancer frequency and case fatality are observed, even in relation to the major forms of cancer in different regions of the world for men and women. Cancer has become one of the 10 leading causes of death in India. It is estimated that there are nearly 2–2.5 million cancer cases at any given point of time. Over 8–9 lakh new cases and 4 lakh deaths occur annually due to cancer.[1]

Time trend analysis of the data from population-based cancer registries (PBCR) over the last decade shows a small but a significant increase in the overall incidence of cancer in all the

urban cancer registries, both among men and women. PBCR gives an idea about the pattern of cancer and frequency of new cases so-called incidence (crude or age-adjusted incidence) every year in well-defined population usually per 100,000 population, but hospital-based registry gives idea about magnitude and pattern of patients care that help in planning for facilities required in respective hospitals and help in evaluation of treatment. The orientation of hospital registry is toward administrative and patient purpose; thus, some of the data collected by hospital registries will be different from those collected by PBCR.

For administrative purposes, hospital registry may be interested in measuring utilization of facilities, patient's follow-up and to measure treatment success rate, etc. Aim at the improvement of cancer therapy; therefore, they have to collect detailed data about diagnosis and therapy, for example, which therapy is best to provide optimal treatment and generating remedies. In general, information collected by PBCR and hospital registry are almost same format so this data can be sent to PBCR to reducing documentation efforts.

Our institute started providing outpatient departments (OPDs) services to cancer patient for past 3 years. There is a need to develop this department with different services for cancer patient as it is a tertiary care hospital and people came from nearby 100 km distance. Peoples also came from rural as well as tribal area. Hence, this study was conducted to generate the basic statistics of cancer and to find the different type of treatment/procedures perform on patient so this statistic will help for infrastructure development of department.

MATERIALS AND METHODS

A cross-sectional hospital-based observational study was conducted to access the morbidity and mortality trend in newly started cancer unit. Separate cancer OPD started providing services from August 2014 before that cancer patient treated at different wards of teaching hospital of Bilaspur, Chhattisgarh. Total duration of information collected was 12 months, from August 1, 2015, to July 31, 2016. Information from medical records, case sheet, OPD, and inpatient departments registers of radiotherapy department, and medical registration department were collected. Information regarding type of cancer, grade of cancer, general characteristics of patient, type of treatment received, and reason of referral are noted down. Ethical clearance obtained from Ethical Committee of CIMS, Bilaspur, Chhattisgarh.

Data Analysis

Data were entered into predesigned format of Microsoft Excel sheet of Window 8, later analyzed by Epi-info software version 7.2.2.2. Data were analyzed in the form of proportion and percentage.

RESULTS

Our department of radiotherapy started providing service since 2013, but separate cancer OPD started from August 2014. Total 132 (100%) cancer patients registered during the study period August 1, 2015–July 31, 2016. New cancer patient detection rate in our center is 9.77%. Most of the patient comes for their chemotherapy cycle and follow-up. Among these 132 registered cases, 54 (40.90%) were male and 78 (59.09%) were female patient. Maximum patient 57 (43.18%) belongs to the age group of 26–50 years, and minimum cases 02 (1.51%) belongs to the age group of 0–15 years. Among these maximum patients belong to low socioeconomic class SES IV (78) + V (21) = 99 (75%) and SES II + I = 32 (24.24%) are middle socioeconomic group only 1 (0.75%) belongs to upper class. In our observation, it was clearly shown that 90 (68.18%) patients belong to rural area and only 42 (31.81%) from urban area. Regarding staging of cancer maximum patient, 63 (47.72%) reported/ diagnosed late in Stage - III, followed by 39 (29.54%) in Stage IV, 19 (14.39%) diagnosed in Stage II cancer, and only 11 (8.33%) diagnosed in Stage I cancer. Of 132 patients, 105 (79.54%) received treatment from our cancer unit, remaining 27 (20.45%) were referred to other center for cancer radiation therapy [Table 1].

In our institute, three commonly registered cancers (common to both sexes) were oral cancer 24 (18.18%) followed by breast cancer 23 (17.42%) and cancer of colon and rectum 14 (10.60%). Maximum cases of oral cancer 15 (11.36%) were male belongs to rural area with low socioeconomic group. It was observed that in our study three most common cancers among male are oral cancer 15 (11.35%), cancer of colon and rectum 9 (6.81%), and blood cancer 06 (4.54%). In our observation, among females, three common cancers are breast cancer 23 (17.42%), followed by cancer cervix 11 (8.33%) and oral cancer 09 (6.81%) [Table 2 and Graph 1].

In our study, 86 (65.6%) patients received treatment free of cost under Rashtriya Swasthya Bima Yojana (RSBY) scheme.

DISCUSSION

Only 132 cancer patients were registered in our hospital compared to another government hospital-based cancer registration system in our state at Pt. JNMC Raipur,[2] cancer registry - 2500 patient per year, this difference may be due to limited facilities in our center and patient may not aware about the newly started cancer unit. It is estimated that during the year 2012, 10.15 lac new cancer cases occurred in the country.[3] 1 in about 15 men and 1 in about 12 women in the urban area could develop cancer in their lifetime.[1]

In our hospital registry, 40.90% cancer patients were male, and 59.09% were female patient. As compared to other hospital-based registry in Mumbai cancer cases among

male are 56.3% and 43.7% in female, in Bengaluru among male 44.7% and 55.3% in females, and in Chennai 46.5% among male and 53.5% among female,[4] almost similar trend

Table 1: Characteristic of cancer patient (*n*=132)

| Variable	Number of patients (%)
Gender	
Male	54 (40.90)
Female	78 (59.10)
Age group	
0–15	02 (1.51)
16–25	14 (10.60)
26–50	57 (43.18)
51–60	40 (30.30)
60 and above	19 (14.39)
Residence	
Rural	90 (68.18)
Urban	42 (31.82)
SES*	
SES class - I	01 (0.75)
SES class - II	20 (15.15)
SES class - III	12 (9.09)
SES class - IV**	78 (59.09)
SES class - V**	21 (15.90)
Staging of cancer	
Stage - I	11 (8.33)
Stage - II	19 (14.39)
Stage - III	63 (47.72)
Stage - IV	39 (29.54)
Patient receives treatment	
Chemotherapy	96 (72.72)
Surgery	37 () 28
Palliation	11 (8.3)
Patient referred outside for radiotherapy	27 (20.45)

*Modified B G Prasad's socioeconomic classification for the year 2017, **Below poverty line socioeconomic group (BPL card holder). SES: Socioeconomic status

in our observations. In PBCR 2009–2011, crude rate (CR) range from 36.8 (total number of cases registered - 797, Barshi Expanded 2009) to 117.5 (total number of cases registered - 944, East Khasi hills 2010–2011) per 100,000 population among male and 36 (total number of cases registered - 110, Nagaland - 2010) to 149 (total number of cases registered - 597, Aizawal district - 2009–2010) per 100,000 population among female.[5]

Maximum registered patient 43.18% belongs to the age group of 26–50 years and minimum was 1.51% belong to the age group of 0–15 years. Similar to 2 years report of five HBCR[4] minimum cases reported in 0–14 years age group range from 2.8% in Dibrugarh to 5.8% in Mumbai. Maximum cases occur in the age group of 35–64 years 60.7% in Mumbai to 67.0% in Dibrugarh with age advances 65+ age group incidences lower down. 25 PBCRs in India, it also shows that average annual age-specific incidence lowest in 0–14 years age group range from 8.8 to 11.1 (Bengaluru), 1.2 to 6.0 (Barshi rural), and 5.0 to 7.3 (Bhopal) per 100,000 person, and maximum incidence of cancer observed in 50–75+ age group range from 169.9 to 928.6 (Bengaluru), 131 to 250 (Barshi rural), and 147.0 to 154.7 (Bhopal).[5]

In our hospital registry, maximum patients belong to low socioeconomic class; it may be due to affluent group avail treatment from other higher center, for example, Pt. JNMC Regional Cancer Institute which is just 120 km away. A study conducted on oral cancer in Durg (C.G.) by Mishra *et al.*[6] clearly mention that majority of cancer patient visiting government hospital belongs to low socioeconomic class with below poverty line card. In our study, 65.6% patients received treatment free of cost under RSBY scheme. In our observation, it was clearly shown that majority were from rural area. Sociocultural and geographical differences exist in both prevalence and risks associated with particular factors.[7] Maximum cases of oral cancer belong to rural area with low socioeconomic group, similar finding as Mishra *et al.*[6]

Regarding staging of cancer, maximum patient reported/ diagnosed late in Stage - III, followed by Stage IV while
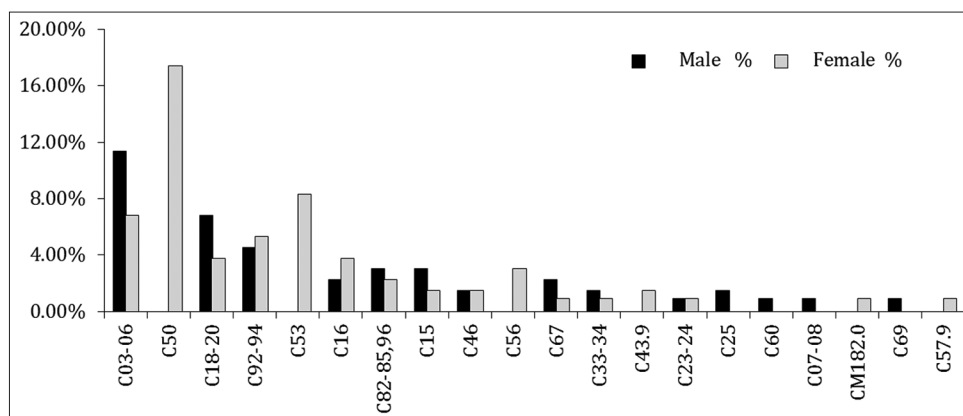
Graph 1: Distribution of percentage of cases according to the site of cancer

Table 2: Distribution of cases according to the site of cancer ICD-10 code C00-D48

Site of cancer	n (%)		
	Male	Female	Total
Oral cancer (C03–06)	15* (11.36)	09*** (6.81)	24 (18.18)*
Breast cancer (C50)	00 (0)	23* (17.42)	23 (17.42)**
Colon and rectum (C18–20)	09** (6.81)	05 (3.78)	14 (10.60)***
Leukemia (C92–94)	06*** (4.54)	07 (5.30)	13 (9.84)
Cancer cervix (C53)	00 (0)	11** (8.33)	11 (8.33)
Stomach cancer (C16)	03 (2.27)	05 (3.78)	8 (6.06)
Lymphoma (C82–85,96)	04 (3.03)	03 (2.27)	7 (5.30)
Esophagus (C15)	04 (3.03)	02 (1.51)	6 (4.54)
Sarcoma (C46)	02 (1.51)	02 (1.51)	4 (3.03)
Ovary (C56)	00 (0)	04 (3.03)	4 (3.03)
Urinary bladder (C67)	03 (2.27)	01 (0.75)	4 (3.03)
Lung cancer (C33–34)	02 (1.51)	01 (0.75)	3 (2.27)
Melanoma (C43.9)	00 (0)	02 (1.51)	2 (1.51)
Gall bladder (C23–24)	01 (0.75)	01 (0.75)	2 (1.51)
Pancreas (C25)	02 (1.51)	00 (0)	2 (1.51)
Penis (C60)	01 (0.75)	00 (0)	1 (0.75)
Parotid (C07–08)	01 (0.75)	00 (0)	1 (0.75)
Endometrial (CM182.0)	00 (0)	01 (0.75)	1 (0.75)
Retinoblastoma (C69)	01 (0.75)	00 (0)	1 (0.75)
Unknown primary (C57.8)	00 (0)	01 (0.75)	1 (0.75)
n=132 (100%)	54 (40.90)	78 (59.09)	132 (100)

*1st most common cancer **2nd most common cancer ***3rd most common cancer. ICD-10: International classification of disease-10

very few diagnosed in Stage II cancer and in Stage I cancer. In five HBCR[4] - Mumbai, Bengaluru, Chennai, Thiruvananthapuram, and Dibrugarh regarding cancer staging maximum cases in Mumbai, reported/diagnosed in early stage of cancer in localized growth (34.0%) and lowest in Chennai (4.6%). Overall, maximum cases reported/diagnosed in II and III stage of cancer in regional involvement range from 26.9% in Mumbai to 60.7% in Dibrugarh. Over 70% of cases are diagnosed during the advanced stages of cancer resulting in poor survival and high mortality rate.[8]

In our institute, three commonly registered cancers (common to both sexes) were oral cancer 18.18% followed by breast cancer 17.42% and cancer of colon and rectum 10.60%. According to India fact sheet, 2013, section of cancer[9] incidence of three most common cancers (common to both sexes) is breast cancer 14.3%, cervix uteri 12.1%, and lip and oral cavity (7.6%). In PBCRs, first three common cancers are, in Bengaluru - (2008–09) breast (27.3), cervix uteri (14.0), and ovary (5.7); Barshi (rural) - (2009–10) cervix uteri (29.8), breast (18.5), and ovary (6.0); Bhopal (2009–10) breast (26.7), cervix uteri (16.0), and ovary (8.0); and Sikkim state - (2009–11) breast (10.3), cervix uteri (8.0), and lung (7.7).[5] In India estimated cases of cancer incidence, mortality and 5 years prevalence of top three cancer (common to both

sexes) are, 1st common breast cancer - incidence 14.3%, mortality 10.3%, and 5-year prevalence 22.2%, 2nd common cervix uteri - incidence 12.2%, mortality 9.9%, and 5-year prevalence 17.3%, and 3rd common cancer of lip, oral cavity - incidence 7.6%, mortality 7.6%, and 5-year prevalence 6.6%.[10]

Three most common cancers among male in our hospital were oral cancer 11.35%, cancer of colon and rectum 6.81%, and blood cancer 4.54%. In five HBCR,[4] three most common cancer among male are, in Mumbai - mouth (11%), lungs (7%), and tongue (7%), in Bangalore - esophagus (10%), hypopharynx (9%), and stomach and lung (7%), and in Chennai stomach (9%), mouth (9%), and esophagus (8%). As compared to national statistic common cancer in the various PBCRs as per relative proportion between 2008 and 2012/100,000 population, among male in Bangalore - (2008–09) lung (8.8), stomach (7.9), and prostate (6.7), Barshi (rural) - (2009–10) mouth (11.0), esophagus (8.4), and penis (5.1), Bhopal - (2009–10) mouth (12.6), lung (10.5), tongue (9.1), and Sikkim state - (2009–11) stomach (15.9), liver (8.9), and esophagus (8.5).[5] Among females, three common cancers in our hospital were breast cancer 17.42%, followed by cancer cervix 8.33% and oral cancer 6.81%. In other HBCR,[4] the most common cancer among female are, in Mumbai - breast (26%), cancer cervix (19%), and ovary (6%), in Bengaluru - cancer cervix (33%), breast (13%), and mouth (11%), in Chennai most common cancer are same as Bengaluru, and in Dibrugarh - cancer cervix (15%), esophagus (13%), breast (12%), ovary (8%), and mouth (7%).[5] As compared to national statistic in our hospital registry cancer of cervix cases is low it ranked fifth among overall cancer registration that is need to be further investigate the causes.

CONCLUSION

In our hospital, trend and pattern of cancer are little different from other hospital and population registry of country. Among first three common cancers (common to both sexes) in our institute are oral cancer, cancer of breast, and cancer of colon and rectum. As compared to other part of country, cancer of cervix ranked 1st–3rd in almost all registry, but in our observation it ranked 5th, this need to be further thoroughly investigate the reason for relatively low registration of cancer cervix cases in reference to more than 73% of state population is rural with 32% tribal population that strongly indicates the need to improvise the cancer cervix screening program. Second, the percentage and proportion of blood cancer are reported relatively high as compared to other part of country this difference may be due to bias generated by very low number of cancer patient registered in our center, or longitudinal observation must carried out to check the trend and pattern of various cancer over a period of time to make a final hypothesis. RSBY[11]

is really good initiative of government, most of the poor patient (below poverty line) benefitted by it and should be promoted.

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