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DRUG PRESCRIBING PATTERN AMONG CANCER PATIENTS ATTENDING THE CANCER CENTRE IN A TERTIARY CARE GOVERNMENT HOSPITAL

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ABSTRACT

Cancer is a group of more than 100 different diseases, characterised by uncontrolled cellular growth, local tissue invasion, and distant metastases. It is second only to cardiovascular disease as a cause of mortality in world wide. Chemotherapy involves the use of pharmacological agents to kill tumor cells. Present study had been conducted to evaluate prescribing pattern of anticancer drugs. A retrospective study was conducted in the cancer centre of MIMS Mandya over a period of 6 months. Records of patients undergoing chemotherapy were included in the study. Out of 108 enrolled patients, majority were female (95,87.96%) and in the age group of 50-70 years (63, 5834%). Among various cancers breast cancer (86, 79.63%) found most commonly reported, followed by lung cancer (8, 7.4%) and ovarian cancer (5, 4.625). Anthracycline antibiotics (95, 87.5%) and 5-FU (87, 80.5%) were most commonly prescribed anticancer drugs. To prevent or manage Anthracycline adverse effects of chemotherapy, dexamethasone, ondansetron and ranitidine were used as palliative therapy.

KEYWORDS: Cancer, Chemotherapy, Prescription pattern.

INTRODUCTION

Carcinoma is one of the most common cause of morbidity and mortality all over the world.[1] Tumors are characterized by themselves, as well as the in which they develop and function. The general term used to describe a tumor is neoplasm, the literal meaning being 'new growth'.[2] The commonly used term for a malignant growth is a cancer – cancer is Latin for crab. The condition was called cancer in ancient times because an advanced cancer was thought to resemble a crab, with "claws" reaching out into surrounding tissues.[3]

The most common cancers reported in India were mouth, oropharynx, oesophagus, stomach and lungs, bronchus, trachea in males while carcinoma of cervix, breast, mouth, orophagus and oesophagus in females.[4]

According to the WHO, annually people die of cancer in India with prevalence of 500,000.[5] Cancer chemotherapy may be indicated as a primary, palliative, adjuvant or neo-adjuvant treatment modality.[6] Prescribing pattern is a potential tool in ascertaining the role of drugs in society. It greatly helps in healthcare budgets making. Prescribing pattern is a process of analysis of prescription use of drugs.[7] Chemotherapy is the cornerstone of treatment in most of the malignancies. With respect to increased number of patients who are treated in outpatient and chemotherapy clinics, the continuity of care is especially important.[8]

METHODOLOGY

This is a reterospective study and this research work was carried out at cancer centre, Mandya Institute of Medical Sciences (MIMS), Mandya. A specially designed patient case record form was administered for the collection of demographic social – economic, past medication history and prescribing pattern. The study was initiating after getting ethical approval from MIMS. All available records from 2015 January to 2019 January were included for this study A total of 108 prescription were analyzed. Data collection has done from medical record room, prescription records of the patients.

RESULT AND DISCUSSION

Gender wise categorization

On analysing the distribution pattern of cancer patients according to gender, the data represented that cancer was more prevalent in females than males. The greater prevalence of cancer in female can be because of the involvement of their reproductive system such as the

ovarian, breast cancer, cervical cancer which occupies the major portion among all other forms of cancer.

Table 1: Gender wise distribution of cancer.

Gender	No. of Patients	Percentage
Male	13	12.04%
Female	95	87.96%

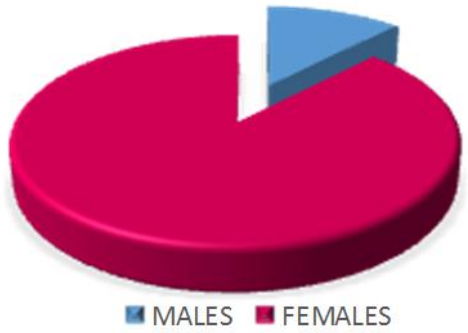

Fig. 1: Gender wise distribution of cancer.

Age wise categorization

The study revealed that majority of cancer cases was evident in the age groups between 50 to 70 years. The age wise distribution of the patient showed that there was higher incidence of cancer in this age group. The total incidence of the case constituted 58.34% of the total age group. The next susceptible age group of patient prone to cancer was found to be 30 to 50 years.

Table 2: Distribution of patients based on Age.

Age	No. of patients	Percentage
10-30	5	4.62%
30-50	40	37.04%
50-70	63	58.34%
Total	108	100%

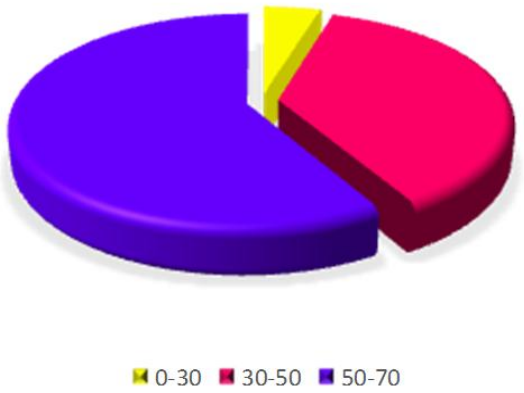

Fig. 2: Distribution of patients based on Age.

Disease wise categorization

There were altogether 10 different types of cancer observed during the study period. The type of cancers observed with their corresponding number of patients is shown in table 4. The cancers were found to be affecting every systems of the body revealing the non-specific nature of the disease.

Our study revealed that reproductive system of female are more susceptible to cancer and malignancy, breast cancer (79.63%) is the most occurring cancer. Lung cancer and ovarian cancer place the second and third position with 7.4% and 4.62% respectively. Other cancers such as oesophageal, duodenal, osteogenic carcinoma, cancer in urinary bladder, colon, stomach cancer and vaginal cancer falls below 10% in our study.

Table 3: Disease wise distribution of cancer.

Type of cancer	No. of patients	Percentage
Breast	86	79.63%
Ovarian	5	4.62%
Oesophageal	1	0.93%
Vaginal	1	0.93%
Duodenal	1	0.93%
Osteogenic Carcinoma	2	1.85%
Lung	8	7.4%
Urinary bladder	1	0.93%
Colon	2	1.85%
Stomach	1	0.93%

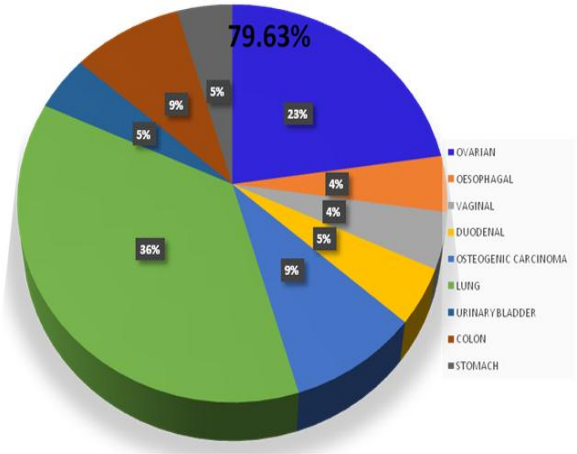

Fig. 3: Disease wise distribution of cancer.

Physiological system wise distribution

In our study reproductive system are more susceptible to malignancy. Out of 108 patients, 92 patients (85.18%) are belongs to cancer which affect reproductive system. And 8 patients (7.4%) falls under cancer in respiratory system. 5 patients (4.62), cancer affect the digestive system. Urinary and skeletal systems are less susceptible to cancer.

Table 4: Physiological System Wise Distribution of Cancer.

Physiological system	No. Of patients	Percentage
Nervous	Nil	0%
Urinary	1	0.93%
Respiratory	8	7.4%
Reproductive	92	85.18%
Skeletal	2	1.85%
Lymphatic	Nil	0%
Endocrine	Nil	0%
Digestive	5	4.62%
Circulatory	Nil	0%

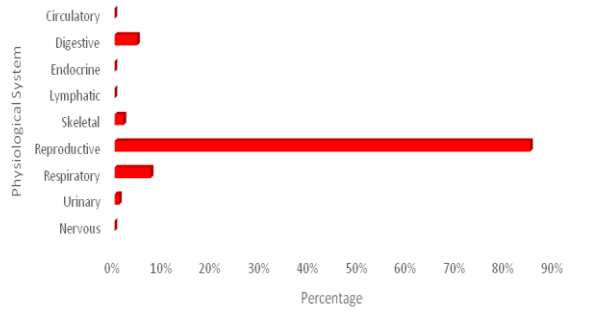

Figure 4: Physiological system wise distribution of cancer.

Drug wise categorization

The percentage of different classes of drug prescribed in the cancer patients is presented in figure 5. The majority of drugs prescribed was alkylating agents (91.63%) followed by antibiotics (87.5%), antimetabolites (80.5%) and taxanes (12.9%).

Table 5: Drug wise distribution of cancer.

Class of anticancer drugs	Percentage
Alkylating agents Cyclophosphamide Cisplatin Carboplatin	 86(79.63% 4(3.7%) 9(8.3%)
Antimetabolites 5-FU	 87(80.5%)
Taxanes Paclitaxel	 14(12.9%)
Antibiotics Epirubicin Doxorubicin	 89(82%) 6(5.5%)

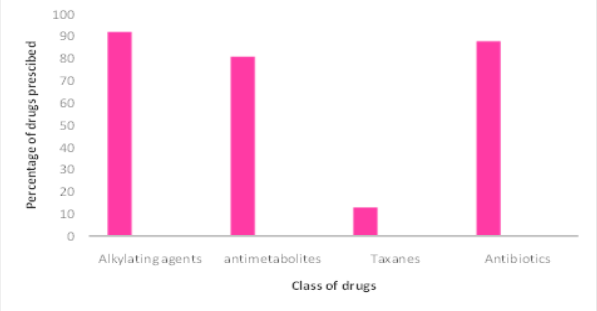

Fig. 5: Drug wise distribution of cancer.

Prescription pattern of anticancer drugs

Out of 15 anti-cancer drugs mentioned in the National essential drug list by WHO, 7 drugs were routinely prescribed to the patients for various cancer treatments. Out of 108 patients Epirubicin is prescribed for 89 patients, 5-FU for 87 patients and cyclophosphamide for 86 patients are prescribed. Other drugs like paclitaxel prescribed for 14 patients, carboplatin and cisplatin are prescribed for 9 patients and doxorubicin for 6 patients.

Table 6: prescribing pattern for anticancer drug.

Drugs	Percentage
Epirubicin	89(82%)
Cyclophosphamide	86(79.63%)
5-FU	87(80.5%)
Doxorubicin	6 (5.5%)
Paclitaxel	14 (12.9%)
Carboplatin	9(8.3%)
Cisplatin	9(8.3%)

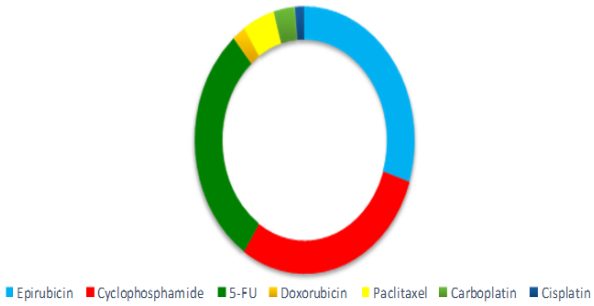

Fig. 6: Prescription pattern of anticancer drug.

Adjuvant medications

Cancer chemotherapy includes cytotoxic medicines accompanied by adjuvant and supplementary therapeutic measures. These additional medications other than the cytotoxic medicines are for reducing the side effect seen with the cancer chemotherapy. Anti-emetics, proton pump inhibitors, H_2 antagonists, rehydration and supplementary therapy are the class of adjuvant medications used in cancer treatment.

Table 7: Adjuvant medications used.

Anti-emetics	
Ondansetron	98 (90.7%)
Emecet	4 (3.7%)
Supplement therapy	
Dexamethasone	102 (94.4%)
Proton pump inhibitors	
Pantaprazole	102 (94.4%)
H_2 Antagonists	
Ranitidine	8 (7.4%)
Rehydration therapy	
Magnesium sulphate	14 (12.9%)
Potassium chloride	5 (4.6%)

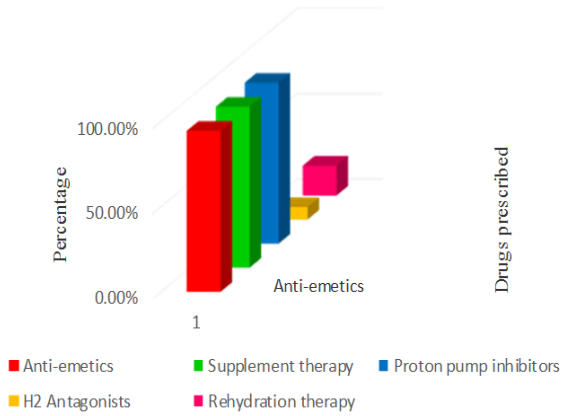

Fig. 7: Adjuvant medications.

Year wise distribution

In our study, we found that incidence of occurrence of cancer is increasing markedly in year by year. It may be due to lifestyle changes, environmental pollution, food habits etc. In the year of 2015 the cancer incidence was 10.18% and the incidence increased to 36.11% in the year of 2018.

Table 8: Year wise distribution.

Year	No. of patients	Percentage
2015	11	10.18%
2016	25	23.14%
2017	33	30.55%
2018	39	36.11%

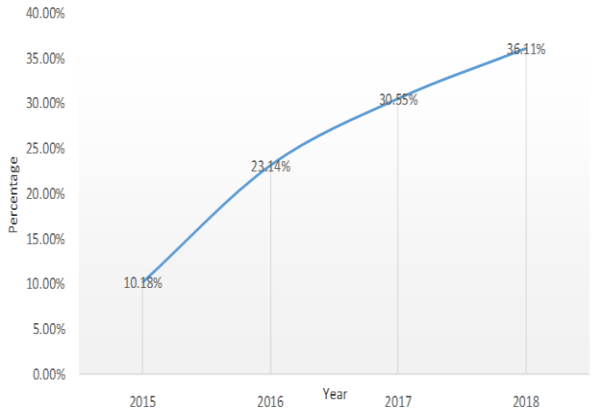

Fig. 8: Year wise distribution.

DISCUSSION

A retrospective study on drug prescribing pattern among cancer patients was conducted in cancer centre, MIMS Teaching Hospital, Mandya. A well designed patient data collection form was used for collecting the details. A total number of 108 prescriptions were studied. In that majority of the patients were females. According to the result, the prevalence of cancer is more in females than males. The greater prevalence of cancer in female can be because of the involvement of their reproductive system such as the ovarian, breast cancer, cervical cancer which occupy the major portion among all other forms of cancer. Similar findings were reported by Gulam Muhammad Khan et al.[9]

In our study we found that the next susceptible age group of patient prone to cancer was found to be 30 to 50 years. Agaarwal et al,.[10] studies were similar to our result.[10] The most common cancer was cancer of breast and lung cancer placing as second most occurring cancer. Similar findings were observed as a higher incidence of breast cancer in the studies carried out by Mary Rohini Pentareddy *et al*., and Manichavasagam M et al.[1,6]

Other cancers such as oesophageal, duodenal, osteogenic carcinoma, cancer in urinary bladder, colon, stomach cancer and vaginal cancer falls below 10% in our study. Similar results were found in study conducted by Sajeev Kumar *et al*.,[11] In our study, Epirubicin, 5-FU and Cyclophosphamide was the most commonly prescribed drugs and a similar study conducted by Renuka L Kadam *et al*., shows that cycloposphamide is the commonly prescribed anticancer drug followed by 5-FU and Doxorubicin.[12]

Carcinoma of breast and cervix are common types, because of the susceptibility of female reproductive system to cancer. Anthracyclins and antimetabolites are the mostly used anticancer drug. H2 antagonists, steroids, anti-emetics, supplement therapy, analgesics, proton pump inhibitors and rehydration therapy are the adjuvant therapies given along with the anticancer drugs. Breast carcinoma, Anti metabolites, Cyclophosphamide and Doxorubacine combination therapy was preferred while in lung carcinoma, platinum and taxol combination was prescribed. H2 antagonist (Ranitidine), 5-HT3 antagonists (Ondansetron), and corticosteroids (dexamethasone) were given in nearly all the cases to manage the adverse effects of anticancer drugs. Cancer for reproductive system (85.18%) are most occurring while considering the hysiological system wise distribution and other physiological system like respiratory, digestive, skeletal, urinary etc. comes under less than 10% of occurrence. The most commonly prescribed medications were alkylating agentsclass of medication, mainly for breast cancer. Anthracyclin antibiotics and antimetabolites were the next mostly prescribed chemotherapeutic agents. Incidence of cancer increases year by year. 10.18% was in 2015 and it increased to 36.11% in the year of 2018. Anti-emetics, proton pump inhibitors and supplement therapy were prescribed adjuvant to chemotherapy.

CONCLUSION

The present study concludes that prevalence of cancer increased with increase in age, in which 5 cancer patients (4.62%) belongs to the aging between 10-30, 40 patients (37.03%) comes between the age 30-50 and 63 patients (58.33%) belongs between aging 50-70. The prevalence of cancer is more in females than males. In our study, we

found that incidence of occurrence of cancer is increasing markedly in year by year. It may be due to lifestyle changes, environmental pollution, food habits etc. In the year of 2015 the cancer incidence was 10.18% and the incidence increased to 36.11% in the year of 2018.

REFERENCE

1. Mary Rohini Pentareddy, A. V. S. Suresh, Shailendra D, Y. Subbaratnam, G. Prasuna, D. T. V. Naresh, K. Rajshekar, et al. Prescribing pattern of anticancer drugs in a tertiary care hospital. Int J Evid Based Healthc, 18, 2015; 2(20): 3001.
2. Rachel Airley. Cancer chemotherapy basics to the clinics. First edition. UK:Wiley Blackwell, 2009; 11.
3. Frederick O. Stephens, Karl R. Aigner. Basics of Oncology. First edition. London New York:Springer Dordrecht Heidelberg, 2009; 5-10.
4. ICMR Report. Cancer Research in ICMR Achievements in Nineties, 2006.
5. Joseph T Dipiro. Pharmacotherapy. Sixth edition. New York: MC Grow Hill, 2005; 2279.
6. Manichavasagam M, P Jovita M Martin, Lavanya R, Karthik S, Seenivasan P, Rajanandh MG. Prescribing pattern of anticancer drugs in a medical oncology department of a tertiary care teaching hospital. Ann Med Health Sci Res., 2017; 7: 1-3.
7. Maryam Taghizadeh-Ghehi, Asiyeh Amouei, Ava Mansouri, Aarefeh Jafarzadeh Kohneloo, Molouk Hadjibabaie. Prescribing pattern and prescription-writing quality of antineoplastic agents in the capital city of a middle-income developing country. J Res Pharm Pract., 2018; 7(1): 46-50.
8. Vinodkumar Mugada, Aswinichand Paruchuri, Mounika Munagala. drug utilization evaluation of anticancer drugs in a tertiary care teaching hospital: a descriptive observational study. J Appl Pharm Sci., 2016; 6(10): 98-100.
9. Gulam Muhammad Khan, Raj Kumar Thapa, Dewashish Singh Adhikari, Muna Rajbhandari, Pratibha Dwa, Saroj Shrestha, SumanOli. Evaluation of cancer prevelance and cytotoxic medication prescribing in central region of Nepal. J Sci. Technol, 2013; 9(1): 189-199.
10. Manushi Agaarwal, Shalini Chawla, Kishore Singh, Proteesh Rana. evaluation of anticancer drug utilization and monitoring of adverse drug reaction in the indoor patients receiving cancer chemotherapy in a tertiary care hospital in new Delhi. J Basic Clin Pharma., 2018; 9(2): 118-123.
11. Sajeev Kumar, Serene Maria, C H Shejila, Padmaja Udaykumar, Drug utilization review and cost analysis of anticancer drugs used in a tertiary care teaching hospital. Indian Journal of Pharmaceutical Education and Research, 2018; 80(4): 686-693.
12. Renuka L kadam, Vijay M Motghare, Smita Sontakke, Vijay Mahobia, A K Diwan. Study of prescription pattern and adverse drug reactions of antineoplastic drugs in patients with breast cancer in a tertiary care teaching hospital. Int J Pharm Pharmacol, 2017; 4(4): 210-214.