Drug Utilization Review of Anticancer Drugs in Medical Oncology Department of a Tertiary Care Teaching Hospital

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Abstract

The present study aimed to analyze the drug utilization pattern of anticancer drugs in medical oncology department of a tertiary care teaching hospital, Tamilnadu. Each prescription in the department of medical oncology was studied for the patient's demographic details, name of the drug, dose, dosage form, frequency, duration etc during the study period. Commonly used anticancer drugs and various types of cancer were noted and the percentage of drugs prescribed from national essential drug list was assessed. The study revealed that majority of cancer cases was evident in the age groups between 55 to 65 years. Out of 214 patients, 115 were female and 99 were male patients. Breast cancer was found to be most prevalent among females followed by ovary and stomach cancer. In male, lung cancer was more common followed by stomach. The majority of drugs prescribed was alkylating agents followed by antimetabolites, plant derivatives, cytotoxic antibiotics and glucocorticoids. As a conclusion, the utilization of anticancer drugs in this hospital was found to be rational and more than 70% of drugs were prescribed from the National essential drug list. Drug utilization review should be conducted periodically to minimize the untoward effects at least to some extent.

Keywords: Drug Utilization; Cancer; Prescription.

Introduction

Drug Utilization Review (DUR) is a potential tool in ascertaining the role of drugs in society. DUR greatly helps in healthcare budgets making. DUR is a process of analysis of prescription use of drugs [1,2]. Potential hazard to the patients are led by inappropriate use of drugs. Periodic review of the drug utilization is one way to prevent such a hazards to patients and also to ensure the safety and effectiveness of treatment [3,4].

Physicians play a vital role in making healthcare related decisions about the usage of health resources. However, with respect to drugs, pharmacists are the bridging bond between the patients and their usage of drugs. By doing DUR, pharmacists interact with their patients about their medications [5,6]. With this background, the present study is carried out by pharmacists in analyzing the drug utilization review of anticancer drugs with the objectives (1) to analyze the classes of drugs being prescribed, (2) to study the usage of adjuvant drugs accompanied in the drug therapy, (3) to analyze the anticancer drugs prescribed from the National essential drug list.

Methods

A prospective, cross-sectional study was conducted in the Department of Medical Oncology, Sri Ramachandra Medical Center, Sri Ramachandra University, Porur, Chennai, which is a tertiary care hospital. The patient belonged to the oncology unit of both private and government block were included. Prior permission was obtained from the department of oncology for conducting this study.

The data were collected from inpatient prescription records at the hospital in a specially designed data collection form. Each prescription was critically

studied for the patient's demographic details such as patient's name, age, gender, date of consultation etc. Name of the drug, dose, dosage form, frequency, duration were noted. The drugs prescribed in each prescription were carefully noted and the following parameter was used to assess the rationality of prescriptions, (1) Segregation of prescription in age wise, (2) Categorization of drugs prescribed with respective to gender, (3) Therapeutic category, (4) Percentage of drugs prescribed from national list of essential mediatory.

Results and Discussion

A total of 214 cancer patients' prescription was studied. The age wise distribution of cancer patients is shown in Figure 1. The study revealed that majority of cancer cases was evident in the age groups between 55 to 65 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 31.30% of the total age group. The next susceptible age group of patient prone to cancer was found to be 45 to 55 years.

Several mechanisms have been proposed for explaining how vulnerability of cancer increases with age. Aging makes an organism susceptible to cancer due to hormonal disturbance, increase in number of loci of chronic proliferation, and the decline in the immune surveillance. Exposure to infectious agents or creation of pro-oncogenic tissue microenvironment with increasing age can promote the development of cancer [7,8].
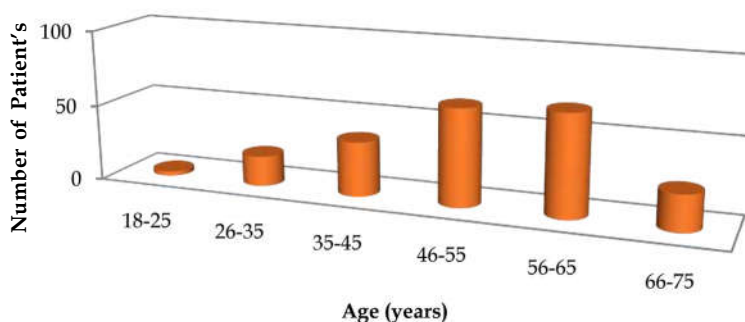

Fig. 1: Age-wise distribution of Cancer

The study revealed that out of 214 patients, there were 115 female patients and 99 male patients. The greater prevalence of cancer in females can be because of the involvement of their reproductive system such as the ovarian cancer, breast cancer, and cervical cancer which occupy the major portion among all other forms of cancer. These susceptible body parts cause greater incidence of cancer problems in females [9,10].

Out of 115 female patients, the most affected age group was found to be 46 - 55 years which constituted about 32.17% and the least affected age group was found to be 18 - 25 years which constituted only 0.86% of the total patients. Out of 115 female patients, breast cancer was found to be most prevalent which constitutes about 39.13% of the total cases. The next prevalent cancer was in ovary and stomach which constituted about 14.78% and 7.82% respectively.

Out of 99 male patients, the most affected age group was found to be 56 - 65 years which constituted about 32.32% and the least affected age group was found to be 18 - 25 years which constituted only 2.02% of the total patients. Lung cancer was found to be most prevalent in males which constitutes about 17.17%%

of the total cases. The next prevalent cancer was in stomach which constituted about 11.11%.

There were altogether 26 different types of cancer observed during the study period. The type of cancers observed with their corresponding number of patients is shown in Table 1. The cancers were found to be affecting every systems of the body revealing the non-specific nature of the disease.

Treatments such as chemotherapy, radiation therapy, immunotherapy, monoclonal antibody therapy and surgery are commonly used for the management of cancer nowadays [11,12]. The choice of therapy vary from the stage of disease, the location and grade of the tumor and overall general state of the patient [13]. Chemotherapy refers to the antineoplastic drugs used to treat cancer or the combination of these drugs into a cytotoxic standardized treatment regimen. Since different chemotherapy drugs act on different mechanism, the combination chemotherapy is most preferred [14]. Cytotoxic drugs have the ability to kill not only tumor cells but also damage normal cells. As a result, they can produce significant side effects in patients. The most cytotoxic drugs are potentially hazardous

substances being mutagenic, teratogenic, orcarcinogenic. These substances may also cause secondaryneoplasm in patients undergoingtreatment [15,16]. Therefore, extreme caremustbe taken in handling and administrating of such products.

The percentage of different classes of drugs prescribed in the cancer patients is presented in Figure 2. The majority of drugs prescribed was alkylating agents followed by antimetabolites, plant derivatives, cytotoxic antibiotics and glucocorticoids.

Table 1: Various types of cancer in study patients

S. No.	Types of Cancer	No. of Patients
1	Breast cancer	45
2	Chronic carcinoma	2
3	Cheek	3
4	Cervix	6
5	Colon	11
6	Carcinoma nasopharynx	2
7	Endometrium	2
8	External ear	1
9	Gastric	9
10	Gall bladder	5
11	Hypopharynx	1
12	Lung	24
13	Lymphatic lymphoma	8
14	Tongue	10
15	Maxilla	2
16	Mouth	1
17	NHL	7
18	Oesophagus	13
19	Ovary	17
20	Postrate	4
21	Pancrease	8
22	Periampullary	1
23	Rectum	8
24	Stomach	17
25	SQ cell CA RT root	1
26	Miscellaneous	12

Table 2: Adjuvant therapies in the management

| S. No	Drug Category	No. of Patients	Percentages
1.	**Anti –emetics**		
	Emecet	60	7.22%
	Perinorm	27	3.24%
2.	**Supplements therapy**		
	FST/BCT	84	10.10%
3.	**Steroid**		
	Dexamethasone	97	11.67%
4.	**Proton pump inhibitors**		
	Pantaprazole	43	5.17%
	Rabenprazole	47	5.65%
5.	**H$_2$ Antagonists**		
	Chlorpheneramine maleate	118	14.51%
	Palzen	79	9.50%
	Ranitidine	134	16.12%
6	**Rehydration therapy**		
	Potassium chloride and magnesium sulphate	19	2.28%
7.	**Analgesics**		
	Paracetamol	75	9.02%
	Tramadol	9	1.08%
8.	**Miscellaneous**	39	4.69%
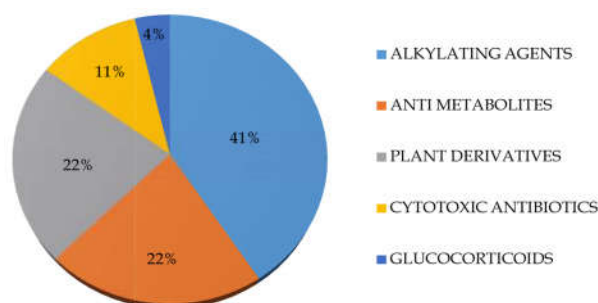
Fig. 2: Classes of anticancer drugs prescribed

Out of 15 anti-cancer drugs mentioned in the National essential drug list by the WHO, 11 drugs (73%) were routinely prescribed to the patients for various cancer treatment. Cancer chemotherapy includes cytotoxic medicines accompanied by adjuvant and supplementing therapeutic measures. These additional medications other than the cytotoxic medicine are for reducing the side effect seen with the cancer chemotherapy. Table 2 depicts the details of the supportive drugs used.

Conclusion

The present study conclude that prevalence of cancer increased with increase in age. The prevalence of cancer in more in females than male. Carcinoma of breast and cervix are common types, alkylating agents and antimetabolites are the mostly used anti-cancer drug. H_2 antagonists, steroids, anti-emetics, supplement therapy, analgesics, proton pump inhibitors and rehydration therapy are the adjuvant therapies given along with the anti-cancer drugs. 73% of the total anti-cancer drugs prescribed were in the National essential drug list.

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