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Drug Utilisation of Anticancer Drugs Used in a Tertiary Care Hospital



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ABSTRACT

Objective: The study is aimed to study the prescribing pattern of anticancer drugs in medical oncology department in a tertiary care hospital, Kerala. **Methods:** This study was a Prospective observational study. The study was conducted at the Oncology Department of Muthoot Healthcare Hospital Pvt Ltd., Kozhencherry, Pathanamthitta, Kerala. A sample size of 200 cancer patients undergoing chemotherapy in the hospital was selected. Each prescription was studied for the patient's demographic details, name of the drug, dose, dosage form, frequency, duration etc. Commonly used anticancer drugs and various types of cancer were noted. **Result:** During the study period around 200 cancer patients were found to be admitted in oncology department. The study revealed that majority of cancer cases was evident in the age groups between 68-77, out of 200 samples. cancer was more common in males 111 (55.5%) than in females 89 (45.5%). The majority of cases observed were multiple myeloma followed by breast cancer. The class of drugs most frequently used were natural and semisynthetic products. **Conclusion:** Cancer is a major concern of current society. A variety of treatment modalities are available to treat cancer. nowadays target specific drugs are available which are having less side effects. As multiple treatment regimens are available to treat different cancer. it is very essential to assess drug utilization of anticancer drug. from our study also we could find the prescription pattern as well as its rationality according to the guidelines.



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INTRODUCTION

Cancer is the second leading cause of death globally after cardiovascular diseases. Cancer patients generally have a poor prognosis in developing countries, including India, because of relatively low cancer awareness and late diagnosis when compared to patients in developed countries¹.

The main modalities used for cancer treatment include chemotherapy, surgery, radiation, hormones and immunotherapy. The choice of therapy depends upon patient factors, treatment factors and tumor factors. Chemotherapy is the treatment of diseases with pharmacological agents. Cancer chemotherapy utilizes anti-neoplastic drugs or a combination of multiple drugs in a standardized regimen for the management of cancer. These drugs usually act on rapidly dividing cells and are either cell cycle-specific or non-specific².

Chemotherapy involves the use of drugs to destroy cancer cells. It works by destroying cancer cells that grow rapidly. Unfortunately, chemotherapy also affects normal cells that grow rapidly, such as blood cells forming in the bone marrow, cells in the hair follicles or cells in the mouth and intestines. The side-effects of anti-cancer chemotherapy remain a major source of concern for both clinicians and patients even with the enhanced survival and improved efficacy offered by modern treatments. Current drugs or other approaches to counteract chemotherapy-induced adverse effects are often incompletely effective, frequently do not address potential long term consequence or may even cause other side-effects which only increases the patient discomfort³.

METHODS

The study was a Prospective observational study which was conducted at the Oncology Department of a tertiary care hospital Pvt Ltd., Kozhencherry, Pathanamthitta, Kerala after obtaining approval from the Institutional Ethical Committee of the hospital. Study period was 6 months and was done in 200 cancer patients undergoing chemotherapy in the hospital during this period. Patients between the age group of 18-90, both gender, IP and OP patients undergoing chemotherapy was chosen for the 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, etc. Name of the drug, dose, dosage form, frequency, duration were noted. All subjects were provided with a brief introduction regarding the study and the confidentiality of the data.

A written Informed Consent printed in their understandable language was obtained from the patient or caregiver if the subject was unable to give the same. The drugs prescribed in each prescription were carefully.

RESULTS

TABLE NO. 1: GENDER WISE DISTRIBUTION OF CANCER

| SL. NO | GENDER | NUMBER OF SUBJECT n=200 | PERCENTAGE |
|--------|--------|-------------------------|------------|
| 1 | MALE | 111 | 55.5 |
| 2 | FEMALE | 89 | 45.5 |
| 3 | TOTAL | 200 | 100 |

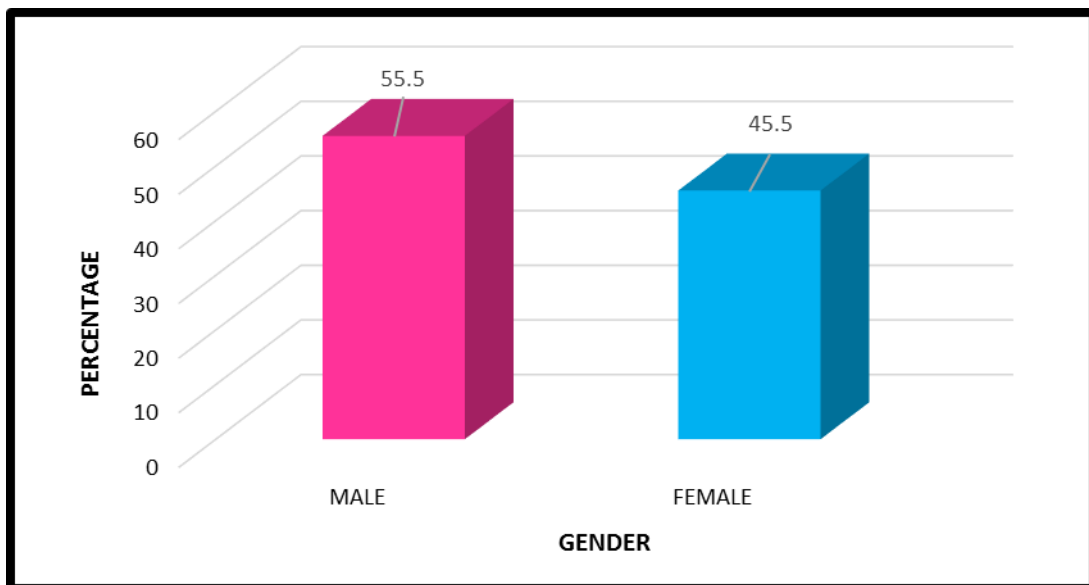


FIGURE NO. 1: GENDER WISE DISTRIBUTION OF CANCER

Among the 200 subjects enrolled in study, cancer was more common in males 111 (55.5%) than in females 89 (45.5%).

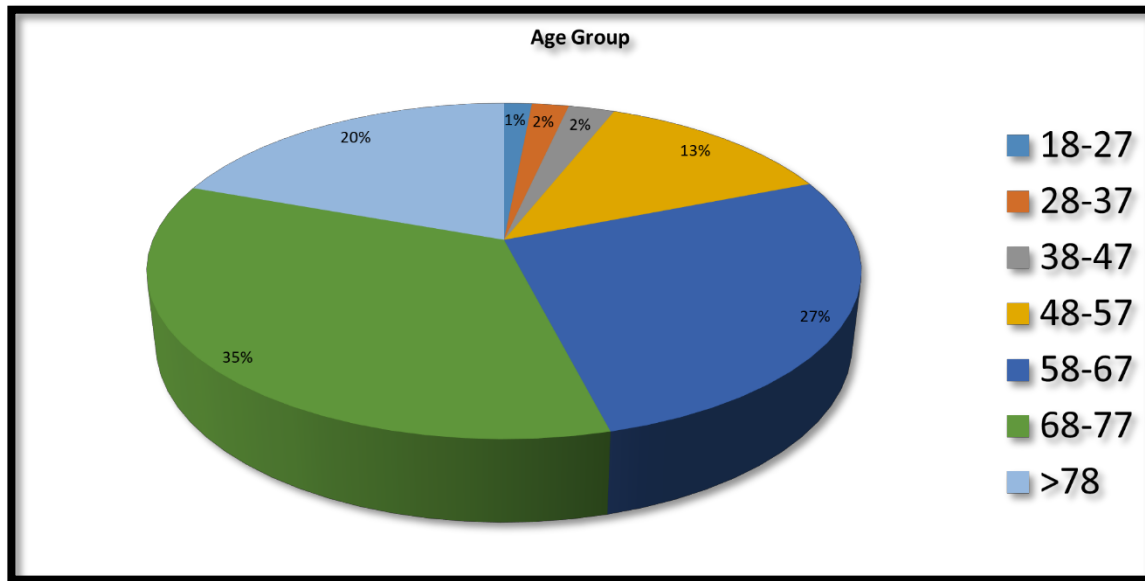


FIGURE NO. 2: PERCENTAGE OF AGE WISE DISTRIBUTION OF PATIENTS

Among the 200 subjects enrolled, cancer was more prevalent in the age group of 68- 77 years (35%) followed by 58-67 years (27%), >78 years (20%), 48-57 years (13%), 28-37 years (2%), 38-47 years (2%), 18-27 years (1%).



TABLE NO. 2: DISTRIBUTION OF CANCER

| SL. NO. | DIAGNOSIS | NO. OF PATIENTS (n=200) |
|---------|------------------------------|-------------------------|
| 1. | Acute Lymphoblastic Leukemia | 1 |
| 2. | Acute Myeloid Leukemia | 1 |
| 3. | Breast Cancer | 33 |
| 4. | Cervix Cancer | 1 |
| 5. | Cholangio Cancer | 1 |
| 6. | Chronic Lymphocytic Leukemia | 5 |
| 7. | Colon Cancer | 4 |
| 8. | Endometrium Cancer | 5 |
| 9. | Esophagus Cancer | 2 |
| 10. | Gall Bladder Cancer | 1 |
| 11. | Glioblastoma | 2 |
| 12. | Hodgkin's Lymphoma | 17 |
| 13. | Hypo pharynx | 2 |
| 14. | Lung Cancer | 3 |
| 15. | Lymphoma | 1 |
| 16. | Malignant Melanoma | 1 |
| 17. | Mesothelioma | 1 |
| 18. | Multiple Myeloma | 34 |
| 19. | Non- Hodgkin's Lymphoma | 5 |
| 20. | Oral Cancer | 2 |
| 21. | Oral Squamous Cell Carcinoma | 1 |
| 22. | Ovarian Cancer | 7 |
| 23. | Pancreatic Cancer | 5 |
| 24. | Pineal Germinoma | 1 |
| 25. | Prostate Cancer | 30 |
| 26. | Rectum Cancer | 13 |
| 27. | Stomach Cancer | 19 |
| 28. | Supraglottic Cancer | 1 |
| 29. | T- Cell Lymphoma | 1 |
| 30. | Urinary Bladder Cancer | 5 |
| 31. | Uterus Cancer | 1 |
| 32. | Vocal Cord Cancer | 1 |
| | Total | 200 |

From the study it was found that majority of subjects were diagnosed with multiple myeloma (17%) followed by breast cancer (16.5%) and prostate cancer (15%) and stomach cancer (9.5%) and less than 9% of subjects were diagnosed with Acute Lymphoblastic Leukemia, Acute Myeloid Leukemia, Cholangio Carcinoma, Chronic Lymphocytic Leukemia, Glioblastoma, Malignant Melanoma, Mesothelioma, Oral Squamous Cell, Pineal

Germinoma, Supraglottic Cancer, T-Cell Lymphoma, Uterus Cancer, Vocal Cord Cancer. (Table 5)

TABLE NO. 3: THERAPEUTIC CLASSWISE PRESCRIBING PATTERN OF ANTICANCER DRUGS

| SL. NO. | CLASS OF DRUGS | FREQUENCY | PERCENTAGE |
|--------------|------------------------------------|------------|------------|
| 1 | Alkylating Agents | 71 | 18.3 |
| 2 | Antimetabolites | 69 | 17.9 |
| 3 | Natural And Semisynthetic Products | 146 | 37.7 |
| 4 | Miscellaneous | 86 | 22.3 |
| 5 | Hormones And Their Antagonists | 15 | 3.8 |
| TOTAL | | 387 | 100 |

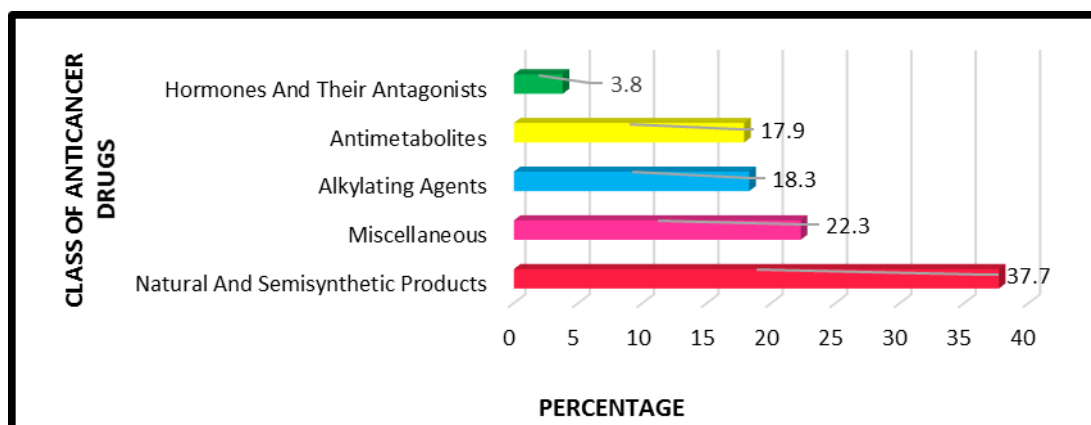


FIGURE NO. 3: THERAPEUTIC CLASSWISE PRESCRIBING PATTERN OF ANTICANCER DRUGS

The class of drugs which were more frequently used were natural and semisynthetic products (37.7%) and less frequently used were hormones and their antagonists (3.8%).

DISCUSSION

AGE

From the 200 subjects enrolled in the study population, the highest prevalence of cancer was observed in the age group between 68-77 years (55%), followed by 58-67 years (27%), and 20% of patients above the age of 78 years and very few was observed in the age group between 18-27(1%). According to **Kumar S et al.**,⁴ maximum prevalence of cancer was in

between the age group of 50-70 years (52%) and the least in the age group of 0-10 years (2%). This study strongly agrees with our result. This suggests that risk of developing cancer increases with age. Exposure to infectious agents, hormonal disturbances or creation of pro-oncogenic tissue microenvironment with increasing age can promote the development of cancer. Older people have more chance of DNA errors (greater exposure to carcinogens like smoke, occupational exposure or UV rays during their lifetime) and it's more likely that these errors will lead to cancer.

DIAGNOSIS

From the 200 subjects enrolled in our study 33 types of cancer were detected. Among them, Multiple myeloma was more prevalent (17%), followed by Breast cancer (16.5%) followed by Prostate cancer (15%) and many other cancers were found in few percentage of patients. According to **Kulkarni MD *et al.***,⁵ cancer of the genitourinary tract is the most common type 24%, breast cancer 18%. This is contradictory to our result which showed greater incidence of multiple myeloma.

PRESCRIPTION PATTERN OF ANTICANCER DRUGS

From the 200 subjects enrolled in the study the most frequently prescribed drugs were the natural and semisynthetic products (37.7%), followed by miscellaneous agents (22.3%), and followed by alkylating agents (18.3%). Drugs like doxorubicin and docetaxel belongs to the class of natural and semisynthetic products. These are the preferred chemotherapeutic agents for breast cancer. Bortezomib, thalidomide, lenalidomide and trastuzumab belongs to the class of miscellaneous agents and are mostly prescribed for treatment of multiple myeloma and breast cancer. Cyclophosphamide, cisplatin and carboplatin are the commonly prescribed alkylating agents which are indicated for the treatment of breast cancer, multiple myeloma and many other cancers. According to **Kumar S *et al.***,⁴ the commonly prescribed anticancer drugs were cytotoxic drugs (90%). This result loosely agrees with our study.

CONCLUSION

The effective prescribing of anticancer drugs is based upon the availability, cost, and tolerance of drugs and progression of cancer in patient. Drug utilization review of anticancer drugs are essential as it is an effective tool to ascertain optimal drug use by reviewing the current prescription pattern and thereby make necessary modifications. The present study

concludes that prevalence of cancer increased with increase in age. Among the 200 subjects enrolled in study, cancer was more common in males 111 (55.5%) than in females 89 (45.5%).

From our study, we could find that risk of developing cancer increases with age. Exposure to infectious agents, hormonal disturbances or creation of pro-oncogenic tissue microenvironment with increasing age can promote the development of cancer.

CONFLICT OF INTEREST

The Author(s) declare(s) that they have no conflicts of interest to disclose.

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