Assessment of Prescribing Pattern of Chemotherapeutic Agents in Oncology Unit of Tertiary Care Hospital: A Cross-Sectional Study

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Abstract: Periodical revision of prescribing pattern studies is essential to promote the rational usage of drugs in every hospital. This study was aimed to assess the prescribing pattern of chemotherapeutic agents in the oncology unit of a tertiary care hospital in Andhra Pradesh. Every prescription was screened for demographic characteristics of the patients, type of cancer, category of drug, dose, dosage form, and the frequency of drugs administration. All the data was collected in a data collection form, and the prescribing pattern was assessed by comparing it with WHO prescribing indicators. The patients' average age was 57.45±11.49 (Mean ± SD), and majority (35.71%) of the patients were in the age group of 61-70. The majority of the patients were females (64%), cervix, and breast cancers were the most commonly observed cancer in females. Cisplatin was the most popular drug used in 57.1% of the patients. Average of 3.95 drugs is prescribed per encounter. 15.7% of encounters were prescribed with antibiotics. 95.7% of drugs prescribed were injections. 71.8% of drugs were prescribed by generic names. 92.7% of drugs prescribed were from the essential drug list. The study implies that the utilization of anticancer drugs in this hospital was found to be rational.

Keywords: WHO prescribing indicators; Cancer therapy; Chemotherapy; Prescribing pattern.

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1. INTRODUCTION

Cancer is characterized by abnormal cell division devoid of control which tend to proliferate and can destroy body tissue.\(^5\)\(^,\)\(^6\) Prescription pattern is the process of analyzing drug prescription use.\(^3\) Irrational use of drugs is currently a significant problem in medical practice.\(^4\)\(^,\)\(^5\) It leads primarily to a reduction in medicine or therapy quality, which increases morbidity and mortality and also increases the risk of adverse effects. The monitoring of prescriptions and utilization studies could identify the problems involved and provide feedback to the prescriber.\(^6\) More than half of all medicines are prescribed, dispensed, or improperly sold worldwide, and 50 percent of patients fail to take them correctly. Besides, approximately one-third of the world’s population lacks access to essential medicines.\(^4\) Prescribing of drugs has changed from generics to brand and also been prescribed out of EDL.\(^7\)\(^,\)\(^8\) WHO developed prescribing indicators to measure the degree of polypharmacy, tendency to prescribe drugs by generic name, overall level use of antibiotics and injections, the degree to which the prescribing practice conformed to the essential drug list.\(^9\) By regularly providing essential drug lists and essential drugs, prescribers can rationally treat patients. These prescribing indicators were commonly used as a standard in Drug utilization studies.\(^8\) A prospective cross-sectional study was planned to assess the prescribing pattern of chemotherapeutic agents in the oncology unit of tertiary care hospitals using WHO prescribing indicators. This study helps to promote and develop standards for prescribing, formulating drug policies and improves the rational usage of drugs so that adequate measures can be taken to prevent some of the side effects of chemotherapeutic agents.

2. METHODS

2.1 Study site and Duration

The study was carried out at the Oncology unit, Govt. Tertiary care Hospital, Anantapuramu, Andhra Pradesh, India over six months from August 2018 to January 2019.

2.2 Study design

Cross-sectional study was followed in this study

2.3 Study criteria

Irrespective of gender, age above 18 years with any type of cancer who are under chemotherapy as alone or in combination with other treatment options (Radiation and Surgery) were included in the study. Pediatrics, critically ill patients who are unable to give information like cognitive impairment, psychiatric illnesses, etc., and who are not willing to participate were excluded from the study.

2.4 Study Procedure

The study was initiated after clearance and approval from the Institutional Review Board (IRB), RIPER with approval number: RIPER/IRB/PP/2018/005. A data collection form was prepared which consists of Name, Age, Gender, Social habits, Dose, Frequency of drugs and WHO prescribing indicators which include: Average number of drugs per encounter, percentage of drugs prescribed by generic name, Percentage of encounter with an antibiotic or Injections prescribed, Percentage of drugs prescribed from EDL. A sample size of 70 patients who met inclusion criteria was included in the study by non-probability sampling method.\(^10\) An informed consent form was taken from the patients in the local language Telugu. Data was collected using a data collection form.

3. STATISTICAL ANALYSIS

Descriptive statistics like mean, frequency, and standard deviation were used to represent the variables of the study population, Graph Pad Prism 3.0 software used to calculate mean, frequency and standard deviation.\(^5\)

4. RESULTS

Out of 70 patients, 64% (45) were female (Fig 1). 35.71% (25) of the patients were in the age group of 61-70 years, and the average age of the patients was 57.45±11.49 (Table 2). Rectal, Stomach, Supraglottis, Gallbladder cancer was the most commonly observed cancer in males (Fig 2). Cervix and breast cancers were the most commonly observed cancer in females (Fig 3). Alkylation agents, Antimetabolites, and Plant derivatives were the most frequently prescribed anticancer drugs (Fig 4). Cisplatin 57.1% (40) was used in the majority of the patients. Trastuzumab was used in 1.4% of the patients. Most commonly used combination of chemotherapeutic agents includes 5-Fluourouracil + Cisplatin 29.4% and Adriamycin + Cyclophosphamide + Taxanes 23.5%. Adjacent drugs prescribed include H\(_2\) blockers, antiemetics, steroids, and analgesics. Ranitidine 29%, Ondansetron 17%, and Paracetamol 16% were preferred in most patients. Average of 3.95 drugs is prescribed per encounter. 15.7% of encounters were prescribed with antibiotics. 95.7% of drugs prescribed were injections. 71.8% of drugs were prescribed by generic names. 92.7% of drugs prescribed were from the essential drug list (Table 2).

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Age</th>
<th>Gender</th>
<th>No. of Patient's (n=70)</th>
<th>Frequency (%)</th>
<th>Mean Age ±SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Above 18-30</td>
<td>Male</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2.</td>
<td>31-40</td>
<td>1</td>
<td>5</td>
<td>6</td>
<td>8.5</td>
</tr>
<tr>
<td>3.</td>
<td>41-50</td>
<td>2</td>
<td>15</td>
<td>17</td>
<td>24.2</td>
</tr>
<tr>
<td>4.</td>
<td>51-60</td>
<td>5</td>
<td>10</td>
<td>15</td>
<td>21.4</td>
</tr>
<tr>
<td>5.</td>
<td>61-70</td>
<td>15</td>
<td>10</td>
<td>25</td>
<td>35.7</td>
</tr>
<tr>
<td>6.</td>
<td>71-80</td>
<td>2</td>
<td>5</td>
<td>7</td>
<td>10</td>
</tr>
</tbody>
</table>

SD: Standard deviation
Table 2: WHO prescribing indicators

<table>
<thead>
<tr>
<th>S. No.</th>
<th>WHO Prescribing Indicators</th>
<th>Result (%)</th>
<th>WHO Prescribing Indicators (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Average number of drugs per encounter</td>
<td>3.95</td>
<td>2</td>
</tr>
<tr>
<td>2</td>
<td>Percentage of encounters with antibiotics</td>
<td>15.7</td>
<td>20-26.8</td>
</tr>
<tr>
<td>3</td>
<td>Percentage of encounters with injectables</td>
<td>95.7</td>
<td>13.4 - 24.1</td>
</tr>
<tr>
<td>4</td>
<td>Percentage of drug prescribed by generic names</td>
<td>71.8</td>
<td>100</td>
</tr>
<tr>
<td>5</td>
<td>Percentage of drug prescribed from EDL</td>
<td>92.7</td>
<td>100</td>
</tr>
</tbody>
</table>

Fig 1: Gender wise distribution of patients

Fig 2: Types of cancer in the male patients

Fig 3: Types of cancer in the female patients
5. DISCUSSION

Our study revealed that out of 70 patients, majority of them are females 45 (64%), similar results were observed in the study conducted by Manickavasagam M et al. 2017. 10 Majority of the patients were in the age group of 61-70 years (35.7%), similar results were observed in the study conducted by Darshan J. Dave et al. 2014 but, in a survey conducted by Sneha et al. 2015, the age group of 41-50 years were the major group. 6 In our study, rectal and stomach cancers were more evident in males and in female's cervix and breast cancer. 11-13 In male's lung and pharynx cancer and in female's breast and pharynx cancers are observed respectively which is similar to a study conducted by Darshan J. Dave et al. 2014.

Cisplatin and Paclitaxel are commonly prescribed anticancer drugs in our study. In contrast, the study conducted by Vinod Kumar Mugada et al. 2016 reported that 5-Fluorouracil and cisplatin followed by cyclophosphamide were the commonly prescribed anticancer drugs. 9 In our study 5-Fluorouracil (5FU) and cisplatin combination was used more frequently (29.4%), similar results were seen in a study conducted by Eskinder Ayalew Sisay et al., 2015. 14, 15 But in the study conducted by Darshan J. Dave et al. 2014 revealed that 5FU and platinum based combinations were given frequently. 6 In the present study, ranitidine, ondansetron, paracetamol, and dexamethasone are the most commonly prescribed adjuvant drugs. Similar results were also observed in a study conducted by Mary Rohiniti et al. 2015. 16 In our study, the average number of drugs per encounter was found to be 3.95, which is very high to the WHO prescribing indicators. A high average number of encounters per prescription leads to polypharmacy and a lot of scope for the possible drug interactions and ADR. In the present study, the percentage of encounters with injectables was 95.7%, which is very high to the WHO prescribing indicators, this may be due to the fact that the majority of anti cancer dosage forms are injectables. Nowadays, antimicrobial resistance is a burning problem around the globe, and our study reveals the percentage of encounters with antibiotics was 15.7%, which is less than WHO prescribing indicators. This is a good sign and helps to prevent antimicrobial resistance. The present study reveals the percentage of drugs prescribed with generic names was 71.8%, which is less than WHO prescribing indicators. This may lead to an economic burden on the patients. In our study, we found that the percentage of drugs prescribed from EDL was 92.7%, which is very close to the WHO standard guidelines. In contrast, a study conducted by Gulum Muhammad Khan, Raj Kumar Thapa, et al., found 73.5%. 17

6. CONCLUSION

The utilization of anticancer drugs in this hospital was found to be rational, more than 70% of drugs were prescribed with generic names, and more than 90% of drugs were prescribed from EDL. The percentage of encounters with antibiotics was less than the WHO prescribing indicators. However, the percentage of encounters per prescription was very high, which may lead to polypharmacy and drug related problems. Assessment of prescribing patterns should be conducted periodically to minimize the untoward effects, at least to some extent.

7. AUTHORS CONTRIBUTION STATEMENT

Dr. Bhupalam Pradeepkumar conceptualized and designed this work. Ms. Kalpana K, Ms. Tejaswini D, Mr. Arunkumar P & Ms. Saraswathi K collected the data regarding to this work. Mr. Narayana G & Dr. Haranath Chinthaginjala analysed these data and necessary inputs were given towards designing manuscript.

8. CONFLICT OF INTEREST

Conflict of interest declared none.

9. REFERENCES

Monitoring of Adverse Drug Reaction in the Indoor Patients Receiving Cancer Chemotherapy in a Tertiary Care Hospital in New Delhi.


