

Study of drug utilization pattern in the department of radiotherapy in a tertiary care teaching hospital**Chandan N. G.^{1*}, Ranganathan T.², Nagabushan H.¹**

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Received: 11 February 2019**Revised:** 23 March 2019**Accepted:** 03 April 2019***Correspondence to:**

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ABSTRACT

Background: Drug utilization studies are an important tool in evaluating the rationality of therapeutic practice and also it is said to improvise the therapeutic use of drugs. The present study will be undertaken to evaluate the drug utilization pattern in the department of Radiotherapy.

Methods: This was a prospective, observational study that was undertaken in the department of Radiotherapy in a tertiary care teaching hospital. The study was conducted for a period of 6 months after obtaining permission from Institutional Ethical Committee. The study was conducted among cancer patients undergoing radiotherapy. The data was collected from the patient case records and was analyzed as per the WHO prescribing indicators.

Results: In the present study it was observed that the average number of drugs prescribed per encounter was 7.7. The drugs prescribed by generic name were 41.4%. Percentage of encounters with an antibiotic prescribed was 100. Percentage of encounters with an injection prescribed was 20.5%. Percentage of drugs prescribed from essential drugs list was 35.8%.

Conclusions: Drug utilization studies helps in modifying the prescription pattern and helps in making the drug usage more rational.

Keywords: Drug utilization studies, Essential drugs, Radiotherapy, WHO prescribing indicators

INTRODUCTION

Cancer is a term used for diseases in which cells abnormally divides without control and are able to invade other tissues.¹ It is a major public health problem and is among the leading causes of morbidity and mortality.² It has been projected by World Health Organization that number of new cancer cases are said to increase by more than 80% by 2030 in low income countries. An estimated 10 to 11 million patients with cancer diagnosis each year by 2030 is projected by the WHO in low- and middle-income countries.³ Various modalities of treatment for cancer include surgery, radiotherapy and chemotherapy.²

Radiotherapy is now an important non-surgical cancer therapy used in more than 50% of all patients with cancer whether curative or palliative.⁴ Radiotherapy involves use of high dose radiation to kill the cancer cells and at the same time normal cells which are adjacent to cancer cells getting exposed to radiation is minimised.⁵

Cytotoxic effects produced by radiation involve absorption of radiation by the DNA of the cells which results in ionization of atoms in DNA and its damage.⁶ Radiotherapy is usually associated with numerous side effects which are site dependant. Some of the acute adverse effects associated with radiotherapy include erythema, dermatitis, hair loss, diarrhea and cystitis. Late complications include

fibrosis which can result in bowel or urethra obstruction following pelvic tumor irradiation and hardening in the breast following radiotherapy for breast cancer. Radiation induced emesis is another commonly seen adverse effect more often seen in upper abdomen irradiation and total body irradiation.^{7,8}

Drug utilization research has been developed not only to evaluate the rationality in therapeutic practice, but it also helps in improving therapeutic use of drugs and also to evaluate the cost-effectiveness of the treatment. Drug usage pattern and trend can also be evaluated by conducting drug utilization studies.⁹

The present study will be undertaken to evaluate the drug utilization pattern in the department of Radiotherapy.

METHODS

This was a prospective, observational study that was undertaken in the department of Radiotherapy in the teaching hospital attached to Mandya Institute of Medical sciences after getting the approval of Institutional Ethical Committee. The study was conducted from April 2016 to September 2016 for a period of 6 months.

Study population

The study was conducted among cancer patients undergoing radiotherapy.

Inclusion criteria

- Cancer patients of either sex who were aged 18 years and above undergoing radiotherapy
- And giving consent to participate in the study.

Exclusion criteria

Patients less than 18 years and those not consenting to participate in the study.

Study procedure

The case records of the patients fulfilling the inclusion criteria were reviewed. The data collected included demographic information like patient's age, gender, occupation, and drug prescription which includes the drugs prescribed, dosage form and frequency. All the information was recorded in a specially designed proforma. The data was analyzed as per the WHO prescribing indicators as follows.¹⁰

- Average number of drugs per encounter
- Percentage of drugs prescribed by generic name
- Percentage of encounters with an antibiotic prescribed
- Percentage of encounters with an injection prescribed
- Percentage of drugs prescribed from essential drugs list.

Statistical analysis

After collection of data it was entered in Microsoft excel sheet and evaluated using descriptive statistics. The results were expressed in numbers and percentages.

RESULTS

A total of 78 patients receiving radiotherapy were included in the study. Among them 42 (53.8%) were females and 36 (46.1%) were males patients.

In the present study it was observed that among 78 patients receiving radiotherapy 21 (26.9%) patients were diagnosed with carcinoma cervix, 15 (19.2%) patients with breast carcinoma, 11 (14.1%) patients with hypopharyngeal malignancy and 9 (11.5%) patients with oropharyngeal carcinoma. Among female patients receiving radiotherapy 50% of them had carcinoma cervix followed by 35.7% with breast carcinoma, 7.1% with oesophageal carcinoma, 4.7% with carcinoma glottis and 2.3% with endometrial carcinoma. Among male patients receiving radiotherapy 30.5% had hypopharyngeal carcinoma, followed by 25% of them with oropharyngeal carcinoma, 19.4% with carcinoma tongue, 13.8% with carcinoma glottis, 5.5% with carcinoma tonsil and 2.7% each with oesophageal carcinoma and carcinoma maxilla (Figure 1 and 2).

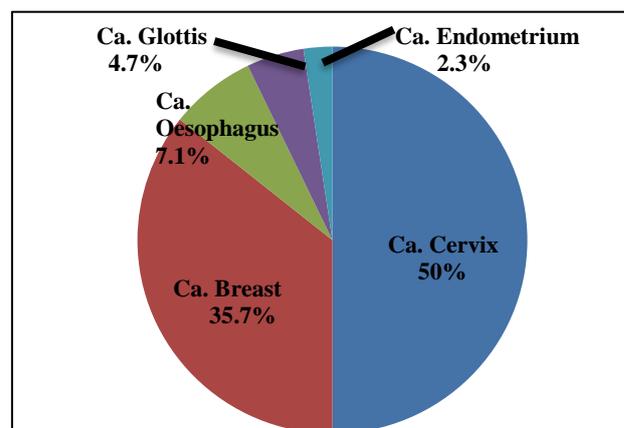


Figure 1: Distribution of cancer in females.

In the present study it was observed that all the patients on radiotherapy received NSAIDs and oral formulation of aceclofenac was the most commonly used NSAID which was used in combination with paracetamol and serratiopeptidase which constituted 10.5% of the drugs used. Around 12 patients received diclofenac in combination with serratiopeptidase. Opioid analgesic, tramadol was used in 8 cases as oral formulation. Injectable diclofenac was used in 12.8% of the cases and 7.6% cases received injectable tramadol, an opioid analgesic. Antihistamine, cetirizine in tablet form was used in combination with montelukast in all the cases. Also, protein supplements and haematinics were prescribed for all the cases. Among PPIs, omeprazole (7.5%) was commonly used. Among corticosteroids, topical

preparations were prescribed more commonly (5.5%). Clobetasol cream in combination with gentamicin was prescribed in 18 cases and topical triamcinolone for 11 patients. Deflazacort in the form of tablet was used in 12 cases. Amoxycillin (11.5%) and metronidazole (11.5%) were the antibiotics that were encountered more frequently.

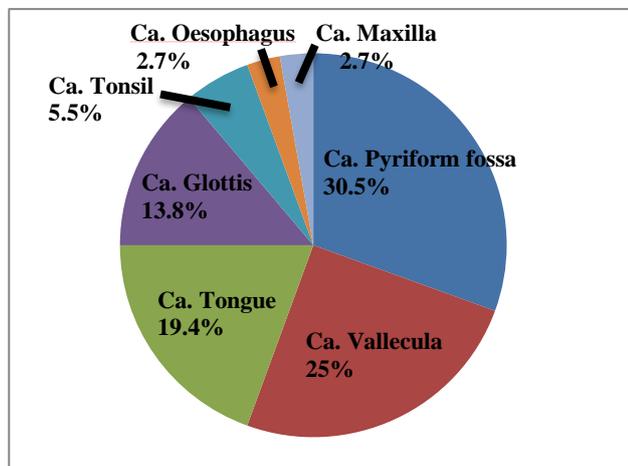


Figure 2: Distribution of cancer in males.

Table 1: WHO prescribing indicators.

WHO prescribing indicators	Results
Average number of drugs per prescription	7.7
Percentage of drugs prescribed by generic name	41.4
Percentage of encounters with an antibiotic prescribed	100
Percentage of encounters with an injection prescribed	20.5
Percentage of drugs prescribed from essential drug list	35.8

Table 2: Percentage of drugs prescribed from different classes.

Drug class	Frequency	Percentage
Nutritional supplements	156	25.6
Antibiotics	148	24.3
Analgesics	100	16.4
Antihistaminic	78	12.8
PPIs	74	12.1
Corticosteroids	41	6.7
Miscellaneous	11	1.8

A total of 608 drugs were prescribed during the study period. Average number of drugs prescribed per encounter was 7.7 in this study. The drugs prescribed by generic name were 41.4% in present study. It was also observed that 20.5% of the prescriptions had a prescription for injection. Also, it was observed that 35.8% of the drugs prescribed were found in Essential list of medicines (Table 1).

In this study, it was observed that among the different class of drugs prescribed nutritional supplements were prescribed more frequently followed by antibiotics, analgesics, antihistaminics, Proton pump inhibitors (PPIs) and corticosteroids (Table 2).

DISCUSSION

The present study was conducted to evaluate the drug usage in the department of radiotherapy. During the study period of six months, of the total patients included in the study receiving radiotherapy, majority were females with cervical malignancy as the commonest type of cancer. Among male patients' head and neck malignancy was more common.

The average number of drugs prescribed per prescription was 7.7. Although, it appears as polypharmacy it is important to know that the definition of polypharmacy is variable and may vary with clinical setting. Polypharmacy is said to not only increase irrational use of drugs but also can increase the risk of drug interactions, medication errors and adverse effects.^{11,12} In present study it was observed that the percentage of drugs prescribed by generic name was 41.4%. Use of generic drugs is said to decrease the expenditure of medicine.¹³ Also, various studies have shown that the generic drugs are comparable with that of the branded drugs.¹⁴ Hence the prescribing of generic drugs has to be encouraged.

Prescription of FDCs was also observed in the present study. Usage of FDCs can be beneficial as they can improve patient compliance by decreasing pill burden, reduced side effects and cost. Also, they may produce synergistic effect when used appropriately. Whereas, inappropriate FDCs may result in drug interactions and dose titration of individual ingredient will not be possible. Also, they can result in increased side effects and decreased effectiveness.¹⁵

The percentage of drugs prescribed from National list of essential medicine, 2015 was 35.8.¹⁶ Prescription of FDCs has reduced the percentage of drugs from Essential drug list used to some extent in this study. Prescribing drugs from essential drug list promotes rational use of drugs. Selection of drugs from the list of essential medicine assures safety and provides maximum benefits at a lower cost.¹⁷ There is a scope for improvement with regard to the selection of drugs from essential drug list.

Antibiotics were used in almost all the patients in this study. The usage of antibiotics was found to be higher in comparison with other similar study done in radiation oncology.¹⁸ Indiscriminate use of antibiotics increases the risk of drug resistance.¹⁹ Hence, the usage of antibiotics needs to be judicious.

In present study it was observed that most of the patients were prescribed with analgesics to treat skin reaction causing pain and also to treat cancer pain. Both NSAIDs

and Opioid analgesics were used depending on the intensity of pain. NSAIDs like Paracetamol with aceclofenac were used more frequently in the treatment of pain. Opioid analgesic like tramadol was also used in some cases to get relief from pain.

WHO has recommended an analgesic ladder in the treatment of cancer pain, which suggests to begin the treatment with non-opioids and then to introduce mild opioids if required. If these drugs are not sufficient to treat the pain, strong opioid analgesics like morphine are recommended.²⁰

In the present study it was also observed that corticosteroids were another major class of drugs that was prescribed. Topical formulations were used more commonly than systemic formulations.

Various studies have shown the effectiveness of topical steroidal preparations in decreasing the acute dermatitis due to radiotherapy.^{21,22}

Antihistamine was another commonly used class of drugs as observed in this study. Pruritus may be experienced by patients receiving radiotherapy.²³ Antihistamines may be used in the treatment of pruritus.

The limitations of the study were that the study was conducted for a short duration. Data collected for an extended period will give a better result. Also, the Prescribing indicators are of less help in specialty outpatient setup, as the drug usage in such setup may be more complex. Thorough analysis of the information is required to confirm the rationality of the drug use as prescribing indicators alone may not be adequate.

CONCLUSION

This study has generated information with regard to the utilization of drugs in the department of radiotherapy. There appears to be some scope for improvement in the prescription pattern with respect to some of the prescribing indicators. Drug utilization studies helps in modifying the prescription pattern and helps in making the drug usage more rational.

Funding: No funding sources

Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee

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Cite this article as: Chandan NG, Ranganathan T, Nagabushan H. Study of drug utilization pattern in the department of radiotherapy in a tertiary care teaching hospital. *Int J Basic Clin Pharmacol* 2019;8:945-9.