Original article:

Study of Adverse Effects of Anticancer Drugs at a Tertiary Care Teaching Hospital

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Abstract:

Background: The current study was conceived to monitor suspected Adverse Effects (AEs) with anticancer drugs, a therapeutic category prone to AEs, in a focused manner and contribute to the overall knowledge base regarding AEs in the country.

Material & Methods: A prospective, observational, non-interventional study conducted at the Agartala Government Medical College, Agartala, Tripura (India) for period of 6 months.A total of 100 patients receiving chemotherapy were interviewed for information on type of adverse effects and the other pertinent information like demographics, diagnosis, treatment, drugs used to manage the adverse effects were collected from the patient's medical records.

Results: Our study showed that the Among the 100 patients, 45 (45%) males and 55 (55%) females had suffered from ADRs after receiving cancer chemotherapy.The cancer with highest prevalence as breast (22%) followed by esophageal (8%), nasopharyngeal (7%) and cervical (6%).Most affected organ system was GIT (33.33%, 38.18%) followed by skin (15.55%, 14.54%), musculoskeletal (11.11%, 14.54%), Heme (8.88% and 9%) and nervous system (11.11% and 9%).

Conclusion: The Adverse effects associated with the use of anticancer drugs were evaluated during a period of 6 months. The AEs prevalence encountered suggest that practically all patients receiving cytotoxic drugs suffer one or more AEs.

Keywords: Cancer, Adverse Effect, Chemotherapeutic Agents.

INTRODUCTION

The global burden of cancer continues to raised largely because of the aging and growth of the world population alongside an increasing adoption of cancer-causing behaviours,[1,2] particularly smoking, in economically developing countries. Different modalities for treatment of cancer includes chemotherapy, radiation, surgery, hormonal therapy, immunotherapy, biologic therapy and cryosurgery.[3-5] Chemotherapeutic medicines have a narrow therapeutic index and the dosage needed to achieve a therapeutic response usually proves toxic to the body's rapidly proliferating cells. The normal tissues adversely affected by these drugs are those which are rapidly dividing: the bone marrow, gastrointestinal tract and hair follicles. Some agents have other organ specific toxicities. Additionally, some drugs are associated with immediate adverse reactions which are a result of their biochemical nature rather than their action against tumours.

Use of cancer chemotherapeutic medicines is associated with several adverse effects (AE)[6] ranging from mild nausea to fatal myelosuppression. During the last decade it has been demonstrated by a number of studies that medicine induced morbidity and mortality is one of the major public health problems.[7]It is well recognised that chemotherapeutic agents are associated with severe adverse effects

leading to economic burden and decreased quality of life. There is no extensive published data regarding the adverse effects of anticancer agents in Indian population. The current study was conceived to monitor suspected AEs with anticancer drugs, a therapeutic category prone to AEs, in a focused manner and contribute to the overall knowledge base regarding AEs in the country. The objective of the current study was to study the prevalence of adverse effects associated with the use of anti-cancer drugs in a South Indian hospital and their management.

MATERIALS& METHODS

A prospective, observational, non-interventional study conducted at the Agartala Government Medical College, Agartala, Tripura (India) for period of 6 months. All patient related information was collected as per case record form. Patients of both genders admitted in the cancer hospital and those who were willing to give informed consent, those with previous history of any disorder or toxicity taking any other drug besides anticancer drug were excluded from the study.

A total of 100 patients receiving chemotherapy were interviewed for information on type of adverse effects and the other pertinent information like demographics, diagnosis, treatment, drugs used to manage the adverse effects were collected from the patient's medical records.

RESULTS

Our study showed that the Among the 100 patients, 45 (45%) males and 55 (55%) females had suffered from ADRs after receiving cancer chemotherapy. Further classification based on the age and gender revealed that maximum number in females was in the age 41-60 years whereas the highest number in males was seen in >60 years group.

The analysis of our study data revealed that the cancer with highest prevalence as breast (22%) followed by esophageal (8%), nasopharyngeal (7%) and cervical (6%). Sub classification based on the gender showed, breast (40%), cervical (11%), ovarian (9%), and nasopharyngeal (7.27%) as the most the prevalent types in females whereas those in males were lung (11.11%), urinary bladder (8.88%) and NHL (8%) (Table: 1).

The present study showed that in both males and females, the most affected organ system was GIT (33.33%, 38.18%) followed by skin (15.55%, 14.54%), musculoskeletal (11.11%, 14.54%), Heme (8.88% and 9%) and nervous system (11.11% and 9%) (table 2).

DISCUSSION

In our study females accounted to more than half of the cases. In our study, it was observed that the populations in the age group 41-60 years were more prone to the development of cancer which is similar to the results obtained from the study conducted by Poddaret al.[8]

A study conducted by S. Mallik[9] on 25 patients treated with chemotherapeutic agents and described the patterns of AEs showed lung cancer (20%) as the most prevalent followed by stomach cancer (16%), breast (12%) and cervical (12%) which was slightly different from our observation.

The commonly prescribed chemotherapeutic agents in our setting were similar to the prescriptions in Kolkata as reported by Amartya De.[10]

The most affected organ systems in both the genders were GIT followed by skin, musculoskeletal, heme& lymphatic and nervous system. However, the study conducted by Guo HJ[11] had slightly different observations, with GIT being the most prominent followed by Heme[12], nervous system and skin.

The overall adverse effects observed in both the genders were similar. However, the effects on GIT and musculoskeletal were higher in females which may be accounted to higher sensitivity in this gender to these effects. When age group is taken into consideration then elderly patients encountered majority of the AEs. This may be due to the low metabolizing capacity and reduced excretory functions leading to accumulation of drugs in the body and thus increasing the risk of AEs in elderly patients.[13] As a result extra precautions should be taken while using chemotherapy in the elderly population.

CONCLUSION

The Adverse effects associated with the use of anticancer drugs were evaluated during a period of 6 months. The AE prevalence encountered suggest that practically all patients receiving cytotoxic drugs suffer one or more AEs. The prevalence of adverse effects was considerably high inspite of the use of existing premedications. Given the findings of the study, attempts to minimize the adverse effects associated with the anticancer drugs should be focused on increasing the awareness through educational intervention, implement appropriate use of premedications and non-pharmacological treatment for improved quality of life.

Table 1: Types of cancer observed

Type of Cancer	Male	Female
Nasopharyngeal	3 (6.66%)	4 (7.27%)
Colon	2 (4.44%)	2 (3.63%)
Rectum	1 (2.22%)	2 (3.63%)
AML	2 (4.44%)	3 (5.45%)
Urinary bladder	4 (8.88%)	1(1.81%)
NHL	4 (8.88%)	1 (1.81%)
Breast	-	22 (40%)
Cervical	-	6 (11%)
Ovarian	-	5 (9%)
Lung	5 (11.11%)	-
Oesophageal	4 (8.88%)	1(1.81%)
Others	20 (44.44%)	8 (14.54%)

Table 2: Distribution of Adverse effects based on organ systems

Adverse effect in Organ	Male	Female
GIT	15 (33.33%)	21 (38.18%)
Skin	7 (15.55%)	8 (14.54%)
Musculoskeleton	5 (11.11%)	8 (14.54%)
Nervous system	5 (11.11%)	5 (9%)

Heme&lymphatics	4 (8.88%)	5 (9%)
Eye	5 (11.11%)	4 (7.27%)
Infection	4 (8.88%)	4 (7.27%)
Total	45 (100%)	55 (100%)

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