



**CLINICAL PROFILE OF CHEMOTHERAPY AMONG CANCER PATIENTS IN A
TERTIARY CARE HOSPITAL- AN OBSERVATIONAL STUDY**

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ABSTRACT

Background: Chemotherapy could certainly cure cancer, justifying including it into multimodality regimens with surgery and radiation treatment in the early stages of illness to give a therapeutic benefit. Since its inception, the primary barriers to chemotherapy's therapeutic success have been toxicity to normal tissues, tumour heterogeneity, and the development of cellular drug resistance.^[1] **Objective:** To study the prognosis of chemotherapy, observe the diagnostic criteria of various types of cancer, and analyse various types of chemotherapy used in all types of cancer. **Methods:** A Hospital-based observational study of chemotherapy was conducted in tertiary care hospital for 6 months duration, with a sample size of 50 patients in the oncology inpatient and day care department of a tertiary care hospital. To begin, only medications that are somewhat successful against the same tumour when taken alone should be chosen for usage in combination. If they are available, medicines that cause some degree of full remission are recommended over those that cause just partial responses. When numerous medications of the same class are available and similarly effective, medication should be chosen based on its toxicity, which should not overlap with the toxicity of other medications to be used in combination. **Results and Discussion:** In this Prospective observational study, females (58%) were found to be more likely to suffer from cancer than male patients. Our study also revealed that 36-45 age group patients (30%) were found to be likely affected more in a population (n=50). Based on body weight difference between pre and post-chemotherapy, 40-60 age group patients were found to have more weight difference (30%). The number of patients diagnosed with carcinoma was high (76%). Pre-medications of chemotherapy found that Dexamethasone (68%) and Ondansetron (68%) were mostly prescribed along with Ranitidine (30%). **Conclusion:** The study shows that a combination of Adriamycin and cyclophosphamide were the most commonly prescribed chemotherapeutic agents used for breast carcinoma for 22% of breast cancer patients and also the combination of cisplatin and paclitaxel which is a mitotic inhibitor were most commonly prescribed chemotherapeutic agents used for 16% of lung cancer.

KEYWORDS: Chemotherapy, Carcinoma, Sarcoma.

INTRODUCTION

Chemotherapy could certainly cure cancer, justifying for including it into multimodality regimens with surgery and radiation treatment in the early stages of illness to give a therapeutic benefit. Since its inception, the primary barriers to chemotherapy's therapeutic success have been toxicity to normal tissues, tumour heterogeneity, and the development of cellular drug resistance. The development and application of advanced molecular tools for assessing normal and malignant cellular gene expression at the DNA, RNA, and/or protein levels have greatly aided in the identification of some of the critical mechanisms by which chemotherapy exerts its antitumor effects and activates the cell death program.^[2]

Chemotherapy is currently used in four clinical settings

- (1) Primary induction treatment for advanced disease or cancers with no other effective treatment options,
- (2) Neoadjuvant therapy for individuals with localized illness for whom local modalities of therapy, such as surgery and/or radiation, are insufficient,
- (3) Adjuvant therapy to local treatment techniques such as surgery and/or radiation therapy,
- (4) Direct installation into sanctuary sites or site-directed perfusion of certain cancer-affected areas of the body.

When numerous active medicines from various classes became accessible for use in combination in the

treatment of acute leukaemia and lymphomas, the Era of Combination Chemotherapy emerged.

Following its initial effectiveness in the treatment of hematologic malignancies, combination chemotherapy was later expanded to the treatment of solid tumours.

Combination chemotherapy with traditional cytotoxic medicines achieves several important goals that are not feasible with single-agent treatment.^[3]

According to the GLOBACON report 2018, lung cancer alone affected about 2.1 million people (11.6% of all cancers and caused 1.8 million deaths (which comprised 18.4% of all cancer related deaths).^[4]

Reports from the article, Clinical Profile of Lung Cancer in North India, on a study done on lung cancer patients over a 10 year period at the All India Institute of Medical Sciences, New Delhi, stated that immune history was started as a routine for lung cancer specimens and disease staging was done using whole body PET or CT scan of chest and upper abdomen.^[5]

The National Comprehensive Cancer Center Network, and other groups recommend adjuvant chemotherapy for women with invasive breast tumors greater than 1 cm in diameter, irrespective of whether axillary lymph nodes are involved.^[6] There are substantial short and long term side effects from chemotherapy in Breast cancer patients, on organs and cell lines and scanty data on the effects of chemotherapy on haematological and biochemical profile. Studies have examined short- and long-term side effects of chemotherapy on organs and cell lines among breast cancer patients.^[7-9]

According to Journal of Cancer and Tumour International, there are substantial short and long term side effects from chemotherapy in Breast cancer patients, on organs and cell lines and scanty data on the effects of chemotherapy on haematological and biochemical profile.^[10]

According to Journal Frontiers in Pharmacology, nausea and vomiting are among the most feared side effects for patients embarking a cancer chemotherapy and chemo-induced peripheral neuropathy is caused by many anti-cancer drugs including platinum based agents, vinca alkaloids, taxanes and proteasome and angiogenesis inhibitors.^[11]

In conclusion, the research topic has several citations and views generated among researchers especially on an individual disease category but still have so much that seems new. Pre medications are given especially to manage the commonly occurring side effects and there are also multiple factors such as dose and type of chemotherapeutic agents, patient's health status and stage of disease.

OBJECTIVES

To study the prognosis of chemotherapy and analyze various types of chemotherapy used in all types of cancer.

METHODOLOGY

STUDY DESIGN: Hospital-based observational study of chemotherapy in tertiary care hospital for 6 months duration in oncology inpatient and day care dept. of Malla Reddy Cancer Hospital and Research Institute. Hyderabad, India.

Dilutions

Cisplatin

Composition: Every 10 ml of solution contains 10 mg cisplatin concentrate solution as an active substance.

Dilution: Diluted in 500ml of Normal saline over 1 hour with 20% mannitol.

Paclitaxel

Composition: Each ml contains 6mg paclitaxel and polyoxyl 35 castor oil 527mg and dehydrated alcohol 49.7% v/v.

Dilution: Diluted in 500 ml of Ecoflac ND I.V over 3grs with Non- PVC I.V set.

Carboplatin

Composition: Each ml of solution contains 10mg of carboplatin 150mg/ 15ml and 450 mg / 45 ml

Each vial contains 150mg/15ml and 450mg/45ml.

Dilution: Diluted in 500ml of 5% Dextrose IV over 2 hours.

Doxorubicin Hydrochloride

Composition: one vial contains 10mg of Doxorubicin Hydrochloride and 0.2mg methylparaben.

Dilution: Diluted in 500ml of normal saline over 1 hour.

Cyclophosphamide

Composition: Each vial contains 900mg of cyclophosphamide solution as an active substance.

Dilution: Diluted in 250ml of normal saline over 1 hour.

Oxaliplatin

Composition: Each vial contains 100mg of oxaliplatin solution as an active substance.

Dilution: Diluted in 500ml of normal saline over 1 hour with 20% mannitol.

STUDY PERIOD

Six months (September 2020 - March 2021)

SAMPLE SIZE: 50 Patients.

Study criteria

Inclusion criteria

- Patient undergoing chemotherapy.
- Patients with all types of cancers (breast, lung, colorectal, endometrial, cervical, ovarian)
- Patients over the age of 10 years.
- Patients of both genders.

- Patients willing to provide Informed consent.
- Presence of concomitant diseases (cardio-respiratory, renal, hepatic, neurological disorders, etc).

Exclusion criteria

- Pregnant and lactating women.
- Patients who are not expected to cooperate and comply with the treatment.

RESULTS

1. Distribution of Patients Based On Gender

Table 1:

SEX	MALE	FEMALE
NO. OF PATIENTS(%)	21(42%)	29(58%)

2. Based On Age Groups

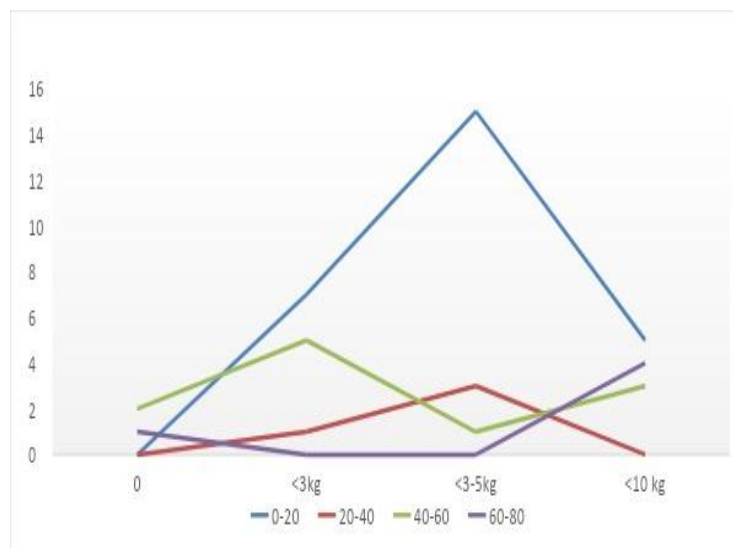
Table 2:

AGE(Yrs)	<18	18-25	26-35	36-45	46-55	56-65	66-75	76-85
PATIENTS	1	4	3	15	11	7	8	1

Based on Body Weight Difference Between Pre And Post-Chemotherapy

Table 3:

AGE GROUP	0	<3KG	≤3-5KG	≤ 10KG
0-20	0	0	2	1
20-40	7	1	5	0
40-60	15	3	1	0
60-80	5	0	3	4



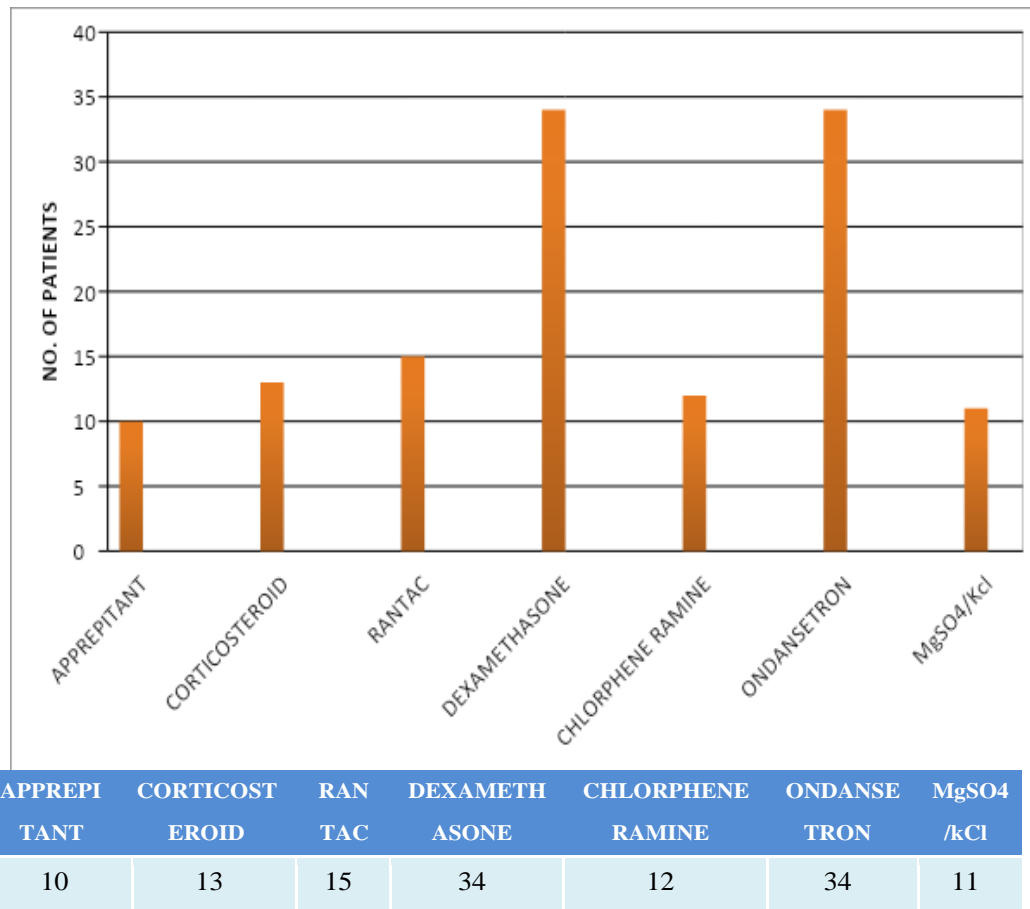
4. Based On Types of Cancer

Table 4:

SARCOMA	CARCINOMA	HODGKING	NON-HODGKING	LEUKEMIA
1	38	1	1	3

5. Based On Pre-Medications Of Chemotherapy

Table 5:



6. BASED ON ADRs

Table 6:

DRUGS	ADR'S
CISPLATIN	NEPHROTOXICITY.
CARBOPLATIN	BONE MARROW SUPPRESSION.
DOXORUBICIN	MUCOSITIS.
CYCLOPHOSPHAMIDE	LEUKOPENIA.
DACARBAZINE	FLU-LIKE SYNDROME.
PACLITAXEL	NEUROTOXICITY.
LENALIDOMIDE	TERATOGENIC EFFECTS.
CAPECITABINE	HAND-FOOT SYNDROME.
OXALIPLATIN	NEUROTOXICITY.
RITUXIMAB	BURNING SENSATION.
GEMCITABINE	FLU-LIKE SYNDROME.
IMATINIB	PERIORBITAL and ANKLE EDEMA.
TEMOZOLOMIDE	BONE MARROW SUPPRESSION
VINCRIStINE	CONSTIPATION.
VINBLASTIN	MUCOSITIS.
BORTEZOMIB	MYELOSUPPRESSION.

7. Based on Chemotherapy for Different Types of Cancer

Table 7:

S.NO	Types of Cancer	Gender		Choice Of Cancer Patient Chemotherapy
		TOTAL	FEMALES	
1	SARCOMA			
	1.MULTIPLE MYELOMA 2. SQUAMOUS CELL	1 7	2	1 5 RVD CISPLATIN
2	CARCINOMA			
	1.BREAST 2.OVARY OR CERVIX 3.LUNG 4.BRAIN 5.RECTUM 6.GALL BLADDER 7.PANCREAS 8.COLON	11 7 8 3 1 1 1 1	11 7 5 1	3 1 1 1 1 1 1 1 ADRIAMYCIN CYCLOPHOSPHAMIDE PACLITAXEL CARBOPLATIN CISPLATIN PACLITAXEL CARBOPLATIN CYCLOPHOSPHAMIDE OXALIPLATIN CAPECITABINE PACLITAXEL+GEMCITABINE OXALIPLATIN CAPECITABINE
3	HODGKINS	1		DACARBAZINE VINBLASTIN ADRIAMYCIN
4	NON-HODGKINS	1		VINCRISTINE ADRIAMYCIN CYCLOPHOSPHAMIDE
5	HEMATOLOGICAL	3		LENALIDOMIDE RITUXIMAB IMATINIB

DISCUSSION AND CONCLUSION

The present study is based on the Clinical Profile of chemotherapy among cancer patients in a tertiary care hospital. The study had observed females (58%) were found to be more likely to suffer from cancer than male patients (42%) in a sample of n=50. 36-45 age group patients (30%) were the highest. Based on body weight difference between pre and post-chemotherapy, 40-60 age group patients were found to have more weight difference (30%). based on diagnosis it showed that carcinoma (i.e., 76%) was the most affected among all types of cancer. The study includes pre-medications of chemotherapy which found that Dexamethasone (68%) and Ondansetron (68%) were mostly prescribed along with Rantac (30%), Corticosteroids (26 %), Chlorpheniramine (24%), Mgso₄/Kcl (22 %), Aprepitant (20 %).

The study also revealed that a combination of Adriamycin and cyclophosphamide were the most commonly prescribed chemotherapeutic agents used for breast carcinoma for 22% of breast cancer patients and also a combination of cisplatin and paclitaxel which is a mitotic inhibitor were most commonly prescribed chemotherapeutic agents used for 16% of lung cancer. For Multiple Myeloma and carcinoma, RVD is mostly

prescribed (14%), Paclitaxel and carboplatin combination is prescribed for ovary/cervix cancer (14%), cyclophosphamide for brain tumour (3%), a combination of Lenalidomide, Rituximab, and Imatinib for Haematological cancer is prescribed (3%). The side effects of chemotherapy showed that patients were suffering from weakness (95%), Fatigue (90%), Nausea (83.3%), Vomiting (78.9%), Hair loss (76%), Dry mouth (74%), Mouth sores (47%), Headache (43%), Abdominal cramps (40%), Diarrhea (31%) and constipation (30%). Chemotherapy-associated side effects not only depend upon cancer type. but these also depend on multiple factors such as Dose and type of chemotherapeutic agent, patient's health status, and stage of cancer.

Cancer patients taking chemotherapy endure a wide range of symptoms. The high incidence of chemotherapy-related adverse effects among patients is concerning especially during the first few cycles of chemotherapy. The findings of patient's views and informational requirements may serve as beneficial guidance for clinical pharmacists to aid with side effect management. To address the chemotherapy-induced problems in cancer patients, preventative treatment must

be included along with prophylaxis for the most common adverse effects expected.

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