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INCIDENCE OF NAUSEA AND VOMITING IN CANCER PATIENTS UNDERGOING CHEMOTHERAPY OR RADIOTHERAPY: OBSERVATIONS FROM SUPER-SPECIALITY HOSPITAL

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ABSTRACT: BACKGROUND: Nausea and vomiting is a debilitating side effect in the treatment of cancer with chemotherapy and radiotherapy. At times this also affects the planned treatment schedule and the outcome. The present study was conducted to assess the incidence of acute nausea and vomiting in cancer patients undergoing chemotherapy or radiotherapy METHODS: This was a prospective study and was carried out in a super specialty cancer hospital from June to July 2013. The incidence of nausea and vomiting were documented in 93 cancer patients requiring curative chemotherapy or radiotherapy after a week of treatment initiation. RESULTS: Majority of the patients were males, between the age group of 51 to 60 years, afflicted by cancers in the head and neck region and undergoing curative treatment. Diabetes was the most common co morbidity. The results of the study indicated that patients having co morbidities; undergoing chemotherapy or chemo radiotherapy were having more severe incidence of nausea and vomiting. From a gender perspective, females undergoing treatment were having more nausea and vomiting. CONCLUSIONS: These results indicate that in spite of adhering to the stipulated anti-emesis guidelines, the chemotherapy and chemo-irradiation-induced nausea and vomiting is a problem and needs careful monitoring.

KEY WORDS: Nausea and vomiting, cisplatin, chemotherapy or chemo radiotherapy

INTRODUCTION:

In the treatment of cancer, effective management of chemotherapy- and radiation-induced nausea and vomiting is still a major problem as nearly 70% to 80% of patients are affected by it [1,2]. Nausea and vomiting prevention are classified as acute where the events occurs within 24 hours after chemotherapy and delayed when it occur 24 hours after treatment[2]. Nausea and vomiting significantly affect patient's quality of life and leads to poor compliance to further treatment. They also cause metabolic imbalances, nutrient depletion, anorexia, decline of the patient's performance status and even withdrawal from

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curative anticancer treatment [2]. There are several factors affecting the severity and incidence of emesis and vomiting, including type of chemotherapy, dosage, schedule and even individual patient variability [1;2]. Untreated nausea and vomiting might adversely affects the quality of life, plan of chemotherapy continuation and this, invariably affects the life of the patients [2].

From a physiological perspective, vomiting is triggered by impulses to the vomiting center from the chemoreceptor trigger zone, pharynx, gastrointestinal tract and cerebral cortex [2]. The principal neuroreceptors involved in emetic response are dopamine and the serotonin receptors[2]. The others are, corticosteroid, histamine, cannabinoid, acetylcholine and neurokinin-1 (NK-1) receptors [2]. Antiemetics can block different neuronal pathways and exert their effects at different points during emesis course [(2)]. Drugs from different pharmacological classes are recommended for prevention of nausea and vomiting such as 5-hydroxytryptamine antagonist, steroid, neurokinin 1 antagonist and dopamine receptor antagonist [2]. Combination or single drug regimen are based on the level of emetogenicity of the treatment is used[2,3]. Proper prevention improves patient quality of life and ensures continuation of cancer treatment plan and patient adherence to medication and the present study was conducted to assess the incidence of nausea and vomiting in cancer patients undergoing chemotherapy or radiotherapy.

MATERIALS AND METHODS:

The present study was conducted to assess acute nausea and vomiting at a tertiary cancer care centre with freshly diagnosed patients proposed to take their first chemotherapy or radiotherapy at Mangalore Institute of Oncology, in the month of June to July 2013. The study was approved by the institutional ethics committee. All cancer patients planned to undergo chemotherapy and radiotherapy during the study time period were recruited and informed consents were taken from the patients before the start of the treatment. Patient receiving anticancer agents or radiation, aged >18 years were included in the study. This observational prospective study was designed to assess acute nausea and vomiting in cancer patients one week after the first chemotherapy or radiotherapy. During the study period, the nausea and vomiting were noted in a data sheet that had these details; patient information, drug information, past medical history, drug treatment, antiemetic given and the degree of nausea and vomiting after the treatment for one week period.

RESULTS:

The results of the study are represented in Table 1 and 2. The demographic details, the age, cancer and habits are all enlisted in Table 1; while the treatment and incidence of nausea and vomiting are represented in Table 2. In the study majority of the patients were males (58.1%), between the age group of 51 to 60 years (48.4%), afflicted by cancers in the head and neck region (48.4%) and undergoing chemo-irradiation (56.98%) (Table 1). Most of the study volunteers (78.5%) did not have any co morbidities while 10.8% and 7.5% patients had diabetes and hypertension respectively (Table 1). It was also observed that 45.2% and 48.4% patients were habitual alcohol and tobacco users (Table 1).

With respect to the treatment details 21.5% patients had surgeries before chemo therapy/radiotherapy; 65.59 were undergoing radiation (including chemo-irradiation) treatment, while 34.41 were undergoing chemotherapy (Table 2). The platinums (cisplatin and carboplatin) were the most commonly used anticancer drugs and 93.5% received a combination of $5HT_3$and dexamethasone as antiemetics before and after the administration of chemotherapy (Table 2). Regarding nausea it was observed that 33.3% had a loss of appetite with feeling of vomiting; while 48% had at least one

Table 1: Demographic and clinical details of the patients

Detail	Choice of answer	No. of Patients	Percentage
Gender	Male	54	58.1
	Female	39	41.9
Age	30 and below	5	5.4
	31 - 40	12	12.9
	41 - 50	21	22.6
	51 - 60	45	48.4
	Above 60	10	10.8
Cancer	Head and Neck	45	48.4
	Respiratory	8	8.6
	GIT	16	17.2
	Urinogenital	21	22.6
	Breast	2	2.2
	Bone	1	1.1
Other Illness	Nil	73	78.5
	Diabetes	10	10.8
	Hypertension	7	7.5
	Lung Problems	1	1.1
	Arthritis	1	1.1
	CKD	1	1.1
Alcohol	Yes	42	45.2
	No	50	54.8
Tobacco	Yes	45	48.4
	No	48	51.6

episode of vomiting (Table 2). Fisher exact test conducted by comparing the incidence with other factors showed that females ($p<0.0001$); patients below the age of 40 ($p<0.001$); having co

Table 2: Details on the treatment and use of anti-emetic

Treatment details	Answer choice	Patients	Percentage
Surgery in the past 2 months	Yes	20	21.5
	No	73	78.5
Treatment	Chemotherapy only	32	34.41
	Chemoirradiation	53	56.98
	Radiation only	8	8.60
Radiation	Yes	61	65.59
	No	32	34.41
Chemotherapy	No	8	8.6
	Arthracyclins	12	12.9
	Taxanes	5	5.4
	Platinum	62	66.7
	Vinca based	1	1.1
	Others	5	5.4
Antiemetics Before	5-HT3 only	5	5.4
	5HT3&Dex	87	93.5
	DEX with no 5HT3	1	1.1
Antiemetics After	None	3	3.3
	5-HT3 only	3	3.2
	5HT3&Dex	87	93.5
Nausea Scale	No feeling of vomiting	38	55.9
	Loss of appetite with feeling of vomiting	41	33.3
	Oral intake	13	8.6
	In adequate	1	2.2
Vomiting Scale	No vomiting	52	55.9
	1-2 episodes	31	33.3
	3-5 episodes	8	8.6
	More than 6	2	2.2

morbidities (p<0.04); undergoing chemotherapy (p<0.0001), chemoradiotherapy (p<0.001) were having more severe incidence of nausea and vomiting.

DISCUSSION:

Although significant advances have been made in the pharmacological management of emesis, it still is a very common and at times the most feared side-effects of cancer treatment[1]. Nausea and vomiting which are not adequately controlled causes complications like anorexia, hydroeletrolytic imbalance, dehydration, need for or prolonged hospitalization, quality of life impairment and negative effect on daily activities[3]. Therefore effective treatment with antiemetics is vital to mitigate the risk of complications, and to prevent termination of the planned treatment [3].

In the present study it was observed that 62% of the patients had a feeling of nausea and almost 44% had vomiting episode post treatment with chemotherapeutic drug. Both chemotherapy-induced nausea and vomiting and radiotherapy-induced nausea and vomiting are important adverse effects of cancer therapy [(4)]. The most important observation here was that the patients who were receiving only radiation to H&N region did not have any emesis or vomiting. These observations are in agreement to existing reports [3,5,6]. The other important observation was that women had a higher incidence and severity of nausea and vomiting and is also in agreement to earlier reports[7].

Among the chemotherapeutic drugs, cisplatin (66.7%) was the most commonly used drug and was observed to be used in both chemotherapy and chemoirradiation. Cisplatin is one of the most useful anticancer drugs and is useful in treating a wide spectrum of specific cancers, including testicular, ovarian, bladder, head and neck, esophageal, small and non-small cell lung, breast, cervical, stomach and prostate cancers, as well as Hodgkin's and non-Hodgkin's lymphomas, neuroblastoma, sarcomas, multiple myeloma, melanoma, and mesothelioma[8]. Scientific literatures have unequivocally shown that cisplatin-containing chemotherapy regimens are highly ematogenic and that the use of corticosteroids, 5-hydroxytryptamine 3 (5-HT3) receptor antagonists, and neurokinin 1 (NK-1) receptor antagonists are the three classes of antiemetic agents with the highest therapeutic index against the resulting nausea and vomiting [(9)].

The results of our study indicate that, in spite of adhering to the stipulated anti-emesis guidelines, the chemotherapy and chemo-irradiation-induced nausea and vomiting is always a problem. More studies from multiple centers are required as these observations needed to help practitioners to manage the issue in a more judicious and effective way.

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