Research Article

Evaluation of Drug Therapy in Breast Cancer Patients in A Tertiary Care Teaching Hospital

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ABSTRACT

The aim of the study is to evaluate the drug therapy in breast cancer patients in a tertiary care teaching hospital. A prospective observational study was carried out for a period of 6 months among the breast cancer inpatients of either sex, with age ≥18 years with or without co-morbidities. Demographics of the patients, co-morbidities, chemotherapeutic drug regimens used, ADRs associated with chemotherapy and severity of pain were recorded. A total of 57 breast cancer cases were collected, among them 56 were females and 1 was male. Nine chemotherapeutic drug regimens (8 drug combinations+1 single drug regimen) were prescribed, out of which the most commonly used chemotherapy single drug regimen was Inj. Docetaxel (47.3%) and combination regimen was Inj. Cyclophosphamide + Inj. Doxorubicin (30%). Most frequent adverse effects seen in patients receiving chemotherapy was alopecia (96.4%) followed by nausea (85.4%) and vomiting (76.4%). The adjuvant therapy included anti-emetics (5-HT3 antagonist), corticosteroids, H2 antagonists, antihistamines and antipyretics.

Keywords: Breast cancer, Chemotherapy, Adverse drug reaction.

INTRODUCTION

Breast cancer is the most common cancer in women worldwide, and it accounts for the second most common cancer overall with nearly 1.7 million new cases diagnosed in 2012. This represents about 12% of all new cancer cases and 25% of all cancers in women. Worldwide it is the fifth most common cause of death from cancer in women.[1] Breast cancer has ranked number one cancer among Indian females with age adjusted rate as high as 25.8 per 100,000 women and mortality 12.7 per 100,000 women. Breast cancer projection for India during time periods 2020 suggests the number to go as high as 1797900. [2]

Breast cancer is caused by the development of malignant cells in the breast. The malignant cells originate in the lining of the milk glands or ducts of the breast. Risk factors for breast cancer include age (80% breast cancers are found in women over age 50), family history and mutations of BRCA1 and BRCA2 genes. History of abnormal breast biopsies or previous history of breast cancer, having first menstruation before age 12 or entering menopause after age 55, having no children or having a first child after age 30, daily alcohol consumption of two drinks or more, obesity and high fat diet, breast exposure to radiation (e.g., in treatment of other cancers), postmenopausal hormone replacement therapy (HRT) with a combination of estrogen/ progesterone drug.[3]

Stage is defined on the basis of the primary tumour extent and size (T1–4), presence and extent of lymph node involvement (N1–3), and presence or absence of distant metastases (M0–1).[4]

The primary goal in the treatment of breast cancer is to control the disease with the aim of achieving cure. The other desirable outcomes of treatment include: to improve survival, minimize the risk of distant metastases and/or local recurrence, cosmesis, relief of symptoms, and the return to a quality life as close as possible to the life before diagnosis.

The different modalities of treatment include surgery, radiotherapy, systemic therapy (cytotoxic drugs and hormonal manipulation) and treatment targeted at HER2. Surgery remains as an important modality of treatment to eradicate the primary tumour and achieve total disease control.[5] Additional cancer treatment given after the primary treatment to lower the risk that the cancer will come back. Adjuvant therapy may include chemotherapy, radiation therapy, hormone therapy, targeted therapy, or biological therapy.[6] The basic principle of adjuvant therapy for any cancer type is that the regimen with the highest response rate in advanced disease should be the optimal regimen for use in the adjuvant setting.[4]

Aims and Objectives

The main aim of the study is to evaluate drug therapy in breast cancer patients in a tertiary care teaching hospital.

The objectives include analysis of drug prescription pattern for breast cancer and co-morbid conditions if exist; assessment of adverse drug reactions associated with drug therapy using Naranjo's Causality Assessment Scale; analysis of breast cancer grading and staging; assessment of pain severity using Wong-baker FACES pain rating scale and brief pain inventory scale.

METHODOLOGY

A prospective observational study was carried out among the inpatients of oncology department of Yenepoya Medical College Mangalore, a 700 bedded multispecialty tertiary care teaching hospital for a period of six months. The hospital caters to both urban and rural population. Most of the patients belong to middle and lower strata of the society.

All the breast cancer patients of either sex with age ≥18 years or who were willing to give consent were enrolled in the study. Patients with other types of cancer, psychiatric patients, paediatric population and infants were excluded from the study. The oncology ward was visited on all six days of the week and information regarding the patient demographics and drug use were recorded in a semi-structured proforma.

A patient information sheet was given to the patients and informed consent was obtained from the patient and/or care givers. A suitably designed data collection form was used to collect necessary information about the patients from the patient file and by patient interview. For extending the clinical pharmacy services in patient care, a validated questionnaire Naranjo's Causality Assessment Scale was used to assess the adverse drug reaction caused by chemotherapy. Wong-Baker FACES Pain Rating Scale and brief pain inventory scale were used to assess the severity of pain in breast cancer patients and its management is evaluated. The data was recorded and analyzed using Microsoft Excel Work Sheet version 2013.

RESULTS

Among the 57 patients studied, 55 came for chemotherapy cycle, one for radiation therapy and one for surgical procedure.

Demographics

Out of 57 patients studied, 56 (98.2%) were females and 1(1.8%) was male. The mean age of the patients was 47.3 ± 11.27 with a minimum age of 25 years and maximum of 74 years. Among them 38 (66.6%) were from rural area and 19 (33.4%) were from urban area. While considering the educational status of the patients, only 2 (3.5%) patients were highly educated and 10 (17.5%) patients were uneducated.

Personal History

7 (12.3%) patients were alcoholics and 2 (3.5%) were smokers. Out of 56 female patients, 26 (46.4%) were pre-menopausal patients and 30 (53.6%) were post-menopausal patients. Based on the marital status, 46 (80.7%) were married, 5 (8.8%) were unmarried and 6(10.5%) were widowed. Among the 56 female breast cancer patients, 15 (26.8%) were nulliparous and 41 (73.2%) had given birth to at least one child.

Disease Status

Among 57 patients, 25 (43.8%) patients had left breast cancer, 29 (50.9%) patients had right breast cancer and 3 (5.3%) patients had bilateral breast cancer. Majority of the patients were found in stage 3A (22) followed by 11 patients in stage2B as per AJCC staging. According to SBR grading, the highest number of patients were found in grade 2 (23) followed by 14 patients in grade 1. Out of 57 patients, 24 (42.1%) patients underwent MRM, 1 (1.8%) underwent lumpectomy and 1 (1.8%) underwent excision procedure. Out of 57 breast cancer patients, 5 patients had bone metastasis (8.7%) and 5 patients had type 2 diabetes mellitus with hypertension (8.7%).

Drug Therapy

Among 55 patients who received chemotherapy, a larger number of patients (18.2%) came for cycle 1 and the least number of patients (7.2%) came for chemotherapy cycle 2. The most commonly used chemotherapeutic drug regimen was Docetaxel (47.3%) followed by Cyclophosphamide + Doxorubicin (30%). (Figure 1)
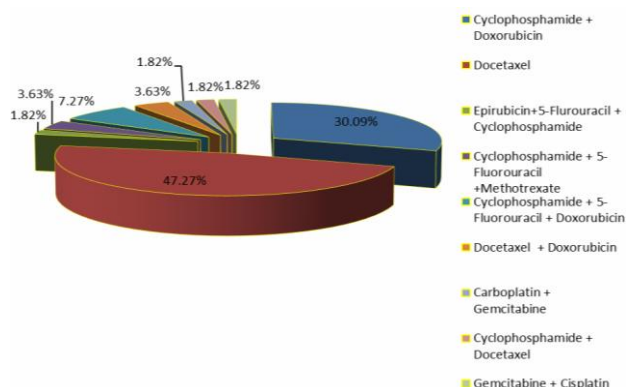

Figure 1: Percentage (%) of patients receiving different chemotherapeutic drug regimens

Among the 55 patients receiving chemotherapy, all of them received antiemetics (ondansetron), corticosteroids (dexamethasone) and H_2 antagonists (ranitidine) as drugs to treat chemotherapy induced ADRs. Some even received antipsychotics and antihistamines. Neurokinin-1 receptor antagonist (aprepitant) was given in 2 patients (5.2%) to treat chemotherapy induced nausea. Among 8 patients who experienced pain, the most commonly used analgesics was the combination of acetaminophen and tramadol (50%).

Adverse Drug Reactions (ADRs)

A total of 15 ADRs were observed in 55 patients during the study period. The most common ADR observed was alopecia (96.4%) followed by nausea (85.4%). (Figure 2) Out of all the single and combination chemotherapeutic drug regimens received by the patients, majority of them experienced nausea, vomiting, alopecia and anaemia. The reported ADRs in patients receiving both single and multi-drug chemotherapeutic agents were further classified as definite, possible, probable and doubtful on the basis of their causal association. Causality assessments showed that majority of ADRs were categorized as definite in nature by Naranjo's Causality Assessment Scale. In patients receiving Cyclophosphamide + Doxorubicin combination

therapy and Docetaxel monotherapy the major ADR reported was nausea and the percentage found to be 88.23% and 92.30% respectively. (Table 1&2) Among the 2 patients receiving Cyclophosphamide+5-Flourouracil +Methotrexate drug regimen, both of them were reported to have drowsiness and alopecia. (Table 3) Nausea and vomiting were reported in all patients receiving Cyclophosphamide + 5-Flourouracil+Doxorubicin and Docetaxel + Doxorubicin combination therapies. In addition, Docetaxel+Doxorubicin drug regimen was reported with drowsiness (100%) and alopecia (100%). (Table 4&5) Alopecia, diarrhoea, anxiety, constipation and fever were reported in patients receiving Epirubicin+5-Flourouracil+Cyclophosphamide combination therapy, whereas nausea, vomiting, alopecia, nail discoloration and diarrhoea were observed commonly in patients receiving Carboplatin+Gemcitabine therapy. While patients receiving Cyclophosphamide+Docetaxel combination therapy was reported with nausea, vomiting, alopecia and

anaemia, the Gemcitabine+Cisplatin therapy caused nausea, vomiting, alopecia, drowsiness and anorexia in all patients receiving the same.
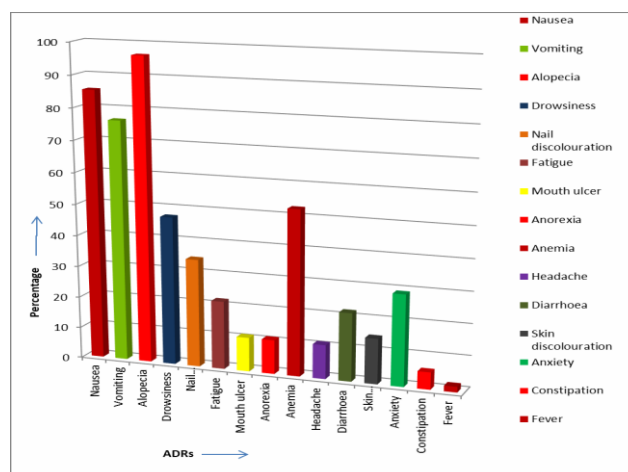

Figure 2: Percentage of patients reporting all ADRs

Table 1: ADRs reported in patients receiving Cyclophosphamide + Doxorubicin drug regimen

ADRs	No. of patients	Percentage (%)	Naranjo's Causality Assessment Scale			
			Definite	Probable	Possible	Doubtful
Nausea	15	88.23	7	4	3	1
Vomiting	12	70.58	6	4	2	-
Alopecia	16	94.12	9	6	1	-
Drowsiness	5	29.41	1	4	-	-
Nail discoloration	3	17.65	-	2	1	-
Fatigue	4	23.53	-	2	2	-
Mouth ulcer	1	5.88	-	-	1	-
Anorexia	3	17.65	-	1	2	-
Anaemia	9	52.94	8	1	-	-
Headache	2	11.76	1	1	-	-
Diarrhoea	3	17.65	-	-	3	-
Skin discoloration	1	5.88	-	1	-	-
Anxiety	9	52.94	6	2	1	-

Table 2: ADRs reported in patients receiving Docetaxel drug regimen

ADRs	No. of patients	Percentage (%)	Naranjo's Causality Assessment Scale			
			Definite	Probable	Possible	Doubtful
Nausea	24	92.30	11	8	4	1
Vomiting	22	84.61	13	5	3	1
Alopecia	25	96.15	7	18	-	-
Drowsiness	15	57.69	1	11	3	-
Nail discoloration	11	42.30	2	6	3	-
Fatigue	7	26.92	-	4	3	-
Mouth ulcer	4	15.38	-	2	2	-
Anorexia	1	3.84	-	-	1	-
Anaemia	16	61.53	15	1	-	-
Headache	2	7.69	1	1	-	-
Diarrhoea	5	19.23	-	1	4	-
Skin discoloration	7	26.92	2	4	1	-
Anxiety	2	7.69	-	-	2	-
Constipation	1	3.84	-	-	1	-

Table 3: ADRs reported in patients receiving Cyclophosphamide+5-Fluorouracil+Methotrexate drug regimen

ADRs	No. of Patients	Percentage (%)	Naranjo's Causality Assessment Scale			
			Definite	Probable	Possible	Doubtful
Vomiting	1	50	-	-	1	-
Alopecia	2	100	1	1	-	-
Drowsiness	2	100	-	-	2	-
Anorexia	1	50	-	1	-	-
Headache	1	50	-	-	1	-
Anxiety	1	50	-	-	1	-

Table 4: ADRs reported in patients receiving Cyclophosphamide+5-Flourouracil +Doxorubicin drug regimen

ADRs	No. of patients	Percentage (%)	Naranjo's Causality Assessment Scale			
			Definite	Probable	Possible	Doubtful
Nausea	4	100	2	1	1	-
Vomiting	2	50	2	-	-	-
Alopecia	4	100	2	2	-	-
Drowsiness	1	25	-	1	-	-
Nail discoloration	3	75	1	-	2	-
Fatigue	1	25	-	1	-	-

Table 5: ADRs reported in patients receiving Docetaxel + Doxorubicin drug regimen

ADRs	No. of patients	Percentage (%)	Naranjo Causality Assessment Scale			
			Definite	Probable	Possible	Doubtful
Nausea	2	100	-	2	-	-
Vomiting	2	100	1	1	-	-
Alopecia	2	100	-	2	-	-
Drowsiness	2	100	-	2	-	-
Nail discoloration	1	50	-	1	-	-
Anaemia	2	100	2	-	-	-
Anxiety	1	50	1	-	-	-

Pain Assessment

Among 57 breast cancer patients, only 8 (14.1%) patients experienced pain and 49 (85.9%) patients experienced no pain. Out of 8 patients who experienced pain, majority had penetrating type of pain. Out of 57 breast cancer patients assessed using Wong Baker FACES rating scale, 36 (63.2%) patients achieved a score of 2 (hurts little bit) followed by 16 (28%) patients with a score of 0 (no hurt).

DISCUSSION

Breast cancer is the most common cancer among Indian females. Earlier cervical cancer was ranked as the number one cancer in Indian woman but now the incidence of breast cancer has surpassed cervical cancer and is the leading cause of cancer death.[2] A total of fifty seven patients with breast cancer were enrolled in the study, among them (98.2%) were females and (1.8%) was male. Majority of the patients fall under the age group 41-50 years (31.6%) which was similar to the study done by Agarwal G et al. [7] stating that in Asia, breast cancer incidence peaks among women in their 40s. Nearly 7 (12.3%) patients out of 57 were alcoholics and 2 (3.5%) patients were smokers. A study done by Hamajima N et al.[8] suggested that the relative risk of breast cancer was found to increase with increasing intake of alcohol, both in never-smokers and in ever-smokers but among who drank no alcohol, ever-smokers and current smokers were not at an increased risk of breast cancer compared to never-smokers. There were 38 (66.6%) patients from rural area and 19 (33.41%) from urban area primarily due to poor health education. In contrast to our study, a study conducted by Nagrani RT et al.[9] stated that living in rural areas decrease the risk for breast carcinoma as compared to urban counterparts mainly due to their adherence to rural lifestyle. Among 56 female breast cancer patients 26 (46.4%) were premenopausal women and 30 (53.6%) were post-menopausal women. The study conducted by Ali R et al.[10] showed that postmenopausal women possessed elevated risks for the disease and presented themselves at late stages. About 46 (80.7%) were married, 5 (8.8%) were unmarried and 6 (10.5%) were widowed/divorced. A

contrast study done by Ali R et al. [10] showed that patients were more likely to be diagnosed as having a later stage of cancer if they were widowed/ divorced/ unmarried. They were also shown to have longer duration of symptoms than married women. Perhaps this is due to the ability of married women to rely on their husbands for household support. Husbands also serve as a source of economic support, therefore allowing these women more of an option to seek medical treatment than widowed or divorced women supporting a household on their own income or labour. Our study consists of 15 (26.8%) nulliparous women and 41 (73.2%) parous women. However MacMahon B et al. [11] stated that women who had their first delivery after the age of 35 years had risks approximately 20% higher than those who were nulliparous. Among the 57 breast cancer patients studied, only 2 (3.5%) were highly educated and 10 (17.5%) were uneducated supported by a study done by Ali R et al. [10] which reported that women of higher education levels were diagnosed at earlier stages of cancer than were women of lower education levels. Perhaps an increased level of education among women in South India allows them to be more aware of the risks associated with symptoms of cancer, thus making them more likely to go to a hospital upon the onset of symptoms as opposed to waiting until they are physically compromised.

Majority of the patients presented with a lump in the breast; 25 (43.8%) patients had right breast cancer and 29 (50.9%) cases had left breast cancer. Three cases (5.3%) had bilateral breast cancer. According to the study done by Hussain MA et al. [12] the incidence of breast carcinoma was more on the left side in the upper outer quadrant corroborating with the previous reports and the study by Seymour I et al. [13] stated that the possible explanations are that the left breast is bulkier and the upper outer quadrant has a relatively larger volume of breast tissue.

The American Joint Committee for Cancer classified breast cancer into four main stages on the basis of the primary tumour extent and size (T_{1-4}), presence and extent of lymph node involvement (N_{1-3}), and presence or absence of distant metastasis (M_{0-1}).[4] Majority of the patients nearly 28 (49.12%) were diagnosed in the stage 3 (3A=38.6%; 3B=5.3%; 3C=5.3%) of breast cancer. Stage III, also referred to as locally advanced disease, usually represents a large tumour with extensive nodal involvement in which either node or tumour is fixed to the chest wall. Some patients (7%) were diagnosed in the stage 4 of breast cancer which is characterized by the presence of metastasis to organs distant from the primary tumour and is often referred to as advanced or metastatic disease.

Breast cancer is also classified by grade. Grading takes into account several features of the cancer and indicates how aggressive the cancer is likely to be (how fast it will grow and spread). For breast cancer, Nottingham modification of the Bloom-Richardson scale (SBR) is most commonly used. Out of 57 patients, majority (40.3%) had grade 2 breast cancer which is the intermediate grade (moderately

differentiated) tumour that has features between grade 1 & 2.

Of 57 patients, MRM (modified radical mastectomy) was done in 24 (42.1%) patients, lumpectomy in 1 (1.8%) patient and excision procedure in 1 (1.8%) patient. The observed co-morbidities among the study population was bone metastasis in 8.7% of the patients, type 2 diabetes mellitus in 8.7%, lung metastasis in 1.8%, liver and brain metastasis in 1.8%, diabetes with hypertension in 1.8%, hypothyroidism with hypertension in 1.8% and the rest with no co morbidities. According to the study done by Extermann M et al. [14] in older patients, the risk & behaviour of cancer can be strongly affected by co morbidities and their related treatment.

Out of 57 patients, 55 came for chemotherapy, 1 for radiation therapy and 1 for surgery. Majority of the patients were in 1st cycle of chemotherapy (18.2%), followed by 16.4% of the patients in cycle 8, 14.6% of the patients in 4th cycle, 12.7% of the patients in cycle 3 & 6, 9.1% of the patients in cycle 5 & 7, and 7.2% of the patients in 2nd cycle.

The most commonly prescribed chemotherapy drug regimen in our study population was Inj. Docetaxel 26 (47.3%). This was supported by the study done by Chevallier B et al. [15] which suggests that Docetaxel has major anti-tumor activity when used as a single cytotoxic agent as first-line chemotherapy in advanced breast cancer. The most commonly prescribed chemotherapy drug combination was Inj. Cyclophosphamide + Inj. Doxorubicin 17 (30%). The least (1.8%) prescribed drug regimen in this study was Inj. Epirubicin + Inj. 5-Fluorouracil + Inj. Cyclophosphamide, Inj. Carboplatin + Inj. Gemcitabine, Inj. Cyclophosphamide + Inj. Docetaxel and Inj. Cisplatin + Inj. Gemcitabine. In this study, breast carcinoma patients were given 1 to 8 cycles of adjuvant chemotherapy and most of the patients were in the age group of 41 to 50 years.

The premedication consists of two or more drugs usually given to the patients before chemotherapy to avert nausea, vomiting and other hypersensitivity reactions. Our study shows that almost all the patients (n=55) who had underwent chemotherapy cycle had received Ondansetron (5-HT3 antagonist) and Dexamethasone (corticosteroid) which is in accordance to the study done by Sakata Y et al. [16] which states that corticosteroids has an effective anti-emetic property in patients receiving chemotherapy. A Meta-analysis by John PA et al.[17] suggests that Dexamethasone is effective in preventing emesis both in acute and delayed phases of cancer. Our study was also supported by another study done by Hajdenberg J et al. [18] which reported that the combination of Palonosetron (5-HT3 antagonist) and Dexamethasone infused as premedication in patients receiving emetogenic chemotherapy proved to be effective and safe in preventing acute and delayed chemotherapy induced nausea and vomiting.

55 patients who had underwent chemotherapy had received Inj. Ranitidine to avoid the gastric irritation caused by most of the chemotherapeutic drugs. According to a study done by Warr GD et al.[19] Aprepitant (neurokinin-1 receptor antagonist) was the most commonly prescribed antiemetic drug used against Cyclophosphamide and Anthracyclines. Our study showed a similar pattern of treatment as 2 (5.2%) patients who were on cyclophosphamide drug therapy has received Aprepitant.

Some of the patients received antipsychotics (21%), analgesics (14.54%), antihistamines (49.1%), PPIs (3.5%), tricyclic antidepressants (5.4%), antibiotics (3.5%), vitamin supplements (3.5%), probiotics (1.8%) and hypnotics (1.8%) as supportive drugs. They are mainly given to treat side effects caused by chemotherapy. The patients with comorbidities have received antihypertensive drugs (amlodipine, telmisartan), oral hypoglycemic drugs (pioglitazone+metformin+glimepride, metformin+ glimepiride, metformin, glyciphage) and levothyroxine. In our study 5 (8.7%) patients had bone metastasis and all of them received Inj. Zoledronic acid which is supported by a study conducted by Kohno N et al. [20] which states that Zoledronic acid significantly reduced skeletal complications compared with placebo across multiple end points in Japanese women with bone metastasis from breast cancer.

Although pain is the most frequent subjective symptom in cancer patients, pain is not a common symptom of early breast cancer but the tumour can cause pain as it pushes into nearby healthy tissues. In this study population only 8 patients complained of pain and they were given analgesics for the same. The most commonly prescribed analgesics were Acetaminophen + Tramadol (50%), followed by Diclofenac + Tramadol (12.5%) and Acetaminophen + Aceclofenac (12.5%). A study done by Ramalakshmi S et al.,[21] showed that Acetaminophen was given in 62% of the patients, Acetaminophen with Ibuprofen in 10% of the patients and Aspirin in 20% of the patients, as analgesics for mild pain and 8% of the patients were on Morphine sulphate for severe pain.

The World Health Organization defines an adverse drug reaction (ADR) as "a response to a drug which is noxious and unintended, and which occurs at doses normally used in man for the prophylaxis, diagnosis, or therapy of disease, or for the modification of physiological function". Universally, in treatment practices potential difficulties are overcome by a mechanism that is set by numerous countries universally by recording ADRs and these databases provide facts and figures about these difficulties. It is required that appropriate standardized scales should be used to measure ADR's precisely. Different scales available for assessing adverse drug reactions that occur by the use of different therapeutic drugs are WHO Assessment Scale, Naranjo's Causality Assessment Scale, Hartwig and Siegel Scale, Modified Schumock and Thornton scale, etc. Here in this study we have used Naranjo's Causality Assessment Scale to

measure the severity of ADR. Out of 57 breast cancer patients who received chemotherapy, all of them experienced at least one or more ADRs. Most frequent adverse effects seen in patients because of chemotherapy were Alopecia (n=53, 96.4%), Nausea (n=47, 85.4%) and Vomiting (n=42, 76.4%). As per the study done by Anjum F et al. [22] Most frequent adverse effects seen in patients because of adjuvant chemotherapy were Anaemia/ Neutropenia (n = 764, 94.20%), Alopecia (n = 763, 94.08%), Fatigue/Anorexia (n=743, 91.61%) and Vomiting/Nausea (n=799, 98.52%). Out of all the single and combination chemotherapeutic drug regimens received by the patients, majority of them experienced nausea, vomiting, alopecia and anaemia.

The World Health Organization defines pain as "an unpleasant sensory or emotional experience associated with actual or potential tissue damage, or described in terms of such damage". Although pain is not a common symptom of breast cancer, 8 out of 57 patients experienced severe pain for which they had received analgesics. Brief Pain Inventory (BPI) rapidly assesses the severity of pain and its impact on functioning. It also helps to assess the type of pain patient experiencing. In our study, using BPI we assessed that majority of the patients (n=5, 62.5%) had penetrating type of pain. The Wong-Baker FACES Pain Rating Scale is a pain scale shows a series of faces ranging from a happy face at 0 which represents "no hurt" to a crying face at 10 which represents "hurts worst." Based on the faces and descriptions, the patient chooses the face that best describes their level of pain. In this study the Wong-Baker FACES Pain Rating Scale is used to rate the pain, from which 36 (63.2%) patients achieved a score of 2 depicting 'hurts little bit' and 16 (28%) patients achieved a score of 0 depicting 'no hurt'.

CONCLUSION

From the present study, it may be concluded that 'Docetaxel' is the mostly used drug regimen in chemotherapy followed by 'Cyclophosphamide' with 'Doxorubicin'. For adjuvant therapy antiemetics (5HT3 antagonist), corticosteroids and H_2 antagonists are the mainly used drug regimen followed by antihistamine and antipyretics. The most common ADR observed was alopecia followed by nausea & vomiting. Only a few number of patients experienced pain. Early diagnosis of breast cancer patients and periodic medical check-up of those who have a family history of breast cancer can be beneficial in improving the survival rate of breast cancer patients. Most of the patients were from rural areas and had poor economic status. So conducting awareness programmes by circulation of pamphlets, leaflets etc., can be useful in preventing incidence of breast cancer cases.

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