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Evaluation of Common Side Effects of Chemotherapy among Cancer Patients in Khartoum Oncology Hospital Ward, 2019

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Abstract

The treatment of cancer with most anticancer drugs is complicated by the risk of numerous severe toxicities, many of which are life-threatening. The toxicities related to anticancer therapies are the most important factors restricting the use of potentially curative doses. This study aimed to assess the most common chemotherapy side effects developed and their treatment in the Khartoum oncology hospital emergency ward. This study was conducted at the Khartoum oncology hospital's emergency ward from March to May 2019. The data were collected from the medical records and individual interviews with the patients using a structured data collection sheet. Total of 100 patients were involved in this study, the most common side effects were nausea and vomiting (40%), abdominal pain (29%) of patients, diarrhea (19%), hypotension, fever, body pain, each experienced by (10%) of patients. Febrile neutropenia and dehydration, experienced by (9%) each. Moreover, the most common management of side effects was IV hydration used among 87% of patients, acid suppressants, and antiemetics used among 45% and 39% of patients, respectively. Antibiotics were used for 30% of patients; corticosteroids were used among 29% of patients. Antispasmodic were used among 27%, and analgesia used for 26 %. The association between the number of chemotherapeutic agents and side effects was significant (P=0.023). The study revealed that the most common side effects of chemotherapy were nausea and vomiting, abdominal pain, and diarrhea. The management mainly by intravenous hydration, antiemetic, acid suppressants, and antibiotics.

Keywords: Cancer, Chemotherapy, Side effect, Emergency ward, Khartoum Oncology Hospital

Introduction

Cancer large group of diseases that can affect any part of the body and characterize by rapidly growing cells that can invade other cells as they grow beyond their usual boundaries [1]. Cancer is the principal cause of death worldwide, and it is responsible for about 7 million death annually. Approximately 16 million new cancer cases may occur every year by 2020 [2]. Cancer is predominately treated with surgery, radiation, and

systemic therapy, which include chemotherapy targeted agents, endocrine therapy, and biologic response modifiers [3]. One of the primary treatment strategies for cancer treatment is chemotherapy, which the National Cancer Institute defines as drugs that treat cancer cells. It also will be defined as cytotoxic therapy that is directed toward rapidly dividing cells [4]. The main problem of chemotherapy is the development of many severe toxicities, several of which are life-threatening [5]. These toxicities can be categorized as common and acute toxicities, specific organ toxicities (cardiotoxicity, nephrotoxicity, pulmonary toxicities, and hepatotoxicity), and long-term complications. Main toxicities that developed frequently occur in patients soon after therapy include nausea and vomiting, diarrhea constipation, hypersensitivity reactions, extravasation, hand and foot syndrome, electrolyte imbalance, mucositis, myelosuppression, alopecia, febrile neutropenia. Others are long-term complications that occur months to years after anticancer therapy, including acute leukemia, fertility, and teratogenicity [5]. There about 6000 patients were admitted to the emergency ward of Khartoum Oncology Hospital in the period between September 2018 to March 2019. Most of these were admitted because of chemotherapy's side effects, as there is limited data about the adverse effects and complications associated with chemotherapy in Sudan. Thus, we were conducting this study to assess the most

Methods

Study design and settings

Descriptive cross-sectional hospital-based conducted at the emergency ward of Khartoum oncology hospital, Khartoum, Sudan. The study was conducted during the period of March to May 2019

Patient selection

A total coverage sampling technique was used. All cancer patients aged over 18 years with side effects post-chemotherapy cycles admitted to the emergency ward of Khartoum oncology hospital during the study were successfully interviewed. The total number of recruited included patients was 100 patients; all their medical records were also reviewed.

Data collection methods

An interview with the recruited patients collected the data, and the medical records for patients admitted to the hospital mentioned above during the study, using structured data collection sheets that were further verified using a pilot study consisting of 10 initial records.

Statistical analysis

The data were analyzed by the statistical package for social science (SPSS v.23). Chi-square test was applied to test the significant association between adverse drug reactions and the socio-demographic data. A P-value of less than 0.05 was considered statistically significant.

Ethical considerations

An ethical clearance (FPEC-04-2019) to carry out the research was obtained from the Ethical Committee of the Faculty of Pharmacy, University of Khartoum. Additional approval for checking the medical records was obtained from Khartoum Oncology Hospital. Informed consent of the interviewed subjects was obtained after a clear explanation of the study purposes.

Results

Demographic and clinical data

A total of 100 patients were included in this study. As shown in table 1, more than half of the patients (55%) were of age (50-70) years. The majority of patients (71%) were females, and the rest (29%) were males. Clinically, gynecological and breast cancers represent the common kinds of cancer among the studied patients. Additionally, about one-third of patients their last cycles were before more than (3) weeks, and (29%) before (3-7) days, (21%) before (1-2) weeks (Table 1).

Table 1. Baseline Demographic and clinical data for patients involved in this study (n=100)

Baseline characteristics	Number (Frequency %)
Gender	
Males	29 (29%)
Females	71 (71%)
Age	
18-30	9 (9%)
30-50	30 (30%)
50-70	55 (55%)
Above 70	6 (6%)
Diagnosis	
Breast cancer	22 (22%)
Gynaecological cancer	23 (23%)
Haematological cancer	15 (15%)
Lung cancer	7 (7%)
Head and neck cancer	12 (12%)
Gastrointestinal cancer	12 (12%)
Osteosarcoma	2 (2%)
Information source	
Medication list+ Patient	48 (48%)
Medication list+ Co-Patient	52 (52%)
Presence of metastasis	
Metastasis	15 (15%)
Unknown	85 (85%)
Time since last chemotherapeutic cycle	
1-3 days	8 (8%)
3-7 days	29 (29%)
1-2 weeks	21 (21%)
2-3 weeks	9 (9%)
More than 3 weeks	33 (33%)

Side effects and their management

As demonstrated in table 2, most of the patients (46%) admitted to the emergency department complaining from two side effects. Regarding the side effects, nausea and vomiting were experienced by more than one-third (40%) of patients, abdominal pain recorded for (29%) and diarrhea (19%) after the last cycle of chemotherapy. While hypotension, fever, and body pain experienced by 10% of patients for each.

The most commonly used treatment of side effects was intravenous hydration used among 87% of patients, acid suppressants and anti-emetics were used 45% and 39% of patients, respectively (Table 2). The therapy plan included (40%) to continue on the emergency ward, (33%) admission, and (27%) discharge (Table 2).

Table 2. Side effects and their management in patients involved in this study (n=100)

Side effects and their management	Number (Frequency %)
Patient's distribution according to number of side effects	
One side effect	25 (25%)
Two side effects	46 (46%)
Three side effects	13 (13%)
More than three side effects	16 (16%)
Patients' Chemotherapy recorded side effects	
Nausea and/or vomiting	40 (40%)
Abdominal pain	29 (29%)
Diarrhea	19 (19%)
Hypotension	10 (10%)
Fever	10 (10%)
Body pain	10 (10%)
Febrile neutropenia	9 (9%)
Dehydration	9 (9%)
Electrolyte imbalance	7 (7%)
Poor oral intake	5 (5%)
Headache	4 (4%)
Neutropenia	3 (3%)
Reduced creatinine clearance	2 (2%)
Mucositis	3 (3%)
Constipation	4 (4%)
Fatigue	3 (3%)

Management of side effects	Number (Frequency %)
IV hydration	87 (87%)
Anti-emetics	39 (39%)
Acid suppressants	45 (45%)
Anti-biotics	30 (30%)
Corticosteroids	29 (29%)
Anti-spasmodic	27 (27%)
Analgesia	26 (26%)
Growth colony stimulating factors	7 (7%)
Anti-diarrheal	4 (4%)
Stool softener	4 (4%)
Electrolytes	4 (4%)
Hypoglycemics	2 (2%)
Vitamins	2 (2%)
Plan after 24 hours	
Continue on emergency ward	40 (40%)
Admission	31 (31%)
Discharge	29 (29%)

Discussion

A descriptive cross-sectional hospital-based study using data collection sheets was conducted among cancer patients at Khartoum oncology hospital who met the inclusion criteria. To our knowledge, this is one of the few studies that described the chemotherapy-related side effect developed and their treatment in the emergency ward, oncology hospital in Sudan. In this study, the majority of patients were females (71%), this because gynecological and breast cancers represent the common kinds of cancer among the studied patients, as the incidences of these cancers are the most frequent in females [6]. The female percentage here is higher than that in a study done by Daniel et al., who found that the female percentage is 58.6% among the 203 study participants [7].

Gynecological cancers were the most common diagnosis in 23% of patients followed by breast cancer (22%) which is in agreement with a study titled as side effects of chemotherapy among cancer patients in a Malaysian General Hospital: The most common chemotherapy protocol used was paclitaxel plus carboplatin which was used by 14%, Cisplatin (12%), Docetaxel (12%), Gemcitabine (3%) and Doxorubicin (3%), Oxaliplatin (5%), Epirubicin (6%) of patients and this agrees with the above study in which paclitaxel plus carboplatin were indicated in 36.7% of patients [7]. Moreover, about one-third of patients, their latest cycle of chemotherapy was more than three weeks. Therefore, it cannot be known if it is a late side effect of chemotherapy or not. Other studies mentioned the number of cycles received by the patients, but they did not mention the time between receiving the cycle and the side effects occurrence.

Chemotherapy treatment often causes many side effects. These side effects are different for each person depending on the type of cancer, location, drugs, and dose, and general patient health [9]. Chemotherapy agents work on rapidly growing cells that contain healthy cells as well as cancer cells. Thus, most of the side effects related to the damaging effect of these agents in blood, cells, digestive system cells, and hair follicles [9]. In the current study, nausea and vomiting were the most common side effects experienced by more than one-third of patients (40%), abdominal pain recorded for (29%) of patients, diarrhea (19%), hypotension, fever, body pain, each experienced by (10%) of patients. Febrile neutropenia and dehydration, experienced by (9%) each. Electrolytes imbalance by (7%), poor oral intake by (5%), headache (4%) neutropenia (3%) mucositis (3%), reduced creatinine clearance (2%), extravasation, skin rash and hypertension 1% for each. Chi-square test confirmed the significant statistical associations between the number of chemotherapeutic agents and the number of side effects was found to be significant (P=0.003), thus means that poly-chemotherapy was associated with more side effects, this significance was in

accordance with Daniel et al. (p=0.031) [7].

Regarding the management of the chemotherapy side effects, the most commonly used treatment was intravenous hydration used among 87% of patients, acid suppressants and anti-emetics were used among 45% and 39% of patients, respectively. Antibiotics were used for 30% of patients; corticosteroids were used among 29% of patients. Antispasmodic were used among 27%, and analgesia used for 26 %. Growth colony-stimulating factors 7%, ant diarrheal, stool softeners, and electrolytes 4% for each. According to the guidelines, diarrhea should always be treated with adequate oral or intravenous fluid and electrolyte replacement [10]. Patients should be observed for signs of malnutrition and/or catabolic state. If indicated, enteral or parenteral electrolytes, carbohydrates, lipids, amino acids, protein, and vitamins should be supplemented [10]. Due to the side effects, many cancer patients will delay or refuse future chemotherapy treatments and contemplate stopping chemotherapy altogether because of their fear of experiencing further nausea and vomiting. They should be treated with anti-emetics and intravenous hydration [11]. According to the guidelines, third generations cephalosporins were used to treat febrile neutropenic patients [12]. In the current study, febrile neutropenia was treated with different antibiotics, including 3rd generation cephalosporin and ciprofloxacin.

The limitations of the current study are that the cross-sectional design may not allow for the temporal relationship for the outcome and other factors. Additionally, the generalization of the study results is limited because the study period was very short. It was also because of the difficulty of following patients after was admitted to the ward.

Conclusion

The study revealed that cancer patients who admitted to the emergency ward at Khartoum Oncology Hospital complaining mostly of nausea and vomiting, abdominal pain, and diarrhea. The main managements were intravenous hydration, anti-emetics, acid suppressants, and antibiotics.

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Conflicts of interest

There are no conflicts of interest.

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