RESEARCH ARTICLE

Clinical profile and outcomes of adult oncological patients presenting to the emergency department of a tertiary care hospital

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Abstract

Objective: To determine the clinical presentations, diagnosis, and outcomes of oncological patients presenting to the emergency department of a tertiary care hospital.

Method: The single-centre, cross-sectional study was conducted at the emergency department of the Aga Khan University Hospital, Karachi, from January 1 to December 31, 2018, and comprised all adult patients with diagnosed solid or haematological malignancy. Demographical and clinical data was recorded from medical record files. The immediate outcomes were reported as hospitalisation or discharge from the emergency department. Data was analysed using SPSS 20.

Results: Of the 320 patients, 167(52.2%) were females. Overall, 214(66.9) patients were aged 35-64 years. Most of the patients had solid organ malignancy 276(86.2%), with the most common being breast carcinoma 60(18.8%). Among haematological malignancies, B-cell lymphoma 32(10%) was the most common. The most common symptoms at presentation were vomiting 78(24.4%), fever 77(24.1%), and generalised weakness 66(20.6%). Of the total, 240(75%) patients were admitted and 80(25%) were discharged. The most common discharge diagnosis was chemotherapy-induced vomiting, followed by febrile neutropenia and malignant hypercalcaemia. There were 26(10.8%) deaths among the in-patients.

Conclusion: Cancer patients presented to the emergency department with diverse signs and symptoms. It is essential for physicians in the emergency department to be familiar with their presentations in order to initiate prompt and timely management plans for better clinical outcomes.

Keywords: Oncology patients, Emergency department, Outcomes. (JPMA 72: 2409; 2022)

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Introduction

Worldwide, cancer ranks as the second leading cause of death after cardiovascular diseases.[1] As per global cancer statistics, the burden is expected to rise by 47% by 2040, with a major increase to be seen in developing countries.[2] In Pakistan, 8% of disease-related deaths are due to cancers.[3] Although novel treatment agents have prolonged the lifespan of cancer patients, but these advanced therapies also cause many serious side effects that eventually result in an increase in the number of emergency department (ED) visits by oncological patients.[4]

Most of the oncological patients do experience an ED visit during the course of their disease that requires an interdisciplinary approach for their care in which the involvement of both oncologist and ED physician is important.[5] The common oncological emergencies which carry significant morbidity and mortality, if left untreated, are septic shock secondary to febrile neutropenia, tumour lysis syndrome, hyper-leukocytosis, airway obstruction secondary to mediastinal mass, and spinal cord compression, etc.[6] Therefore, the knowledge of the clinical presentations and prompt treatment of these emergencies is essential for the ED care provider to prevent devastating outcomes, like paralysis and death.

There is not much local data available on ED presentations of cancer patients in Pakistan. The current study was planned to determine the clinical presentations, diagnosis and outcomes of oncological patients presenting to the ED.

Patients and Methods

The single-centre, cross-sectional study was conducted at the Aga Khan University Hospital (AKUH), Karachi, from January 1 to December 31, 2018. After approval from the institutional ethics review committee, the sample was raised by including all adult patients with diagnosed solid organ or haematological malignancy who presented to the ED. Patients presenting with complaints not related to their primary disease, like trauma or fall, were excluded.

Data was collected from the medical record files of the patients using a standardised proforma to note demographics, type of malignancy, signs and symptoms, diagnosis, and immediate outcomes. Solid-organ tumours were classified based on their primary site, while haematological malignancies were classified as

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leukaemia, lymphoma, aplastic anaemia and multiple myeloma. Outcomes were reported as admission or discharge from ED and in-hospital mortality. Febrile neutropenia was defined as fever of > 38.3 degree centigrade with ANC count of less than 1000, whereas malignant hypercalcemia was defined as serum calcium level of > 10 mg/dl secondary to a malignant process.

Data was analysed using SPSS 20. Descriptive analysis was performed, and frequencies with percentages were calculated for categorical variables like gender, type of malignancy, common presenting complaint, diagnosis, disposition, and outcomes of patients.

Results

A total of 36,400 adult patients presented to the ED during the study period, and 320(0.8%) of them had oncology-related ED visits. Of them, 167(52.2%) were females. Overall, 214(66.9) patients were aged 35-64 years. There were 276(86.3%) patients with solid organ tumours. In terms of immediate outcome, 240(75%) patients were hospitalised and 80(25%) were discharged (Table-1).

The most common solid organ malignancy was breast cancer 60(18.8%), while lymphoma was the most common haematological malignancy 32(10%) (Table-2).

The most common presenting complaints were vomiting 78(24.4%), fever 77(24.1%) and generalised weakness 66(20.6%) (Table-3). Among patients presenting with vomiting, the most common reason was chemotherapy-induced vomiting 19(24%), followed by intestinal obstruction 17(21%) and brain metastasis 06(8%). The most common diagnosis in patients who presented with fever was febrile neutropenia 57(74%), followed by sepsis 04 (05%) and neutropenic colitis 03(04%). Among the patients who presented with generalized weakness, the most

Table-1: Demographics, disposition and outcomes.

Characteristics	Results n (%)
Age (years)	
18 to 34	30 (9.4)
35 to 64	214 (66.9)
>65	76 (23.8)
Gender	
Male	153 (47.8)
Female	167 (52.2)
Type of Malignancy	
Solid Organ Tumour	276 (86.3)
Haematological	44 (13.8)
Outcomes	
Admitted	240 (75)
Discharged	80 (25)
Total Cases	320

Table-2: Localisation of malignancies.

Site	n (%)
Brain	01 (0.3)
Head and Neck	51 (16)
Oral Cavity	39 (12.2)
Nasopharynx	04 (1.3)
Hypopharynx	02 (0.6)
Larynx	06 (1.9)
Lung	33 (10.3)
Breast	60 (18.8)
Gastrointestinal	46 (14.6)
Esophagus	12 (3.8)
Gastric	11 (3.4)
Colon	11 (3.5)
Caecum	04 (1.3)
Rectum	08 (2.5)
Hepatobiliary	16 (05%)
Hepatocellular	09 (2.8)
Gall Bladder	03 (0.9)
Cholangiocarcinoma	04 (1.3)
Pancreas	08 (2.5)
Gynaecological	30 (9.4)
Ovarian	21 (6.6)
Endometrial	02 (0.6)
Cervix	06 (1.9)
Placental	01 (0.3)
Genitourinary	23 (7.2)
Renal	08 (2.5)
Bladder	06 (1.9)
Prostate	09 (2.8)
Skin (Malignant Melanoma)	01 (0.3)
Soft Tissue (Sarcoma)	02 (0.6)
Leiomyosarcoma	01 (0.3)
Primary Unknown	02 (0.6)
Haematological	46 (14.3)
Lymphoma	32 (10)
Leukaemia	09 (2.8)
Aplastic Anemia	03 (0.9)
Multiple Myeloma	02 (0.6)
Total Cases	320

Table-3: Common presenting complaints.

Presenting Complains	n (%)
Vomiting	78 (24.4)
Fever	77 (24.1)
Generalised Weakness	66 (20.6)
Abdominal Pain	62 (19.4)
Diarrhoea	52 (16.3)
Shortness of Breath	45 (14.1)
Altered Mental Status	38 (11.9)
Others	178 (57.2)

Table-4: Presenting complaints with a common diagnosis.

Presenting Complain	Diagnosis (n,%)	n (%)
Vomiting	Chemotherapy-induced vomiting	19 (24)
	Intestinal obstruction	17 (21)
	Brain metastasis	06 (08)
Fever	Febrile neutropenia	57 (74)
	Sepsis	04 (05)
	Neutropenic colitis	03 (04)
Generalised weakness	Malignant hypercalcaemia	21 (32)
	Chemotherapy-induced vomiting/diarrhea	06 (09)
	Febrile neutropenia	06 (09)
Abdominal pain	Intestinal obstruction	14 (22)
	Malignant ascites	14 (22)
	Chemotherapy-induced vomiting/diarrhea	09 (14)
Diarrhoea	Chemotherapy-induced vomiting/diarrhea	18 (35)
	Febrile neutropenia	16 (31)
	Neutropenic colitis	06 (11)
Shortness of breath	Malignant pleural effusion	20 (44)
	Upper airway obstruction	6 (13)
	Pulmonary embolism	03 (07)
Altered mental status	Malignant hypercalcemia	16 (42)
	Brain metastasis	06 (16)
	Sepsis/Septic shock	04 (10)

common diagnosis was malignant hypercalcaemia 21(32%), followed by chemotherapy induced vomiting and diarrhoea 06(09%), and febrile neutropenia 06(09%). Diagnoses for all other presenting complaints was also noted (Table-4).

There were 26(10.8%) deaths among the in-patients. The most common diagnosis among the expired patients was malignant hypercalcaemia 8(30.7%), followed by sepsis 4(15.3%).

Discussion

Cancer is among the most resource-intensive lethal healthcare problems across the world. Cancer patients show heterogeneity among their reasons for ED visits, therefore emergency care is an important discipline for the acute management of such patients. They are likely to use ED resources for medical complications that may either be related to their malignancy or due to its treatments. Different studies have reported epidemiological data from ED, including symptoms management and the need for hospitalisation, among cancer patients.[7-9]

In the current study, the most common presenting complaints encountered at ED were vomiting, fever, generalised weakness and abdominal pain. These findings are consistent with earlier studies.[10,11] In contrast, a study showed that pain, respiratory and neurological symptoms were more common reasons among cancer patients presenting to the ED.[12]

Among the patients who presented with vomiting, the most common underlying cause of their manifestation was chemotherapy side effects, followed by small-bowel obstruction, and the less common was brain metastasis. Swenson et al. also found that small-bowel obstruction, tumour involvement in the gastrointestinal tract (GIT), and side effects of chemotherapy were the common reasons for vomiting in oncological patients presenting to ED.[13] The reason could be the lack of proper supportive care in outpatient clinics which results in the diversion of cases with nausea and vomiting to ED for prompt care delivery.

In the current study, fever was the second most common complaint. It is one of the most significant and life-threatening complications of cancer treatment and a very common reason for hospitalisation and death among cancer patients.[14] The common cause of fever was febrile neutropenia, followed by sepsis and neutropenic colitis.

Generalised weakness was the third most common presenting complaint. Malignant hypercalcaemia was found to be the most common associated aetiology, followed by chemotherapy-induced vomiting/ diarrhoea, and febrile neutropenia. Malignant hypercalcaemia is seen in 5-30% of cancer patients with advanced disease at some time during their disease course.[15] It is a poor prognostic marker and is almost always associated with disease progression. Classical symptoms of hypercalcaemia include lethargy, confusion, anorexia and nausea.[16] Chemotherapy-related vomiting and diarrhoea can cause muscle weakness by causing electrolytes imbalances. In the current study, only 6 patients developed generalised weakness due to this reason.

Abdominal pain was another common complaint. The common causes associated with this manifestation were intestinal obstruction, followed by malignant ascites and chemotherapy-induced vomiting and diarrhoea. Davis et al. also reported abdominal pain as the most frequent presentation of malignant bowel obstruction.[17]

In the current study, a significant number of patients presented with diarrhoea which was related to different aetiologies, including side effects of chemotherapeutic agents, followed by febrile neutropenia and neutropenic colitis. Chemotherapy-related diarrhoea can occur in 50-80% of patients depending on the regimen used.[18]

Shortness of breath was also one of the common symptoms in patients presenting to ED with advanced stage malignancy. Those who presented with this complaint had either malignant pleural effusion or upper airway obstruction, while a few of them also had pulmonary embolism. Dixit et al. reported similar findings.[19]

The current study observed altered mentation in 38

patients, and found malignant hypercalcaemia as its predominant cause, followed by brain metastasis and sepsis. Usually, patients with hypercalcaemia of malignancy have a higher degree of serum calcium levels, and they develop hypercalcaemia over a shorter period, which is why such patients are usually more symptomatic than patients with other aetiologies.[20] Nolan et al. described metabolic imbalances as a common cause of confusion seen in cancer patients.[21]

Of the total study population, three-fourth of the patients were admitted, whereas one-fourth were discharged. The final diagnosis of cancer patients who expired during their hospitalisation period was predominantly disease progression, manifested as malignant hypercalcaemia, followed by sepsis. The development of hypercalcaemia due to malignancy is a poor prognostic factor, and around 80% of the patients die within a year, and 50% die within 30 days of their presentation.[22,23] Zaorsky et al. reported that 60% of such deaths were attributed to infections.[24]

The limitation of the study was that the data was collected and divided into age groups rather individually, hence unable to state the mean of the ages.

Conclusion

Oncological patients presented to ED with a complex clinical picture that required timely diagnosis, intervention and a multidisciplinary team approach. It is vital for ED physicians to be familiar with their presentations to initiate urgent diagnostic and treatment plans that may ultimately improve their clinical outcome.

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