Cancer Medicine Journal

Short Communication | Vol 6 Issue 3

Cancer Patients Admitted to the Emergency Department

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Received: October 11, 2023; Accepted: October 25, 2023; Published: October 31, 2023

ABSTRACT

INTRODUCTION

The new treatment strategies have led to a prolongation of life and an increase in the number of cancer patients admitted to emergency departments. Our aim was to describe the epidemiologic, therapeutic and evolutionary aspects of cancer patients admitted to the Emergency and Intensive Care Department of Professor ZAFISAONA Gabriel Teaching Hospital, Mahajanga.

METHODS

This was a cross-sectional study, from 1st January 2014 to 31st December 2018 in this department. We included all admitted patients, then excluded non-cancer patients and cancer patients who came for a non-cancer reason. We considered each new admission as a "new patient".

RESULTS

We collected 215 cancer cases with a mean age of 52.41 +/- 15.89 years and a sex ratio of 0.50. Twenty-eight-point eight percent (28.8%) had previous oncologic follow-up and 18.6% had previously received specific anticancer treatment. Dyspnea (32.56%) and deterioration of general condition (28.37%) were the main reasons for admission. Pelvic gynecological cancers (24.2%) were the most common, and cancer extension was unknown in 59% of cases. Analgesics (47.91%), antibiotics (47.91%), and corticosteroids (43.72%) were the most commonly prescribed treatments. At the end of the admission, 33.5% of the patients died in the department.

Citation: Valéry Refeno, Cancer Patients Admitted to the Emergency Department. Cancer Med J 6(3): .

CONCLUSION

The number of emergency room visits by cancer patients was high. It is likely that many cancers are diagnosed only in emergencies. The mortality rate was higher, reflecting the severity of cancer patients presenting to the emergency department.

KEYWORDS

Cancer; Emergencies; Epidemiology; Madagascar; Outcome

INTRODUCTION

Cancer is defined as the anarchic and uncontrolled proliferation of initially normal cells [1]. The World Health Organization estimates that there will be approximately 18 million new cases of cancer and nearly 9.6 million cancer-related deaths worldwide in 2018 [2]. Advances in research have changed the prognosis of this disease as well as the methods of its management. The use of conventional hospitalization is decreasing with the increasing use of specific oral treatments, day hospital care, and the possibility of home care. Nevertheless, hospital management is still necessary in certain situations, such as the management of certain serious side effects of treatment, the management of complications related to the progression of the disease, and the continuous administration of cancer chemotherapy for several days [3].

The emergency department is the place where all patients who come to the hospital and whose care has not been scheduled are seen [4]. For a cancer patient, the emergency department is a place of "last hope" to change the predetermined fatalistic course of the disease. The development of new treatment strategies for cancer patients has led to a prolongation of life and an increase in the number of cancer patients presenting to the emergency department [5]. The term "oncologic emergency" refers to any clinical situation related to cancer or specific oncologic treatment that requires rapid management and presents a life-threatening risk or permanent sequelae if therapeutic measures are not taken quickly [6].

To our knowledge, there are no data in the Malagasy literature on cancer patients admitted to emergency departments. Therefore, our objective was to describe the epidemiologic, clinical, therapeutic aspects and outcome of cancer patients admitted to the Emergency and Intensive Care Department of the Professor ZAFISAONA Gabriel Teaching Hospital, Mahajanga.

METHODS

It was a cross-sectional longitudinal descriptive study carried out over a period of 5 years from January 01, 2014 to December 31, 2018 in the Emergency and Intensive Care Department (SUSI) of the Professor ZAFISAONA Gabriel Teaching Hospital in Mahajanga, Madagascar. We included all patients admitted to this department, then we excluded the non-cancer patients and the cancer patients who came for a reason unrelated to their cancer. We selected documented cancer patients admitted to the emergency department for a reason related to their cancer.

Because the same patient could be admitted to the emergency department multiple times, we considered each admission a "new case. For each patient, we examined the number of emergency department visits during the study period. We then collected the epidemiologic, clinical, therapeutic, and outcome parameters for each new emergency department admission.

RESULTS

During the study period, 187 patients, corresponding to 215 admissions (cases), were admitted to the SUSI for a cancer-related reason. More than three quarters of the cases (75.81%) were admitted only once (Figure 1). Of the 9,850 admissions to the SUSI, we collected 215 new admissions for a cancer-related reason, or 43 new cases per year (NC/year), representing 2.18% of emergency admissions. The mean age was 52.41 +/- 15.89 years. The median age was 54 years with extremes of 15 and 87 years. The sex ratio was 0.50.

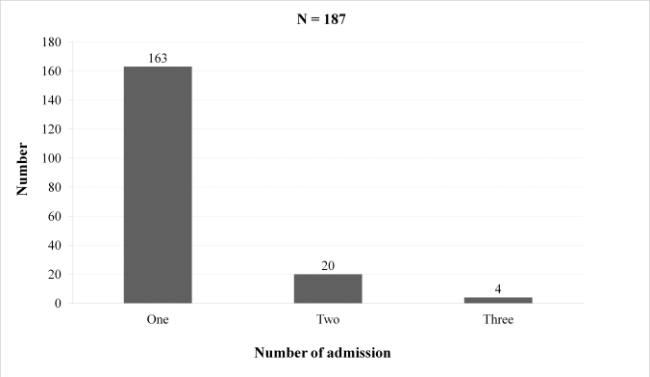

Figure 1: Distribution by number of admissions per patient.

Prior to admission, 62 cases (28.8%) were already being followed in oncology, of which 40 (18.6%) were undergoing specific treatment for their cancer. The main reasons for admission were dyspnea (n = 70 or 32.56%), deterioration of general condition (n = 61 or 28.37%) and confusional state (n = 32 or 14.88%). The reasons for admission are shown in Table 1.

Reasons for Admission	Number (N)	Percentage (%)
Dyspnea	70	32,56
General Condition Deterioration	61	28,37
Confusional State	32	14,88
Pallor	29	13,49
hemorrhagic Syndrome	25	11,63
Pain	18	8,37
─ Slight	1	0,47
─ Moderate	4	1,86
─ Intense	13	6,05
Fever	11	5,12
Liquid Effusion	8	3,72
Convulsions	7	3,26
Deficit Syndrome	5	2,33
Occlusive Syndrome	5	2,33
Edema	4	1,86
Infectious Call Point	3	1,40
Intracranial Hypertension Syndrome	2	0,93
Nausea and Vomiting	2	0,93
Diarrhea	2	0,93
Other	36	16,74

Table 1: Reasons for admission of cancer patients to SUSI.

The most common cancers were gynecological (pelvic) (n = 52 or 24.2%), breast (n = 36 or 16.7%), and digestive (n = 29 or 13.5%). The distribution by primary site is shown in Figure 2. The cancers were localized in 2.3% of cases, locoregionally advanced in 4.7% of cases, metastatic in 22.3% of cases, and hematologic malignancies in 12.1% of cases. Note that the tumor extension was not known in 126 cases or 58.9% of the cases.

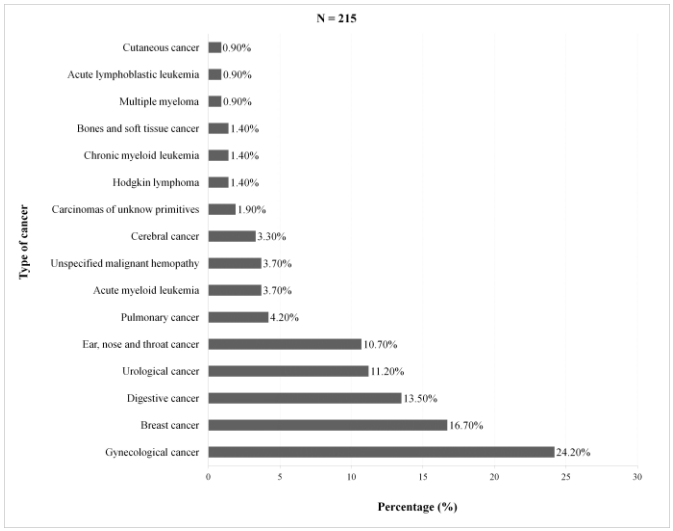

Figure 2: Distribution of patients by primary tumor type.

Compared to the treatments received at SUSI, 103 cases (47.91%) received analgesics, 103 cases (47.91%) received antibiotics, and 94 cases (43.72%) received corticosteroids. The details of the treatments received at SUSI are shown in Table 2. Note that 35 cases (16.28%) benefited from an oncologic opinion during the admission to SUSI.

Treatments Received	Number (N)	Percentage (%)
Analgesics	103	47,91
─ Tier 1	63	29,30
─ Tier 2	19	8,84
─ Tier 3	21	9,77
Antibiotics	103	47,91
Corticosteroids	94	43,72
Hydration	91	42,33
Transfusion	82	38,14
Nutritional Support	65	30,23
Enteral Feeding	51	23,72
Parenteral Feeding	14	6,51
Oxygen Therapy	53	24,65
Antipyretic	45	20,93
Diuretics	41	19,07
Antihaemorrhagics	24	11,16
Anticonvulsants	20	9,30
Exploratory Puncture	9	4,19
Evacuation Puncture	8	3,72
Anti Diarrheal	5	2,33
Hypertonic Solutions	4	1,86
Antiemetics	3	1,40
Other Treatments	157	73,02

Table 2: Non-specific treatments received at SUSI.

At the end of their admission, 110 cases (51.2%) were transferred to other departments, 72 cases (33.5%) died during their admission to the SUSI and 33 patients (15.3%) were allowed to return home. The average length of stay in the SUSI for all admissions was 2.63 days with a median of 1 day. There was a significant difference in the average length of stay according to the type of discharge ($p = 0.01$): 4.39 days for return to home, 2.24 days for hospitalization (transfer), and 2.43 days for death (Figure 3).

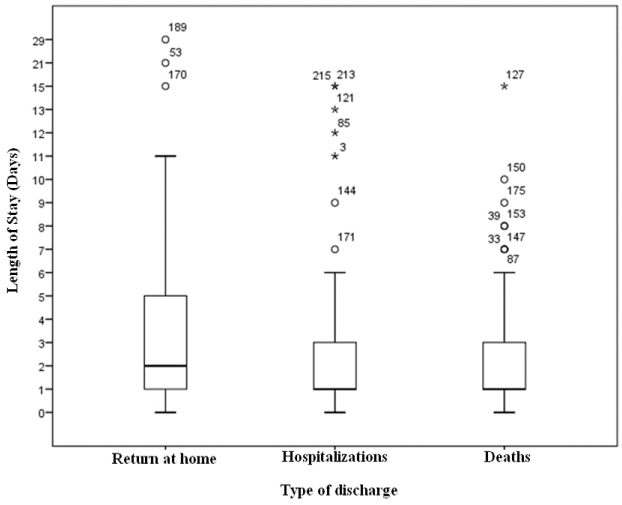

Figure 3: Patient length of stay by discharge mode.

DISCUSSION

In our study, 76% of cancer patients were admitted to the emergency department only once. This proportion is close to that found by Asian authors, where it varies from 77% to 88% [7-9]. This proportion is also similar to that reported by Mayer et al. in North Carolina (77.2%) [10]. However, this proportion is higher than that found by Oatley et al. in Australia (24%) [11]. The number of emergency visits per patient is broadly consistent with data in the literature.

We collected 43 new cases of cancer admitted to the emergency department per year. This frequency is much lower than that found in an Australian study conducted in 2016 by Rogers et al., who collected 1,307 new cases per year of cancers admitted to the emergency department [12]. This frequency is even lower than that found in Korea by Ahn et al., where there were 5,502 new cases of cancer admitted to the oncology emergency service in 2010 [13].

In our study, the mean age of cancer patients admitted to the emergency department was 52.41 years. This mean age is close to that found by Asian authors, where it varies from 53.64 years to 61.1 years [7,8,13]. However, it is overall lower than that found by Western authors such as Yates et al. in England (63.62 years) and Mayer et al. in the United States (64.50 years) [10,14]. The median age of the patients in our study was 54 years, which is similar to the result of Yucel et al. in Turkey, where the median age was 60 years [8]. Compared to American data, this is similar to that of Diaz-Couselo et al. in Argentina and Geraci et al. in Texas, where it was 56 years [15,16].

In our study, 66.5% of the patients were female. This female proportion is much higher than that found by Ozgur et al. in Asia (35%) [17]. It is also higher than that reported in American studies, which ranged from 51% to 56% [15,16,18,19]. On the one hand, this could be explained by the higher proportion of cancers in women in developing countries, especially in Africa [20]. On the other hand, it could indicate that women are more aware of their health and visit the emergency department more often. Similar studies should be conducted in other emergency departments to determine the true distribution of cancer patients admitted for related reasons.

We found that only 18.6% of the patients admitted to the emergency department had already received specific treatment for their cancer. This proportion is much lower than that reported by Asian authors, where it varies from 46% to 90.8% [5,7,8,13,21]. It is also lower than that found by Caterino et al. in Colombia, which was 73.9% [22]. Twenty-eight-point eight percent (28.8%) of the patients in this study were seen in oncology prior to admission to the emergency department. This is lower than the result reported by Hjermstad et al. in Norway, where 34% were seen by an oncologist on admission [23]. It can be assumed that many cancer cases are diagnosed only at the emergency department and/or that the financial cost of certain treatments limits access to the least fortunate patients. Collaboration between Malagasy oncology centers and humanitarian organizations and/or research groups could improve patient access to specific cancer treatments.

In our study, 32.6% of patients reported dyspnea, which is similar to that found by Asian authors (30% to 66%) [17,24,25]. Twenty-eight out of thirty-seven (28.37%) cases reported a worsening of their general condition. This proportion was lower than that found by Ozgur et al. in Asia (12%) [17]. The proportion of patients with confusional state was 14.88%, which is lower than that found in Iran by Bahram et al. (23.2%) [7] and higher than that found by Barbera et al. (2.1%) [19]. Dyspnea, deterioration of general condition and confusion, the most common symptoms of patients, should be systematically sought at follow-up visits before they worsen. Public awareness campaigns on screening and signs suggestive of cancer could reduce the number of cancers detected by their complications.

In our study, gynecological cancers were the most common (24.2%). The predominance of gynecological cancers has not been found by other authors, although their results are very different. In Turkey (Yucel et al.) and Iran (Bahram et al.), the most common cancers in the emergency department were gastrointestinal cancers (26%) and brain cancers (32.7%), respectively [7,8]. In the South American continent, the most common cancers were breast cancer (19%) and urologic cancer (14%) [15,26]. In the present study, the second most common cancer was breast cancer (16.7%). This is consistent with the result found in the study by Kraft Rovere et al. in Brazil, where breast cancer represented 13% of the cancers admitted to the emergency department [26].

In the present study, 2% of cases were classified according to the localized stage of their cancer and 5% of cases had locoregionally advanced cancer. These proportions are lower than that reported in the literature [8,17,27]. We found that 22% of patients were in the metastatic stage when they were admitted to the emergency department. Compared to data from the Asian regions, this proportion is much lower than that found in Iran (43.5%) and Turkey (53%) [7,17]. Although the proportion of metastatic patients is close to that found in Spain (23.8%) and is much lower than that found by other European authors (43.9% to 91%) [23,27]. Overall, our proportions of the different stages are lower than those reported in the literature. This can be explained by the fact that the true extent of the tumor was not known in 59% of the patients. We can assume that the different proportions of stages do not reflect the real situation of the patients.

The proportion of patients who benefited from antibiotics (47.91%) is higher than that found by Ahn in Korea (28.9%) and Hjermstad et al. in Norway (42%) [13,23]. This high proportion is noteworthy, especially since fever was present in only 5.12% of patients. Other parameters not collected in our study could explain this difference. In our study, 47.91% of the patients had benefited from antalgics, which is higher than that reported in Australia (18.6%), and lower than that reported in Latin America (59.1%) [11,22]. The proportion of blood transfusion in our study (38.14%) is much higher than that reported by Asian authors (7%) [8,13]. Our data are characterized by a high proportion of transfused patients. In our study, the proportion of patients

receiving antiemetics was 1.4%, which is close to that reported by Oatley et al. in Australia (2.8%) [11]. However, this proportion is much lower than that found by Caterino et al. in Colombia (47.6%) [22].

In the present study, 33.5% of the admitted patients died in the emergency department. This proportion is much higher than that found in Asian studies, which ranged from 0.2 to 8% [7,13,17]. This proportion is also higher than that reported by Oatley et al. in Australia, which was 0.69% [11]. Our results are characterized by a very high proportion of emergency department deaths compared to other studies.

The median length of stay in the emergency department was 1 day. This is much lower than that found by Yates et al. in the United Kingdom (6.5 days) and Yucel et al. in Turkey (7 days) [8,14]. In our study, the maximum length of stay in the emergency department was 29 days. This is lower than that reported in the United Kingdom (38 days) and Turkey (82 days) [8,14]. Our data are characterized by a length of stay in the emergency department that is generally lower than that found in the literature. On the one hand, this may be due to the rapidity of the evaluation and decision regarding the patient's return home or hospitalization. On the other hand, it could be due to the very high proportion of deaths in the emergency department. Due to the retrospective nature of the data collection, we regret that we were not able to take into account general health and cancer treatment phase.

CONCLUSION

The number of emergency visits per patient is broadly consistent with literature data. Among them, a low frequency of treated cancer patients was observed. Dyspnea was the main reason for admission. Gynecological cancers were the most common, contrary to known data. The mortality rate was higher, reflecting the severity of the cancer patients presenting to the emergency department. It is likely that many cancers are diagnosed only in emergencies. Collaboration between oncology centers and/or research groups could improve patient access to specific cancer treatments. Regular, close monitoring of cancer patients on an outpatient basis, with systematic tracking of complaints, could enable them to be treated before they become emergencies. In the case of intermittent symptoms, treatments could be prescribed "on demand" during follow-up consultations, so that some patients do not necessarily need to consult outside working hours during a crisis.

COMPETING INTERESTS

The authors declare no competing interest.

ETHICS APPROVAL

This study respected the Helsinki principles for research and the ethical guidelines of our institution.

AUTHOR CONTRIBUTIONS

Rova Malala Fandresena Randrianarisoa: Drafting, revision and editing. Valéry Refeno and Ernestine Faly: Conception and design, acquisition of data, analysis and interpretation of data, drafting of the article. Giannie Rasamimanana and Hery Randrianirina: Interpretation of data, drafting of the article. Tovohery Andriambelo and Florine Rafaramino: Interpretation of data, critical revision for important intellectual content.

FUNDING

The authors declare that the article has no funding.

DATA AVAILABILITY STATEMENT

All data used in the study can be requested from the corresponding author.

ACKNOWLEDGEMENTS

We thank all people who contributed to this manuscript.

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