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Original Research Article

Profile of Children Admitted for Acute Leukaemia in Paediatric Oncology at Donka National Hospital

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Abstract: ***Introduction*:** The aim of this study was to investigate the characteristics of patients admitted for acute leukaemia in paediatric oncology at Donka National Hospital. ***Methods*:** This was a retrospective and descriptive study. We extracted data from the GFAOP Redcap registry for patients admitted between 1 January 2019 and 31 December 2023 to the paediatric haematology and oncology unit at Donka National Hospital. ***Results***: There were 331 confirmed cases of cancer and 96 cases of acute leukaemia, representing a frequency of 29%. Children aged 0–4 years were the most represented, with a male predominance and a sex ratio of 1.13. The socioeconomic status was low for 70.83% of patients. Acute lymphoblastic leukaemia accounted for 80.2% of patients. 90.62% of patients had already consulted a hospital before coming to the unit. There was a 96.87% mortality rate. ***Conclusion*:** Acute leukaemia in children is common at Donka National Hospital. Acute lymphoblastic leukaemia is the most prevalent form. Treatment is marked by high rates of loss to follow-up and mortality.

Keywords: Acute leukaemia, Paediatric oncology, Epidemiology, Acute lymphoblastic leukaemia, Mortality, Guinea.

INTRODUCTION

Acute leukaemias are a heterogeneous group of malignant blood disorders characterised by the clonal and uncontrolled proliferation of immature haematopoietic precursors, blocked in their differentiation, which invade the bone marrow, then the peripheral blood and finally numerous organs [1]. They are the most common type of cancer in children, accounting for up to 30% of childhood cancers in Western countries, with around 400 new cases diagnosed each year in France. There are two main types, depending on the origin of the precursor involved: acute myeloblastic leukaemia (AML), which becomes more common with age, and B- or T-cell lymphoblastic leukaemia, which is mainly seen in children [2]. Clinical manifestations are the result of medullary and extramedullary invasion by abnormal cells [3, 4].

The diagnosis of malignant blood disorders is based primarily on cytological and immunophenotypic criteria of cells in the blood, bone marrow and other haematopoietic organs such as the lymph nodes. Given that these specific diagnostic methods are costly and unavailable in hospitals in developing countries, blood counts and bone marrow examinations remain important tools in the diagnosis of malignant blood disorders [5].

Treatment is based on polychemotherapy, the duration of which varies depending on the type of protocol followed. The prognosis is often good, with a cure rate of over 80% in developed countries. However, in developing countries, the results of cancer treatment in children are disappointing, with a survival rate of around 10 to 15% [6, 7].

Worldwide, the standardised incidence of acute leukaemia in the global population is 45.9 cases per million inhabitants [8].

In the United States and France, acute leukaemia accounts for 80% of leukaemia cases and approximately 35% of childhood cancers [8]. In Morocco in 2017, 67.3% of ALL cases were diagnosed in children [9].

In Guinea, with regard to childhood cancers, a few rare published studies seem to indicate that the disease poses enormous difficulties in terms of both diagnosis and treatment. It is considered a real scourge,

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labelled as a death sentence due to its severe prognosis and inadequate technical facilities.

The aim of this study was to investigate the characteristics of patients admitted for acute leukaemia in paediatric oncology at Donka National Hospital.

METHODS

The paediatric department at Donka National Hospital served as the setting for this study. The paediatric department is a leader in the treatment of childhood diseases. It has a threefold mission: care, training and research. Within this department, there is a paediatric haematology-oncology unit where children with cancer are treated. This unit is a member of the Franco-African Paediatric Oncology Group (GFAOP).

This was a retrospective and descriptive study. We extracted data from the GFAOP RedCap registry for patients admitted between 1 January 2019 and 31 December 2023 to the paediatric haematology and oncology unit at Donka National Hospital.

We included in our study all patients who were admitted with a clinical suspicion of acute leukaemia confirmed by myelogram.

We studied the following characteristics:

- Epidemiological: age, gender, region of origin, parents' level of education, socioeconomic status, year of admission
- Care: patient pathways, type of leukaemia, treatment and progression

The data were analysed using Excel software. Data extraction was carried out anonymously and confidentiality was respected. "data confidentiality has been respected″

RESULTS

During the study period, 331 confirmed cases of cancer were recorded in the paediatric oncology unit at Donka National Hospital. There were 96 cases of acute leukaemia, representing a frequency of 29%.

Sociodemographic Characteristics of Patients

Children aged 0–4 years were the most represented, with a male predominance and a sex ratio of 1.13. The socioeconomic status was low for 70.83% of patients (Table I).

Therapeutic Characteristics and Patient Progression

Acute lymphoblastic leukaemia accounted for 80.2% of patients. 90.62% of patients had already consulted a hospital before coming to the unit (Table II).

Table I: Sociodemographic data of patients

	Number	%
Age groups in years		
0 - 4	30	31, 25
5 – 9	29	30,20
10 -14	32	33,33
14 -18	5	5,20
Sex		
Masculine	51	53,12
Féminine	45	46,87
Year of admission		
2019	10	10,41
2020	18	18,75
2021	14	14,58
2022	30	31,25
2023	24	25
Region of origin		
Conakry	38	39,58
Lower Guinea	20	20,83
Middle Guinea	26	27,08
Upper Guinea	5	5,20
Forest Guinea	6	6,25
Other	1	1,04
Father's level of education		
Illiterate	45	46,87
Primary	10	10,41
Secondary	14	14,58
Academic	22	22,91
Unknown	5	5,20
Mother's level of education		
Illiterate	62	64,58
Primary	8	8,33
Secondary	12	12,5
Academic	10	10,41
Unknown	4	4,16
Socio-economic status		
Low	68	70,83
Average	28	29,17

Table II

	Number	%
Type of leukemia		
ALL	77	80,20
AML	19	19,8
Route		
Traditional practitioner	5	5,20
General practitioner	19	19,79
Health centre	18	18,75
Hospital	87	90,62
Treatment		
Curative	70	72,91
Palliative	1	1,04
Untreated	25	26,04
Evolution		
Death	93	96,87
Remission	3	3,12

DISCUSSIONS

We conducted a retrospective and descriptive study over a five-year period from January 2019 to December 2023. The aim of this study was to examine the profile of patients admitted for acute leukaemia in paediatric oncology at Donka.

During our study, we recorded 96 cases of acute leukaemia out of 331 recorded cases of cancer. This represents a frequency of 29%. Our results are higher than those of Roussel *et al.,* in France in 2020 [10], who reported 22% of acute leukaemia cases.

Children aged between 0 and 4 years old were the most represented, accounting for 31.25% of cases. Ngolet *et al.*, in Brazzaville in 2017 [2], reported that the 7-14 age group was the most affected, and Jankowski *et al*., in Belgium in 2019 [11], reported the 1-4 age group. Acute lymphoblastic leukaemia is a condition with a peak incidence between 2 and 5 years of age, and in our study we recorded 80.45% of acute lymphoblastic leukaemias [12].

In our series, males predominated with a sex ratio of 1.13. These results are similar to those of Sando *et al*., in Cameroon in 2015 [13], who reported a male predominance (56.9%) with a sex ratio (M/F) of 1.3. The majority of our patients were from the Conakry region (39.58%). This could be explained by the fact that the paediatric haematology-oncology unit is located in Conakry and is the only unit dedicated to the treatment of childhood cancers in Guinea.

The majority of admissions were in 2022, accounting for 31.25% of cases. The paediatric oncology unit was officially opened in 2018 with its membership of the Franco-African Paediatric Oncology Group (GFAOP). Since 2019, all cancer cases have been recorded in the GFAOP's Redcap registry. We have seen a gradual increase in admissions. This can be explained by the training courses on early diagnosis of childhood cancers held in 2021.

Most parents were illiterate: 46.87% of fathers and 64.58% of mothers. The parents' lack of education could be a limiting factor in understanding the signs and explain the advanced stage of the disease at diagnosis. The level of education can have an impact on the care and survival of children with cancer, as reported in the study by Mogensen *et al*., who reported that children whose parents had a high level of education had a higher survival rate than those whose parents had less than a secondary education [14].

The socio-economic level was low in 70.83% of cases. In Guinea, there are no subsidies for the treatment of childhood cancer. The GFAOP makes regular donations of anti-cancer chemotherapy drugs, but this is still insufficient to cover the entire duration of treatment. Son *et al*., found a relationship between the social status of parents and the mortality rate of children with cancer. The lower the social status, the higher the mortality rate [15].

Twenty-six per cent of children were not treated because they were lost to follow-up. The lack of financial support and low socioeconomic status could explain this high number of untreated patients. The mortality rate was high, at 96.87%. Late diagnosis, lack of financial resources and inadequate technical facilities are factors that may explain this high mortality rate in our context.

CONCLUSION

Acute leukaemia in children is common at Donka National Hospital. Acute lymphoblastic leukaemia is the most prevalent form. Treatment is characterised by high rates of loss to follow-up and death. Continued training in early diagnosis, funding for treatment and improvements in technical facilities could improve the standard of care.

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