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Original Research Article

Childhood cancers in a tertiary facility in Southern Nigeria: a four-year update

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ABSTRACT

Background: Cancer is a global epidemic and leading cause of death for children and adolescents worldwide. Developing countries contribute an estimated 60-80% of the total burden of all new cancer cases worldwide. Data on the burden of childhood cancers across Nigeria varies from centre to centre and may well even vary in periodic reviews done in the same areas over a time lag. It was therefore important to have periodic reviews of the various cancer types seen or evolving in various geographical areas.
Methods: A prospective hospital-based study, over a period of four years, from January 2016 to December 2019. Children admitted and diagnosed with cancers in the paediatric medical ward of the University of Uyo Teaching Hospital were reviewed. This teaching hospital was one of the two tertiary health care facilities in the state and caters for children from different parts of the state and its environs.
Results: The frequency distribution of each childhood cancer showed nephroblastoma as the predominant cancer seen, 12 (23.1%), followed by non-Hodgkin's lymphoma, 6 (11.5%). Retinoblastoma, Burkitt's lymphoma and Hodgkin's lymphoma were 5 (9.1%) and ranked third respectively. Leukaemia ranked 4th in frequency; 4 (7.7%), children less than five years of age formed a greater percentage of those presenting with various cancers.
Conclusions: Nephroblastoma was the predominant childhood cancer now seen in this geographical area of south-South Nigeria, with a decline in the incidence of Burkitt's lymphoma, which was most frequent in erstwhile years.

Keywords: Cancer, Children, Update, Nigeria

INTRODUCTION

Cancer is a global epidemic, with about 19.3 million new cases reported. It accounts for 9.9 million deaths globally.[1] Worldwide, cancer now causes more deaths than HIV/AIDS, tuberculosis and malaria combined. It is also a leading cause of death for children and adolescents.

According to a WHO 2018 report, an estimation of about 300,000 children less than 19 years are diagnosed of cancer each year.[2] Of these, about 160,000 new cases of cancer and 90,000 deaths are recorded annually in children under the age of 15 years.[2]

Developing countries contribute an estimated 60-80% of the total burden of all new cancer cases worldwide, with a mortality of approximately 80% or even 90% in the world's poorest countries.[3,4] On the other hand, in developed countries, more than 80% of children with cancer are cured.[3,5] There are projections, that by the year 2030, 85% of all cancer death may be occurring in low and middle income countries (LMIC). A key factor responsible for this projection is the global population that is growing and aging as well as the changes in the distribution of major risk factors for cancer.[1,3] The increase in childhood cancer mortality in LMIC is largely due to late presentation, misdiagnosis, delayed diagnosis, lack of diagnosis, obstacles to accessing care,

abandonment of treatment, deaths from toxicity and higher rates of relapse. Most childhood cancer cannot be prevented. Hence, improving outcomes for children with cancer requires early and accurate diagnosis followed by effective treatment.

Data on the burden of childhood cancers are important for resource planning and health policy prioritisation.[3] It is also needful for cancer control efforts by governments, stakeholders, and the global health community. This study therefore seeks to provide data update on the prevalent childhood cancers seen in this locality, with the aim of sensitizing relevant health policy stakeholders.

METHODS

A prospective longitudinal study of all children from birth to seventeen years, admitted and evaluated for various childhood cancers in the post neonatal wards of the paediatrics department, University of Uyo Teaching Hospital over a period of four years, from January 2016 to December 2019. The University of Uyo Teaching Hospital was one of the two tertiary health facilities located within the state. It served children from all parts of the state and its immediate environs.

Information obtained on admission included age, gender, duration of illness before presentation, symptoms, clinical findings on examination, both general and systemic. The laboratory and histopathological reports as well as various imaging results that were done before diagnosis were also noted. The purposive sampling technique was employed. All children who presented to this facility with a history, symptoms and signs suggestive and associated with cancers, were assessed. General physical and systemic examination was done. Various investigations including excisional biopsies of any masses including lymph nodes, fine needle aspiration for cytology, bone marrow evaluation and other ancillary investigations such as a complete blood count, electrolytes/urea, creatinine and uric acid, liver function tests were done. Where indicated, tumour markers such as alpha feto-protein was also done. Those whose histological results confirmed the diagnosis to be cancers, were included. Excluded were those whose results were inconclusive and those whose histology reports were not confirmed to be cancer.

Children were serially registered as they came for treatment over the study period. Consent was obtained from the parents/guardian before registration. Refusal to be registered did not in any way affect management and care given to child.

Treatment modalities used were medical-chemotherapy, surgical and radiotherapy where indicated. Referrals were made to other centres for immunocytochemical analysis to delineate specific cancers, when the results obtained from ordinary stains were ambiguous. Referrals to other centres was also done when child needed treatment with radiotherapy as the University of Uyo Teaching Hospital presently lacks the facilities for such treatments.

Information obtained was entered into a Microsoft excel spread sheet and analyzed using the Microsoft excel package. The results presented in simple tables and figures.

RESULTS

Of the one thousand, eight hundred and ninety-three children (1,893) who were admitted in the study period, fifty-two (52) of these, were diagnosed with various childhood cancers, constituting 2.7% of total admissions.

Table 1: Age distribution of the children, with year of diagnosis.

Year	<5 years	5 - <10 years	10 - <15 years	≥ 15 years	Total
2016	3	4	2	0	9
2017	5	3	4	1	13
2018	5	4	4	2	15
2019	3	3	5	4	15
Total (%)	16 (30.8)	14 (26.9)	15 (28.8)	7 (13.5)	52 (100.0)

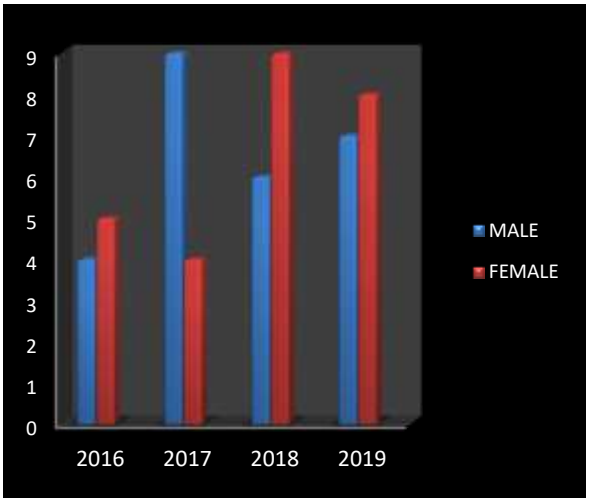

Figure 1: Gender distribution per year of childhood cancers.

Table 1 shows that children less than five years of age were the most frequently diagnosed group with childhood cancers, followed by children between 10 to 15 years of age. The age range greater than 15 years were the least frequently diagnosed. There were twenty-six (26) males, and twenty-six females (26), with a male to female ratio of 1:1, however, the gender distribution of the various cancers varied with each year with a female preponderance in three of the four years as shown in Figure 1.

The frequency of distribution of each childhood cancer showed Nephroblastoma as the predominant cancer seen, 12 (23.1%), followed by non-Hodgkin lymphoma, 6 (11.5%). Retinoblastoma, Burkitt's lymphoma and Hodgkin's lymphoma were 5 (9.1%) and ranked third respectively. Leukaemia was the 4th commonest cancer seen 4 (7.7%) (Table 2).

Table 2: Frequency of the various cancers seen in the study population.

Diagnosis	N (%)
Nephroblastoma	12 (23.1)
Non-Hodgkin's lymphoma	6 (11.5)
Retinoblastoma	5 (9.1)
Burkitt's lymphoma	5 (9.1)
Hodgkin's lymphoma	5 (9.1)
Leukaemia	4 (7.7)
Rhabdomyosarcoma	3 (5.8)
Histiocytosis	2 (3.8)
Hepatoblastoma	1 (1.9)
Neuroblastoma	1 (1.9)
Osteosarcoma	1 (1.9)
Sacrococcygeal teratoma	1 (1.9)
Polycystic astrocytoma	1 (1.9)
Unspecified	5 (9.1)
Total	52 (100.0)

DISCUSSION

Data on the burden of childhood cancers across the country varies from centre to centre. In Uyo, Nigeria it constitutes a burden to the healthcare system. This present study shows an increase in the annual rate of reported cancers in this centre, 13.5 per annum in contrast to an erstwhile study which was 10.5 per annum.[6] This is however much lower than 23.0 cases per year reported in Jos, Northern Nigeria.[7]

The yearly increase in the number of cancer cases presenting to this hospital aligns with the report that the burden of childhood cancer, incidence and mortality was on the increase especially in low- and middle-income countries.[1,3] It could be a reflection of the slight increase in cancer awareness, availability of many primary, secondary and private-owned health facilities and a higher index of suspicion among medical practitioners. It could also be suggestive of better diagnostic facilities.[4] Increasing number of childhood cancers might also be a reflection of an epidemiological transition that is seen, where as a low socio-demographic index country like ours develops, the burden of infectious diseases tends to decline while, the burden of non-communicable diseases like cancers, tend to rise.[3]

There was a higher frequency of cancer cases among children under five years in this study which could be explained by the fact that a greater number of embryonal tumors such as nephroblastoma and retinoblastoma are commoner in this age group. Also, the predominance of these cancers in the first year of life was consistent with postulations linking prenatal influence and genetic susceptibilities.[11] Vast majority of childhood cancers do not have a known cause, while familial and genetic factors were identified in 5 -15% of childhood cancers. In <5% of cases, some environmental and exogenous factors such as prenatal exposure to tobacco, radiation or certain medications were implicated.[12,13]

Chronic infections like HIV, EBV and malaria infection were other risk factors implicated for childhood cancers.[10,14] There was need for an even greater increase in cancer awareness and establishment of more health facilities in the developing countries. This was expedient because more than 80% of children with cancer have no access to treatment even though many childhood cancers would be amenable to cure with simple treatment regimens if detected, diagnosed and treated early enough.[4]

This study highlighted nephroblastoma (23.1%) as the commonest childhood cancer that presented in the study period, agreeing with Ocheni et al in South-Eastern Nigeria, who also noted that nephroblastoma seemed to be on the relative increase.[8] Nephroblastoma remained one of the most curable cancers in children, especially if diagnosed early. Its incidence in developed countries did not exceed 6-7% however, in some African countries it was reported as one of the most common cancers exceeding 10% of all paediatric cancers.[9,10]

The predominance of nephroblastoma now seen in this centre varied with an erstwhile study which recorded lymphomas as the most prevalent cancers seen then.[6] Of these lymphomas, the Burkitt's variant was the commonest type.

Non-Hodgkin lymphoma was the second most frequently diagnosed cancer in the present study and the slight male preponderance was in line with reports from other centers within the country.[4,11]

The unavailability of some special screening histological stains used to delineate some cancer types including lack of radiotherapy may be considered a limitation of this study, as the few cases referred to other centres, could give an inadvertent skew to the occurrence of some childhood cancers documented in this study.

CONCLUSION

Nephroblastoma was the most prevalent childhood cancer seen in the study region over the period, while Burkitt's lymphoma which hitherto was most prevalent is on the decline. Creating and strengthening existing cancer registries and databases would help cancer research, and information-gathering. Raising community awareness of the existence of childhood cancers would help tackle ignorance, negative cultural and religious beliefs that

mitigate against prompt presentation of patients and ultimately, more favourable outcome.

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Ethical approval: The study was approved by the Institutional Ethics Committee

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