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The Spectrum of Solid Childhood Malignant Tumors in a Tertiary Health Care Institution

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Abstract

Background: Experts on malignant disease in childhood in the late thirties once stated that cancer is rare in childhood. Now, over seventy years later, childhood cancer is reported to be the leading cause of death in children between 1 and 15 years worldwide. Malignant tumors in infancy and childhood constitute about 2% of all malignant tumors. The objective of this study is to present the spectrum of childhood malignant tumors and compare our findings with similar reports from reliable institutions in other parts of the world.

Patients and method This is a retrospective study of all cases of malignant tumors seen in children in our department over the last 5 years (from Jan 2008 to Dec 2012). Studies elsewhere had always included hematological malignancies such as lymphoma and leukemia which are relatively more common in pediatric age group. We therefore, decided to exclude hematological malignancies and focus on mesenchymal and other malignancies. The age in months, sex and histological diagnosis were recorded a pre-designed data form. All these were analyzed using the statistical package for social science (SPSS) Software version 20.

Results Altogether 56 out of 2,610 cases representing 2.2% of all malignant tumors were seen in this study with females and males constituting 52% and 48% respectively. The male to female ratio (M: F) was approximately 1:1. Tumors were more common in children above 42 months of age and least common below 6 months. Wilms' tumor accounted for 44%, while retinoblastoma accounted for 20%. Others included rhabdomyosarcoma (9%), malignant teratoma (8%) and Yolk sac tumor (5%).

Conclusion Wilms' tumor is the most common childhood malignant tumor at our centre. This is in agreement with almost all the studies done elsewhere. However, some variations exist in other centers.

Keywords infancy, childhood, malignant tumor.

Introduction

Experts on malignant disease in childhood in the late thirties once stated that Cancer is rare in childhood [1]. Over seventy years later, childhood cancer is now reported to be the leading cause of death in children between 1 and 15 years worldwide [2,3].

The recent advances in treatment in the last couple of decades have however, resulted in improved cure rate especially among those who are treated in specialized care unit [4]. There has been a difficulty in estimating the overall incidence of childhood cancer in most parts of Africa, this is largely due to poor record keeping and inadequate diagnostic skills, nonetheless, differences in incidence between the southern

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Table 1

Males	27 (48)
Females	29 (52)
Age Group	
<1 Month	2 (4)
1-6 months	2 (4)
7-12 months	8 (14)
13-18 months	4 (7)
19-24 months	10 (18)
37-42 months	7 (12)
Above 42 months	23 (41)
Year of Diagnosis	
2008	14 (25)
2009	5 (9)
2010	10 (18)
2011	13 (23)
2012	14 (25)
Diagnosis	
Wilms' tumor	25 (44)
Retinoblastoma	11 (20)
Rhabdomyosarcoma	5 (9)
Yolk sac tumor	3 (5)
Malignant teratoma	4 (8)
Neuroblastoma	2 (4)
Others	6(10)

and northern parts of Nigeria have been observed with the former being relatively higher [5,6]. Lower incidences ranging from 0.5% to 2% of all malignant tumors have been observed in Kenya, Tanzania and Ghana [7, 8, 9]. The objective of this study was to look at the spectrum of malignant childhood tumor and to compare the results on malignant childhood disease seen in this centre with similar reports from other centers in Africa and the World at large. Where there are disparities, attempts would be made to find explanations.

Material and methods

This is a retrospective study of the cases of malignant tumors seen in children in the Department of Pathology and Forensic Medicine in our tertiary health care institution over a 5-year period i.e. (from Jan 2008 to Dec 2012). This work is intended to concentrate solely on mesenchymal and germ cells tumors of children since almost all previous studies done on this work elsewhere had always included hematological malignancies. Hematological malignancies such as lymphoma and leukemia were therefore excluded from this study. Unspecified diagnosis such as undetermined malignancies, report of fine needle aspiration cytology and blood or fluid smears cytology were in addition excluded from this study so as to avoid ambiguity. The age in months, sex and histological diagnosis were recorded a pre-designed data form. All these were analyzed using the statistical package for social science (SPSS) Software version 20

Result

Altogether 56 childhood malignancies were seen out of 2,610 cases representing 2.2% of all tumors in this study with females and males constituting 52% and 48% respectively. The male to female ratio (M: F) was approximately 1:1. Tumors were more common in children above 42 months of age and least common below 6 months. The only tumor seen in the neonatal period was retinoblastoma. The most common tumor was Wilms' tumor which accounted for 44%, while Retinoblastoma accounted for 20%. Others included Malignant teratoma (8%), Rhabdomyosarcoma (9%), Yolk sac tumor (5%). See table 1.

Discussion

The overall incidence of pediatric solid malignant tumors in Africa is difficult to estimate because of the lack of vital hospital statistics and partly by the absence of national childhood cancer registry in most countries including this country.

A major short fall in this study is the inability to determine the geographic and ethnic distributions. These unfortunately, might have assisted in relating the tumors to the genetic and environmental factors. Because of the present lack of immunohistochemical studies in this center, our diagnoses were based on the use of hematoxylin and eosin- stained slides.

In our study, 56 cases were seen over a 5- year period. This represented 11.2 cases per year. This is closely comparable to the study done in Calabar, South Eastern part of Nigeria which recorded annual rate of 12 cases [5]. These findings are however, slightly at variance with similar studies done in Lagos (24.8) [5], Zaria (17.1) [13] and Jos (17.8) [6]. The highest recorded rate was found by Williams in 1975 in Ibadan [12], the Western part of Nigeria which reported annual rate of 100. This finding is also closely related to that found out by Welbec *et al* [7], in Korle Bu, Ghana which also reported a high figure of 76.8 cases per year. The very high figures in these two centers could have been due to unavailability of special diagnostics aids during that period.

Our findings that in South Eastern Nigeria [14] and South Western Nigeria [15] all showed that Wilms' tumor and Retinoblastoma were among the top three common malignant tumors. Similar study in Kenya [10] showed preponderance of lymphoma followed by Retinoblastoma and Kaposi sarcoma. The prevalence of HIV infection in this region fully explains the high incidence of Kaposi sarcoma.

Apart from lymphoma, retinoblastoma and Wilms' tumors were the commonest tumors found in a study done by Mukiibi *et al*, in Malawi, East Africa [11]. This finding is in tandem with our results.

An interesting twist was however, observed in two centers in Northern Nigeria where Rhabdomyosarcoma was found to be the commonest malignant tumor [6, 13]. The reason for this dramatic twist will be another area of research in the nearest future

We conclude that wilms' tumor is the most common malignant tumor. This was followed by retinoblastoma in this center. These findings are in agreement with result of other centers.

Ethical Considerations

The study was approved by the Ethics committee.

Authors Contributions

SS: prepared the manuscript and involved in literature search

OR was responsible for the design, conceptualization of the work and part of literature search

OJ was responsible for the design, conceptualization of the work and part of literature search

OO searched the records for the data and analyses

SS searched the records for the data and analyses

EF searched the records for the data and analyses

Competing Interests

The authors declare that they have no competing interests.

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