

Childhood malignant tumours in owerri; a histopathological review

ABSTRACT

Aim: The aim of this study is to evaluate the demographic and pathologic characteristics of childhood tumours in Owerri.

Methodology: The surgical day books, histology request and report forms were studied and the clinico-pathologic information were retrieved and analyzed using SPSS version 20.0

Results: A total of 27 cases of malignant diseases of children were clinically diagnosed and histologically confirmed. The mean age of the patients were 10.17 ± 4.33 years with age range of 1 to 18 years. The male to female ratio was 1:1.25. The peak age of incidence falls in the 6-10 age groups which accounted for 40.74%. Wilm's tumor (Nephroblastoma) was the commonest 8 cases (29.63%), Embryonal Rhabdomyosarcoma 6 cases (22.22%), Neuroblastoma 4cases (14.81%), osteosarcoma 3cases (11.11%), yolk sac tumour of the ovary 2 cases (7.41%), one case "3.70%" each for retinoblastoma, soft tissue sarcoma and angiosarcoma

Keywords: Tumours, childhood, Owerri

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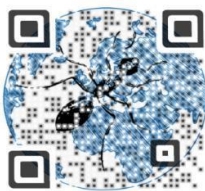
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INTRODUCTION

Cancers and other non-communicable diseases have been thought to be unimportant health problems in developing countries.^[1] However, with improved health care facilities, extensive national immunization programmes and general improvement in socio-economic status, malignant diseases are beginning to account for a significant percentage of childhood morbidity and mortality.^[1] This is especially so in poorer countries, where childhood cancers are often detected often too late for effective treatment and where appropriate treatment is either not available or affordable.^[2] The aim of this study is to evaluate the demographic and pathologic characteristics of childhood tumors.

MATERIALS AND METHODS

This is a retrospective study of childhood malignant neoplasm histologically confirmed in the Department of Pathology, Federal Medical Centre Owerri, Imo State between September, 2010 and October 2016 (Five years). Owerri consists of three [Local Government Areas](#) including [Owerri Municipal](#), [Owerri North](#) and [Owerri West](#), it has an estimated population of about 401,873 as of 2006,^[3] The surgical day books, histology request and report forms were studied and the clinico-pathologic information were retrieved. The data was analyzed using SPSS version 20.0 and presented in simple tables.

ETHICAL CONSIDERATIONS

The ethical approval was sort from the Research ethics committee, Federal Medical Centre Owerri.

RESULTS

A total of 27 cases of malignant diseases of children were diagnosed and histologically confirmed. The

mean age of the patients was 10.17±4.33 years with age range of 1 to 18 years. There was a slight female preponderance giving a male to female ratio of 1:1.25. The peak age of incidence was in the 6-10 age groups which accounted for 40.74% followed by the 11-15 and 16-18 years age groups that constituted 18.52% respectively. This is shown in table 1.

The commonest malignancy was Wilm’s tumor (Nephroblastoma) which constituted 29.63% (8 cases) of all the childhood tumors in the period under review. The average age was 8.61±3.68 years and age range of 1 to 11 years. The male to female ratio was 1:1.7. There were bimodal peaks in the 6-10 and 11-15 years age groups.

Embryonal Rhabdomyosarcoma was the second most common neoplasm. There were 6 cases (22.22%) of this malignancy. The mean age of the patients were 10.92±6.58 years, age range of 2 to 18 years and a peak in the 16-18 years age groups. A single case of Alveolar Rhabdomyosarcoma and soft tissue sarcoma was also observed.

Neuroblastoma constituted 14.81% (4 cases). The mean age was 13.5±2.87 years with age range of 10-18 years and peak at the 11-15 years age groups.

Moreover, Osteogenic sarcoma contributed 11.11% (3 cases) of all childhood tumors in this study with a mean age of 8.67±1.15 years, peak age in the 6-10 years age groups and age range of 7 to 10 years.

Two cases (7.41%) of yolk sac tumour of the ovary were observed. A single case (3.7%) each was recorded for Angiosarcoma and Retinoblastoma. The relative frequency of all the tumours is shown in table 2.

Table 1: showing the age distribution of malignant childhood tumors

S/n	Age groups	Freq	%
1	1-5	6	22.22
2	6-10	11	40.74
3	11-15	5	18.52
4	16-18	5	18.52
Total		27	100.00

Table 2: showing the relative frequency of each childhood malignancy

S/n	Neoplasm	Freq	%
1	Nephroblastoma	8	29.63
2	Embryonal rhabdomyosarcoma	6	22.22
3	Alveolar rhabdomyosarcoma	1	3.70
4	Neuroblastoma	4	14.81
5	Osteogenic sarcoma	3	11.11
6	Yolk sac tumour	2	7.41
7	Angiosarcoma	1	3.70
8	Retinoblastoma	1	3.70
9	Soft tissue Sarcoma	1	3.70
Total		27	100.00

DISCUSSION:

A total of 27 cases of malignant paediatric tumors were histologically confirmed in the period under review. There was a female preponderance in this study. This observation is unique as most studies reported a predilection for males.^[3-9] However, the age range was similar to the findings in previous studies.^{[4][5]} This study demonstrated that the peak age of incidence was in the 6-10 age groups which accounted for 40.74% followed by the 11-15 and 16-18 years age groups that constituted 18.52% respectively. This observation agreed with reports from Ilorin and Uyo.^{[1][6]}

The commonest malignancy in this study was Wilm’s tumor (Nephroblastoma). The male to female ratio was 1:1.7. There were bimodal peaks in the 6-10 and 11-15 years age groups. Soyemi et al.^[10] reported that nephroblastoma was the commonest childhood malignancy in Lagos. Several reports also indicated that it is the commonest intra-abdominal tumor of childhood in sub-saharan Africa.^[11-13] In Enugu, Ekenze et al.^[11] reported that the male to female ratio for Wilm’s tumor was 1.1:1 with peak age of incidence in the 2-5 years age groups. Most previous studies demonstrated that Wilm’s tumor affect children in the first five years of life with predominantly male predilection.^[14-18] However, our observation showed that nephroblastoma was common among the 6-15 years of life with a female preponderance. The difference in mean age may be due to the late presentation of patients to hospital.^[16]

Rhabdomyosarcoma is said to be the commonest soft-tissue sarcoma of childhood worldwide.^[19] Embryonal Rhabdomyosarcoma was the second most common neoplasm in this study constituting 22.22% (6 cases). The mean age of the patients were 10.92±6.58 years and age range of 2 to 18 years. All the patients were males. These findings were in agreement with reports from Port-Harcourt and Jos where there were male preponderance and mean ages were 11 and 9.5±4.5 years respectively.^{[20][21]} However, Brown and Abdullahi et al.^{[22][23]} reported lower mean ages from Ibadan and Sokoto with marked predilection for females in Sokoto. The peak age of incidence in our study was in the 16 to 18 years age groups. However, there were bimodal peaks in Port-Harcourt and Jos with the embryonal variant of rhabdomyosarcoma having a peak in the 0-5 years and 4-7 age groups and the alveolar variant in the 16-20 and 12-15 years age groups respectively.^{[20][21]} In all the studies, the commonest variant was the embryonal rhabdomyosarcoma constituting 71.5%, 63%, 61.5% in Port-Harcourt, Jos and Ibadan respectively.^[20-22] A single case of Alveolar Rhabdomyosarcoma and soft tissue sarcoma from the gluteal region were also observed. Neuroblastoma is the most common solid abdominal tumor in children under the age of 2 years and accounts for approximately 15% of childhood mortality due to cancer. Its clinical behavior can vary from spontaneous regression to rapid fatal progression and anywhere in between (e.g. differentiation into benign tumors).^[24] Neuroblastoma constituted 14.81% (4 cases) in this study. The mean age was 13.5±2.87 years with age range of 10-18 years and peak in the 11-15 years age groups. The

male to female ratio was 1:1. Aikhionbare et al.^[25] reported that neuroblastoma is the fourth malignant neoplasm of childhood in Zaria with marked male preponderance. The age range in their study was between 3 and 5 years. Furthermore, other studies demonstrated that neuroblastoma constituted 5.3%, 5.1%, 4.8%, 3.34% and 1.9% in Lagos, Kano, Uyo, Zaria and Enugu respectively.^[4-8]

Osteosarcoma is the eighth common cancer of childhood and its incidence is 4 cases in a million of children younger than 14 years.^[26] Osteogenic sarcoma contributed (3 cases) 11.11% of all childhood tumors in this study with a mean age of 8.67±1.15 years, peak age in the 6-10 years age groups and age range of 7 to 10 years. All the patients were females. However, Omololu et al.^[27] reported that osteosarcoma has a male to female ratio of 1.6:1 in Ibadan with a peak age of incidence in the 10-19 age groups. The extremities were most affected followed by the mandibles. Other reports demonstrated that 0.8%, 2.2%, 6.34%, 7.5% of childhood malignant neoplasm was Osteogenic sarcoma in Zaria, Abuja, Ilorin and Pakistan respectively.^[28-31]

Two cases (7.41%) of yolk sac tumour of the ovary were observed. Similarly, Soyemi et al.^[10] reported that ovarian yolk sac tumour constituted 5% of childhood malignant neoplasm in Lagos.

A single case (3.7%) was recorded for retinoblastoma. Retinoblastoma is one of the leading childhood malignancies. It has been reported as the commonest paediatric tumor in Zaria and Kano.^{[32][33]} In addition, retinoblastoma is the second and third commonest tumor in Orlu, Lagos and Benin City respectively.^{[4][9][34]} In our centre, there is dearth of this tumour due to hospital policy to refer such patients to special centres designated for its management.

In this study a single case of angiosarcoma of the right shoulder was diagnosed in seventeen year old female. Though angiosarcoma is an exceedingly rare tumour of childhood, Bien and Ayadi et al.^{[35][36]} reported ten and twelve cases from Poland and Tunisia respectively.

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