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Nigeria, there is no comprehensive cancer center or standalone pediatric oncology units. Most institutions have general wards for other pediatric cases, and children with cancers are admitted to these wards. As a first step to improving the quality of care, the Lagos University Teaching Hospital (LUTH) designated the first solely pediatric oncology ward in 2011. The unit is an 18-bed ward with a procedure room, kitchen, and play area. The unit uses treatment protocols from Europe, USA, as well as SIOP guidelines with locally adapted modifications. We reviewed admissions, course of treatment, outcomes, and determinants of completion of treatment in the unit over the last 30 months.

INTRODUCTION

An estimated 200,000 children are diagnosed annually with childhood cancers with over 50% of them dying due to poor infrastructure, lack of diagnosis, or general lack of access to care and with most of these deaths occurring in low- to middle-income countries (LMICs). [1-4] While survival rates of most cancers in the developed world over are around 85%-90% for most cancers, in the LMIC mortality rates are approximately 75%-80%. [1] Pediatric oncology care in resource-constrained settings is bedeviled by many challenges such as poor infrastructure, inadequate workforce, absence of chemotherapeutic agents, and poorly developed health insurance. [5,6] Another major challenge is the lack of attention given to pediatric oncology. Most of the attention is on adult-type cancers such as breast, prostate, cervix, and colon. In Nigeria, there is no comprehensive cancer center or standalone pediatric oncology units. Most institutions have general wards for other pediatric cases, and children with cancers are admitted to these wards. As a first step to improving the quality of care, the Lagos University Teaching Hospital (LUTH) designated the first solely pediatric oncology ward in 2011. The unit is an 18-bed ward with a procedure room, kitchen, and play area. The unit uses treatment protocols from Europe, USA, as well as SIOP guidelines with locally adapted modifications. We reviewed admissions, course of treatment, outcomes, and determinants of completion of treatment in the unit over the last 30 months.

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MATERIALS AND METHODS

This was a retrospective, descriptive study from January 2015 to July 2017. The study location was the Pediatric Hematology/Oncology Unit popularly called “oncology ward” of the LUTH, Idi‑Araba, Lagos, Nigeria. This is one of the major teaching hospitals in Nigeria providing healthcare to an estimated population of 38 million inhabitants in Lagos and surrounding states. The clinical notes of the patients were reviewed for demographic data as well as clinical information. The treatment protocol was documented for all confirmed patients. The outcome was classified as survived or deceased. Those patients who abandoned treatment received phone calls from the unit. Only 30% of them responded to the calls and the patients were all dead. Treatment outcomes were classified as completed treatment which was described as survived and in follow‑up, dead, and abandoned treatment for those whose phone numbers could not be reached. Patients who were on admission at the time of compilation were described as on admission. All information were imported into an excel sheet. Ethical clearance was obtained from the Hospital’s Health Research and Ethics Committee.

RESULTS

A total of 178 children were seen on the oncology ward of LUTH between January 2015 and July 2017. There was a slight male preponderance with a ratio 1.4:1, with the age ranging from 8 weeks to 16 years, with a mean age at 5.8 ± 4.4 years. Three years was the most common age at presentation for all tumors.

The most commonly occurring tumor diagnosed in Luth between 2015 and 2017 was leukemias (30.3%); acute lymphoblastic leukemia (ALL) was the most common leukemia (20.8%); acute myeloid leukemia and chronic myeloid leukemia had the same prevalence at 2.3% [Table 1].

Retinoblastomas were the second most common malignancy seen with a prevalence of 19.6% while Wilm’s tumor was the third most common malignancy with a prevalence of 16.9%. Hodgkin’s lymphoma was the most common lymphoma (5.6%), non-Hodgkin’s lymphoma (2.3%), and Burkitt’s lymphoma (1.1%) [Table 1].

Other rare forms of malignancies seen were hepatoblastoma, hepatocellular carcinoma, renal cell carcinoma, ovarian teratoma, lung spindle cell cancer, and germ cell testicular tumor [Table 1].

Variations in distribution of presentation were noted over the months; there was no identified pattern (peaks or troughs) noted over the months. Data could not be collected over certain months as the hospital was on industrial strike [Figure 1].

Mortality rates for the patients accounted for over a 30-month period were as high as 45%. Only 25% of patients seen in the 30-month period were treated and discharged to go home [Figure 2].

About 22% of the patients abandoned treatment. This commonly occurred following the second course of chemotherapy. The most common reasons for abandonment of treatment included financial constraint and seeking traditional or spiritual solution.

A small percentage of patients were discharged against medical advice or voluntarily refused treatment while the rate of relapse was 1.7% [Figure 2].

Tumor types with the highest mortality included neuroblastoma, brain tumor, and osteosarcoma while Wilm’s tumor, lymphomas, and retinoblastomas had lower mortality rates.

DISCUSSION

This review highlights the challenge that most LMIC still grapple with in the treatment of children with childhood cancers. There is only one population-based cancer registry in Nigeria; thus, most data generated are hospital based as in this review. There was a slight male preponderance in this review which is similar to that reported in most other studies in Nigeria and other parts of Africa.[7-9]

However, unlike what has been reported in most African publications, ALL was the most common malignancy
Akinsete, et al.: Presentation, treatment, and outcome of pediatric oncology in Lagos

Table 1: Diagnosis

<table>
<thead>
<tr>
<th>Type of cancer</th>
<th>Frequency (n=179) (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neuroblastoma</td>
<td>10 (5.5)</td>
</tr>
<tr>
<td>Retinoblastoma</td>
<td>35 (19.6)</td>
</tr>
<tr>
<td>Brain tumor</td>
<td>3 (1.6)</td>
</tr>
<tr>
<td>Leukemia</td>
<td>53 (30.2)</td>
</tr>
<tr>
<td>Lymphoma</td>
<td>27 (9.0)</td>
</tr>
<tr>
<td>Wilm's tumor</td>
<td>30 (16.8)</td>
</tr>
<tr>
<td>Osteosarcoma</td>
<td>8 (4.5)</td>
</tr>
<tr>
<td>Rhabdomyosarcoma</td>
<td>23 (7.3)</td>
</tr>
<tr>
<td>Others</td>
<td>10 (5.5)</td>
</tr>
<tr>
<td>Total</td>
<td>179 (100)</td>
</tr>
</tbody>
</table>

Unlike most reports from Africa, Burkitt's lymphoma is not very common in Lagos. Only 1.12% of the children had a diagnosis of Burkitt's lymphoma [Table 2]. This is at variance with most of the reports from other parts of Nigeria and Africa where Burkitt's is reported to be the commonest or one of the most common childhood cancers.[7-9] This may be due to possible environmental influences on the genes of children residing in Lagos or the possibility of a near absence of malarial infection in most of the inhabitants of Lagos since this is the commercial nerve center of Nigeria with a difference in health-seeking behavior. Thus, we may conclude that individuals in Lagos will treat malaria better and the general environmental hygiene will be higher leading to a reduced prevalence of malaria and its comorbidities.

The high rate of abandonment of treatment in this review is similar to that reported in other parts of Africa [Figure 1].[14] The factors responsible for treatment abandonment are similar to those reported in other reports.[14,15] However, a lack of health insurance was a major factor for treatment abandonment in this review. Over 85% of the caregivers paid out of pocket for treatment, and most of the providers suffer provider fatigue by the second course of chemotherapy. The factors identified in this present review were not different from those identified in an earlier report from Ilorin, Nigeria, 12 years ago.[16]

The overall mortality recorded in this review was 45.5% which is similar to what has been described for most of the continent [Figure 2].[14] Acute myeloid leukemia has the worst prognosis recording 100% mortality in this review See Table 3. Despite the late stages of patients with nephroblastoma, the mortality rates were 25% which is quite comparable to what is documented in literature see Table 3.[17] The improvement in Wilm's tumor statistics is due to the multidisciplinary treatment approach that has been implemented in the hospital. The same intervention has also been introduced for retinoblastoma and the mortality figures are also low at 35% [Figure 2].

Nephroblastoma was also quite common among the children reviewed accounting for 16.9% of the diagnosis. Most of the children had advanced stages of the disease. There were few patients who had a stage 2 disease with most presenting with stages 3 and 4 disease. No patient in the review had stage 5 disease. Nephroblastoma has also been commonly reported in other reviews in Africa.[7-9]

The most prevalent solid tumor was retinoblastoma accounting for 19.6% of the malignancies [Table 1]. This is similar to reports from Ghana where retinoblastoma was the second most occurring malignancy.[9] Most of the patients seen had unilateral disease and had advanced stages of the disease as had been reported previously.[11-13]
CONCLUSION

A strong health insurance policy by government to enhance access to cancer care for all children with childhood cancer will improve outcome data. The parents will also need strong social support while the kids are on admission. We believe that it will be important to search for possible genetic differences among the children presenting with cancers from the different geographical zones of the country.

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Nil.

Conflicts of interest
There are no conflicts of interest.

REFERENCES