

## **Cancer in Children at El Obeid Hospital, Western Sudan.**

El Bushra Ahmed Doumi<sup>1</sup>, Dawood Ishag Dawood<sup>2</sup>, Mohamed Guma Mohamed<sup>2</sup>,  
Siragelnoor Mohammed Ahmed<sup>2</sup>, Alameldin Musa Mostafa<sup>2</sup>, Zidan Ahmed  
Hussein<sup>3</sup>, Maha Hamadnalla Mohammed Ali<sup>4</sup>.

### **Abstract:**

**Background:** Cancers form one of the major causes of death in children. They differ markedly from adult cancers in their nature, distribution and prognosis.

**Objectives:** To determine the pattern of childhood cancer at El Obeid Hospital, Western Sudan.

**Patients and Methods:** The records of all patients admitted with cancer aged 15 years and below to the wards of El Obeid Hospital, Western Sudan over two years were studied. The cancers were classified according to the organs affected and then ranked in their order of relative frequency. The mean age, age range, gender and the relative frequency rates were calculated.

**Results:** There were 40 newly diagnosed childhood cancer patients during the study period. Males were 29 patients (72.5%). The age ranged three months to 14 years. Leukaemias were the most common malignancy in both sexes, followed by bone tumours and then nephroblastoma.

**Conclusions:** Cancers in children were seen at Western Sudan, and cases admitted to hospital only reflect the tip of the iceberg as many cases were directly referred to Oncology Hospitals. Establishment of a local radiation and isotopes centre is needed in this part of the country to provide oncology services and to integrate preventive programs.

**Key words:** Acute lymphocytic leukaemia, osteosarcoma, nephroblastoma, Western Sudan.

Cancer remains a leading cause of morbidity and mortality worldwide<sup>1</sup>. Much of the burden falls on developing countries where the risks associated with tobacco, alcohol, diet, industrial exposure and lack of exercise were added to cancers caused by infectious diseases<sup>2</sup>. Cancer incidence rates have significantly increased in Sudan to become one of the major killer diseases (second in 2002)<sup>3</sup>.

The emergence of cancer as a major cause of death among children in developing countries is not well addressed.

The developing countries bear the greatest burden of childhood cancers as over 90% of the children of the world live there<sup>4</sup>. It was estimated that childhood cancer, malnutrition and lack of safe water and sanitation contribute to half of all children mortality<sup>5</sup>. The patterns of childhood cancers in America and Europe were almost the same, with leukemia and central nervous system tumors accounting for over one-half of the new cases<sup>6</sup>. In contrast, lymphoma is the most common prevailing cancer of this age group in Africa<sup>7</sup>.

The objective of this study is to document the epidemiology of cancer in children seen at El Obeid Hospital, Western Sudan.

### **Patients and Methods:**

The records of all patients admitted with cancer aged 15 years and below to the wards of El Obeid Hospital, Western Sudan during the years 2007 and 2008 were studied.

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1. General Surgeon.

2. Paediatricians.

3. Ophthalmologist.

4. 5<sup>th</sup> year Medical student.

\*Faculty of Medicine & Health Sciences,

University of Kordofan, El Obeid, Sudan.

Correspondence to: elbushradoumi@hotmail.com

The cancers were classified according to the organs affected and then ranked in their order of relative frequency. The mean age, age range, gender and the relative frequency rates were calculated.

### Results:

There were 40 children admitted with cancer to the wards of El Obeid Hospital, Western Sudan in two years. 72.5% of the patients were males (29 cases). The age ranged from three months to 14 years with the mean age  $\pm$  Standard deviation (SD) of 6.5 years  $\pm$  4.2 years. Six (15%) children were from El Obeid town; whereas 34 (85%) children were from distant rural locations. The diagnosis in all cases was confirmed by bone marrow aspirates, cytology, histological and radiological studies when appropriate. The type of childhood cancer was shown in table 1.

Table 1: Types of Childhood Cancer. n=40

Tumour	M	F	Total	%
Leukaemia	13	03	16	40.0
Bone tumours	06	02	08	20.0
Retinoblastoma	02	02	04	10.0
Nephroblastoma	01	03	04	10.0
Neuroblastoma	01	01	02	05.0
Testicular tumours	02	00	02	05.0
Lymphosarcoma	02	00	02	05.0
Hepatoblastoma	01	00	01	02.5
Skin tumour	00	01	01	02.5
Total	28	12	40	100.0

M= males, F= females

The frequency of occurrence of different varieties of leukaemias was shown in table 2. The bone tumours were osteosarcoma of the lower femur and upper tibia in six patients and Ewing's sarcoma of the tibia in two patients.

Table 2: Leukaemias: n=16.

Tumour	M	F	Total	%
Acute Lymphoblastic Leukaemia	12	02	14	87.5
Acute Myeloid Leukaemia	01	01	02	12.5
Total	13	03	16	100.0

M= males, F= females

### Discussion:

In this study 40 children were seen with documented diagnosis of cancer at this hospital in two years. This did not reflect the actual situation in this community as many patients were not included due to the lack of confirmatory laboratory diagnosis, because they were seen at clinics and referred directly to oncology centres without being admitted to hospital or because many patients might not have reached health care units at all. In situations where the parents were not aware of cancer, where they rely on non medical remedies and where they lack the cost of the diagnostic tests and treatment, ascertainment of cases and hospital registries indicate only the summit of a wide base problem<sup>7</sup>.

It was interesting to notice that 85% of the patients were from rural areas, where children were brought up in the open atmosphere. In a report from Central Sudan it was observed that 66.1% of children with cancer were coming from rural areas<sup>8</sup>, what may suggest that some genetic or environmental exposures affect cancer-risk.

The distribution of the tumours was age related as we observed that commonly acute lymphoblastic leukaemia, nephroblastoma, neuroblastoma and retinoblastoma were seen in children below five years of age. Lymphomas and bone tumours occurred more frequently in the age groups of over 10 years. The majority of the patients (almost three quarters) were males. Similar age pattern and male preponderance was reported from African and other developing countries<sup>9,10</sup>.

Leukaemia was the commonest neoplasm accounted for 40% of cases. This was similar to reports from Libya<sup>11</sup> where acute lymphoblastic leukaemia accounted for 83% of the leukaemias compared with 87% in our study (Table 2). Leukaemia was also found to be the commonest childhood neoplasm in the developed countries. This contrasted reports from African countries where lymphoma was

the commonest tumour in many countries<sup>10, 12-14</sup>, and rhabdomyosarcoma<sup>15</sup> and tumours of the central nervous system<sup>16</sup> were the commonest tumour in others. In Egypt the incidence of both lymphatic and haemopoietic cancers increased over the last decades<sup>17</sup>.

In this study bone tumours were 20% followed by retinoblastoma and nephroblastoma 10% each, compared to 5.9%, 2.7% and 12.8% respectively as reported from central Sudan<sup>8</sup>. Less common tumours were neuroblastoma, testicular and lymphosarcoma each accounting for 5% of the cases.

Similar to cancer in developing countries most patients were brought to our hospital in late clinical stages. Wilm's tumour was described presenting at late stage in 72% and 78.4% of patients at Nigeria<sup>18</sup> and Sudan<sup>19</sup>. Due to absence of oncology and radiotherapy services in our hospital all patients who survived diagnostic and relevant surgical interventions were referred to higher centres, in spite of their critical clinical status.

### Conclusions:

Childhood cancers reporting to El Obeid Hospital at Western Sudan commonly arise from haematopoietic, bone and primitive embryonic tissues. The disease was found to be prevalent in our community and these documented cases only indicate the tip of the iceberg. Increasing awareness of the disease among the parents and at primary health care settings may significantly alter its course and improve the outcomes. Active plans for local oncology and radiotherapy services need urgent implementation. A regional cancer registry centre supplements the national efforts to evaluate the magnitude of the problem in order to plan future strategies.

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