AUDIT OF PEDIATRIC HEMATOLOGY-ONCOLOGY OUTPATIENTS IN KUALA LUMPUR

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Abstract. The aims of this study were to determine the types of cancers and hematological disorders in patients attending a pediatric hematology-oncology clinic. This was a prospective study at the Pediatric Institute, General Hospital Kuala Lumpur, Malaysia from June 2005-November 2006. During the 18-month study, 803 patients attended the clinic, 730 had oncological problems and 73 had hematological problems. The age range was from 2 months to 28 years (median 6 years). The patients were Malay (66%), Chinese (23%), Indian (10%) and other races (1%). Of the oncological patients, 51% had either leukemia (*n*=293) or lymphoma (*n*=77).The other most common diagnoses were retinoblastoma, followed by Wilm's tumor and germ cell tumors. Six patients (0.8%) developed a second malignant neoplasm. Of the hematological patients, 60% had platelet disorders, most commonly chronic immune thrombocytopenic purpura. Twenty-four per cent had bone marrow failure and 16% had red cell disorders.

INTRODUCTION

Childhood cancer now has an overall survival rate of > 80%. It is estimated that in the United States by 2010, 1 in 250 adults will be a childhood cancer survivor (Bleyer, 1990). In Malaysia, pediatric hematology-oncology services have been available at the General Hospital, Kuala Lumpur (GHKL) for the past 25 years. The aim of this study was to determine the range and types of cancers as well as hematological disorders currently being seen at the clinic.

SUBJECTS AND METHODS

This was a prospective study from June 2005 until November 2006. Patients attending hematology-oncology clinic at the Pediatric Institute, GHKL were included. Our clinic system is not computerized so clinical data was collected by hand at the time of the clinic visit. Repeat visits were not recorded. Patients attending bone marrow transplant or thalassemia clinics were excluded from the study.

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RESULTS

During the 18-month study period, 803 patients attended clinic. Seven hundred thirty were oncological patients, 73 were hematological patients. The age range was from 2 months to 28 years (median age 6 years). Sixty-six percent were Malay in ethnic origin, 23% were Chinese, 10% Indian and 1% other races.

Of the 730 oncological patients, 293 (40%) had leukemia and 77 (11%) had lymphoma. The types and numbers of patients with other malignancies are shown in Table 1.

Table 1
Diagnoses of oncological patients.

Diagnosis	Number of patients
Acute lymphoblastic leukemia	251
Acute myeloblastic leukemia	29
Chronic myeloid leukemia/juvenile myelomonocytic leukemia	13
T- cell Non-Hodgkin's lymphoma	37
B-cell Non-Hodgkin's lymphoma	27
Hodgkin's disease	13
Retinoblastoma	67
Wilm's tumor	57
Germ cell tumors	57
Sarcomas	42
Brain tumors	42
Neuroblastoma	36
Langerhans cell histiocytosis	33
Liver tumors	18
Others	8
Total	730

Table 2
Second malignant neoplasms.

Sex	First tumor	Age (yrs)/ Year diagnosed	Second tumor	Age (yrs)/ Year diagnosed	Status
M	ALL	4 / 1984	Carcinoma-tongue	25 / 2005	Alive
F	RMS-bladder	3 / 1994	Ewing's sarcoma-mandible	9 / 2000	Alive
M	NHL	5 / 1995	Hodgkin's lymphoma	15 / 2005	Alive
F	RMS-orbit	5 / 1998	Osteosarcoma-tibia	11 / 2004	Alive
M	Wilm's tumor	12 / 1999	Carcinoma-colon	17 / 2004	Deceased
M	RMS - thigh	1 / 1998	Medulloblastoma	8 / 2006	Alive

M=male; F=female; ALL=Acute lymphoblastic leukemia; RMS=Rhabdomyosarcoma; NHL=Non-Hodgkin's lymphoma

The ratio of males to females was 1.3:1. Fifteen per cent of patients were receiving chemotherapy, these were mainly children with acute lymphoblastic leukemia (ALL) and Wilm's tumors. There were 13 children with Down syndrome; 8 had acute myeloid leukemia (AML), 4 ALL and 1 a germ cell tumor. The majority of patients (60%) were within the first 5 years of diagnosis. The longest follow-up period was 24 years. One female ALL survivor was married and had a healthy baby. Six patients (0.8%) developed a second malignant neoplasm. The diagnosis of a second malignancy ranged from 5-21 years after the first tumor (Table 2).

Of the 73 hematological patients, platelet disorders were the most common problem (60%), especially chronic immune thrombocytopenic purpura. Twenty-four percent had bone marrow disorders and 16% had red cell

disorders. Only one child had a coagulation defect.

DISCUSSION

This audit showed that children with hematological disorders made up only 10% of the hematology-oncology clinic workload. The most common pediatric hematological disorder seen in Malaysia is thalassemia (George, 2001) and for this reason, we run two clinics a week exclusively for this condition. In the combined clinic we audited, platelet disorders were the most common problem seen. In Kuala Lumpur, patients with coagulation disorders are managed by blood banking services, hence the single patient in our clinic with a coagulation disorder.

Hematological malignancies made up the majority of the oncological patients. Brain tumors are the second commonest childhood malignancy in Malaysia but were only the fifth commonest tumor in our clinic. Retinoblastoma was the most common solid tumor treated at our clinic. In incidence, it is the sixth most frequent cancer in childhood in Malaysia (Lim and Halimah, 2003).

Children with cancer have a 10-20 fold increased lifetime risk of developing a second malignancy. The incidence is 3-12% in the first 20 years after diagnosis (Neglia *et al,* 2001). The usual predisposing malignancies are Hodgkin's lymphoma and retinoblastoma. In this study, half the children who developed second tumors had a primary diagnosis of rhabdomyosarcoma. Both AML and solid tumors have been reported in survivors of childhood rhabdomyosarcoma (Sacradavou *et al*, 1995). In our series, all were solid tumors and none occurred in the radiotherapy field.

Of the oncological patients, 40% were considered long-term survivors (more than 5 years from diagnosis). Apart from second malignancies, this study did not examine the many other sequelae these children were prone to. With the increasing numbers of survivors, we plan to establish a late-effects clinic to adequately assess and monitor the long-term health of these patients.

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