MALIGNANCIES IN CHILDHOOD

Pages with reference to book, From 68 To 69

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INTRODUCTION

Childhood malignancies which were fatal about two decades ago are nearly all treatable, and almost half are curable. They differ in clinical behaviour, histology, and site of origin from adults. The most dramatic change in prognosis has been in acute lymphocytic leukaemia, which, today, is still the most common of all childhood malignancies[1]. Our experience with malignancies at the Children's Hospital Islamabad, is discussed in this paper. The cases have been picked up from an average, daily out patient attendance, of 600/day and draw patients from the districts around Rawalpindi, Islamabad, Azad Kashmir, and other adjoining areas.

MATERIALS AND METHODS

Of 4363 patients admitted to the medical wards of Children's Hospital over a period of 2 years from October 1986 to October 1988, there were 104 (2.3%) cases of childhood malignancies. Seventy two patients were male and 32 females. The male/female ratio was 2.4:1. The relative frequency of tumours in our series is shown in Table I.

TABLE I. Males and Females 1986-1988.

Diagnosis group		0-1Y	1-4	5-9	10-14	ALL	Relative Frequency (Crude)	Group %
	Total	7	48	20	29	104	100.0	100.0
I.	Leukaemia	1	24	10	5	40	38.5	100.00
	Acute Lymphocytic	1	19	9	4	33	31.7	82.5
	Acute Non-Lymphocytic		5	1	1	7	6.7	17.5
II.	Lymphomas	0	5	0	4	9	8.7	100.0
	Hodgkins disease	0	1	0	1	2	1.9	22.2
	Non-Hodgkins Lymphoma	0	3	0	2	5	4.8	53.3
	Burkitt's Lymphoma	0	1	0	1	2	1.9	22.2
III.	Central Nervous System Tumours	0	4	7	12	23	22.1	100.0
	Craniopharyngiomas	0	0	1	4	5	4.8	21.7
	Astrocytoma	0	0	1	0	1	0.9	4.3
	Medulloblastoma	0	2	1	5	8	7.7	34.8
	Glioma	0	0	1	0	1	0.9	4.3
	Others and Unspecified	0	2	3	3	8	7.7	34.8
IV.	Sympathetic Nervous System	2	3	0	0	5	4.8	100.0
	Neuroblastoma	2	3	0	0	5	4.8	100.0
V.	Kidney Tumours	1	5	0	0	6	5.8	100.0
	Wilms Tumours	1	5	0	0	6	5.8	100.0
VI.	Retinoblastoma	0	4	2	1	7	6.7	100.0
VII.	Bone Tumours	0	0	1	4	5	4.8	100.0
	Osteosarcoma	0	0	1	1	2	1.9	40.0
	Ewings Tumours	0	0	0	2	2	1.9	40.0
	Chondrosarcoma	0	0	0	1	1	0.9	20.0
VIII.	Gonadal and Germ Cell Tumours	2	0	0	1	3	2.9	100.0
IX.	Soft Tissue Tumours	0	2	0	2	4	3.8	100.0
	Drhabdomyosarcoma	0	1	0	1	2	1.9	50.0
	Fibrosarcoma	0	1	0	1	2	1.9	50.0
X.	Liver Disorders	1	1	0	0	2	1.9	100.0

RESULTS AND COMMENTS

The distribution of major forms of childhood cancer varies in different age groups. Many tumours, especially those associated with chromosomal defects, have a peak incidence in children under 5 years of age[2]. In our series more than 50% of patients were under 6 years of age, with a peak incidence at 2-4 years. These comprised of children with acute lymphoblastic leukaemia, neuroblastoma, Wil's, tumour and liver tumours. The peak incidence of acute lymphocytic leukaemia occurred at 3-5 years of age. This peak is seen in the western countries, but is absent in Africa and many developing nations[3]. The malignancies seen in children above 6 years of age, with a peak between 11-12 years, were, Hodgkins disease, central nervous system tumours, and bone tumours. The occurrence of tumours above 6 years has been related to environmental factors, for example, Epstein-Barr virus is linked to the development of non Hodgkins lymphoma[4]. In the United States and Britain, the overall incidence of pediatric malignancies is more frequent in males, by a ratio of approximately 1:2:1. [5] In our series it was also

higher than, and almost double the number seen in females. A comparision of the frequency of tumours in our series with U.S. studies[6] is shown in Table II.

TABLE II. Major Cancers in Children under 14 years.

U.S. Study Incidence	%	Children's Hospital Study (relative Frequency)%	
Leukaemias	30.1	Leukaemias	38.5
CNS Tumours	19.1	CNS Tumours	22.1
Lymphomas	12.3	Lymphomas	8.7
Renal Tumours	6.5	Renal Tumours	5.8
Sympathetic Tumours	8.1	Sympathetic Tumours	4.8
Bone Tumours	4.8	Bone Tumours	4.8
Retinoblastoma	2.7	Retinoblastoma	6.7
Soft Tissue Tumours	6.3	Soft Tissue Tumours	3.8
Gonadal Germ Cell	2.0	Gonadal Germ Ce,,	2.9
Liver Tumours	1.1	Liver Tumours	1.9
Others	8.0		

According to the third national cancer survey in USA, leukaemias and lymphomas are the most common malignancies and constitute 44% of cancer in children[5]. Our studies show 47.2% incidence of leukaemias and lymphomas. This is followed by central nervous system and sympathetic nervous system tumours, which have a 26% incidence in both series. Liver tumours were the least frequent in both series, being 1.9% in CH study, and 1.1% in the US. Reports from the Far East show excessive number of liver tumours. These are similar to studies done by Pizzo at the National Cancer Institute in USA. [7] Acute leukaemias have a very high incidence of 38.5%. A high incidence of acute leukaemia has also been reported from Israel, Denmark, and Japan[8] and a lower incidence from Nigeria[9] and India[10]. . Workers from Nigeria showed a greater proportion of lymphomas, probably due to increased incidence of Burkitt's lymphoma[11]. The tumour frequencies, different from western studies, were seen in neuroblastoma and retinoblastoma. Neuroblastoma, which has a high incidence in Western Europe and the US[2], was not so common in our series (4.8%). Retinoblastoma had a high incidence of 6.7% compared to 2.7% in the US[5].

TABLE III. Frequency of Tumours compared to Wilms Tumour in Pakistan.

	Islamabad	Karachi*	Lahore*	Peshawar*	Hyderabad*
Total No.	65	213	72	112	45
Wilms Tumour	1.0	1.0	1.0	1.0	1.0
Leukaemia	4.4	1.3	2.3	1.0	0.6
Lymphoma	1.4	2.5	4.3	7.0	1.8
CNS Tumours	2.0	0.4	2.0	0.2	–
Retinoblastoma	1.0	1.8	5.0	10.0	0.6
Bone Tumours	0.8	1.0	4.0	3.8	1.8
Soft Tissue Tumours	0.2	0.9	0.3	0.8	0.5
Hepatic Tumours	0.4	0.1	0.3	–	–
Gonadal Germ	0.6	0.6	–	0.5	–
Neuroblastoma	0.8	–	–	–	–

*Figures taken from Zaidi and jafarey. (1977)

Table III shows the frequency of selected tumours as compared to Wilm's Tumours in different areas in Pakistan[12]. Wilm's Tumour is used for comparision because it has an almost equal worldwide distribution. According to the Pakistan Medical Research Council study, CNS tumours and leukaemias were seen to be less frequent than lymphomas from all centers of Pakistan[12]. Retinoblastomas were more frequent in one study[13], and lower in our series. This review is not all inclusive but represents many aspects of the epidemiology of childhood cancer.

REFERENCES

1. Pratt, C.B. Some aspects of childhood cancer epidemiology. PCNA., 1985; 32:541.
2. Altman, AJ. and Shwartz, A. D. The Cancer problems in pediatrics; Epidemiologic aspects, in malignant diseases of infancy chiLdhood and adolescence. 2nd Ed. Philadelphia, Saunders, 1983, p.1.
3. SalIan, S.E., Weinstein, l-I.J. and Nathan, D. The childhood leukaemias. Pediatr., 1981; 99:676.
4. Miller, R.W. Relation between cancer and congenital defects in man. N. Engl. J. Med., 1966; 275; 87.
5. Young, J. L. Jr. and Miller, R.W. Incidence of malignant tumours in U.S. children. Pediatr., 1975; 86: 254.
6. Young, J.L. Jr., Heise, H.W., Silverberg, E. et. al. Cancer incidence survival and mortality for children under 15 years of age. NewYork, American Cancer Society Professional Education Publication Sept., 1987.
7. Pizzo Philip — Management of pediatric cancer. l-losp. Pract., 1986;21: 111.
8. Li,F. P. and Bader, J.L. Epidemiology of cancer in childhood, in (Eds.) Hematology in infancy and childhood. Edited by Nathan, D.G. and Oski, F.A. 2nd ed. Philadelphia, Saunders 1981, p. 908.
9. Edington, G.M. and Hendriskse, M. Incidence and frequency of lymphoreticular tumours in Ibadan

and the Western state of Nigeria. J. Natl. Cancer Inst., 1973; 50: 1623.
10. Parkin, D.M., Stiller, C.A., Draper,G.J., Beiberm, C.A.,Terrachini, B. and Young, J.L., International incidence of Childhood Cancer. IARC Scientific Publications No. 87, Lyon, 1988.
11. Williams, A. 0. Tumours in children in Ibadan, Nigeria. Cancer,1975; 36: 370.
12. Zaidi, S.H.M. and Jafarey, N.A. Tumours in Karachi, JPMA., 1977;27: 346.
13. Khan, A.B., McKeen, E.A. and Zaidi, S.H.M. Childhood cancer in Pakistan, with special reference to retinoblastoma. JPMA., 1983; 33 : 66.