Solid Pediatric Tumors

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ABSTRACT:

BACK GROUND:

Children are not merely little adults, and the diseases they have are not merely variants of adult diseases (1,2). Pediatric neoplasm as a group causes more deaths in children than any other disease (2) .Histologically many of the malignant pediatric tumors are unique, with primitive (embryonal) microscopic appearance and exhibit features of organogenesis specific to the sites of tumor origin, so they are frequently designated as blastomas (1,2) .We managed to collect- 175 - cases of solid pediatric tumors

OBJECTIVE:

1-To identify different histopathological types of solid pediatric tumors .
2-To find out their relative frequencies ,sites , age &sex distribution .
3-To compare our results with others.

METHODS:

This is a Prospective study conducted During a period of one year from July 2003 through August 2004; (175) biopsies of children in Mosul with solid tumors were Collected. The surgical specimens were collected from; Al-Salaam teaching hospital, Al-Zahrawi teaching hospital, Al-khansa teaching hospital and few private laboratories.

RESULT:

There were 92 cases (52.57%) of benign tumors and 83 cases of malignant tumors (47.4%).The leading malignant tumors were Lymphomas 20 cases (24.09%), followed by CNS tumors 14 cases (16.8%)

CONCLUSION:

1-Benign tumors are more frequent than malignant ones, with hemangiomas being the prevailing one.
2-Lymphomas constitute the commonest malignant tumors with predominance of non Hodgkin variety.
3-Among the reported tumors with noticeable rise in relative frequency are CNS tumors and Retinoblastomas. This rise may be due to genuine increase in incidence.

KEY WORDS: solid pediatric tumors, lymphomas, cns tumors.

INTRODUCTION:

Children are not merely little adults, and the diseases they have are not merely variants of adult diseases ([1,2]. Many childhood diseases are unique, or at least take distinctive form [1,2] . Relative to it's prevalence in adults, cancer in children is much less Common [1,2,3,4] . Nevertheless, it is important for reasons that transcend its numeric significance [3,4] . Worldwide, cancer develops in an estimate of (200,000) children each year [3,4] . It has been reported that the incidence of cancer in children younger than 15 years of age has increased from (12 per (100,000) in-1972- to nearly (14 per 100,000) in-1990 [3,4]. Although mortality rate from cancer has decreased during this time, there are still more than (100,000) persons lost each year among U.S. children [1,2,3,4] .In developing countries where the medical facilities are limited [5,6,7] , classification of childhood tumors histopathologically rather than by anatomic sites offers a much reliable method for cancer statistics and useful source for international comparisons [5,6,7]. Benign tumors are far more common in infancy and childhood than malignant ones; of the former , hemangiomas are the most common [1,2,4] .Pediatric neoplasm as a group causes more deaths in children than any other disease [2] . Their importance as a cause of death in developed and developing countries is increasing due to the relative decline of accidents in the former and infections in the latter [1,2,8] . Pediatric tumors differ markedly from adult tumors, in their nature, distribution and prognosis[1,4].Regarding solid tumors, CNS tumors, lymphomas and sarcomas are the dominant tumors in children, while carcinomas are more common in

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adults [1,4,9,10] .The precise cause of malignancy in children is unknown [11,12] yet specific genetic events associated with tumor development, are being identified; as for example, in retinoblastoma and nephroblastoma [1 ,2 ,4 ,13,14,15] . The relationship, of congenital malformation and cancer is an important one [1,2,4] . Although children have been minimally exposed to environmental mutagens and carcinogens, a great deal of interest has focused on the possibility of an infectious origin for cancer, particularly a viral infection [1,2,4,16,17] .Screening children for cancer is impractical [16,17] . Usually pediatric tumors are deeply seated, and do not involve epithelial tissues, so they do not bleed externally or exfoliate tumors cells [16,17] . Screening techniques in adults; such as mammography, chest-x-ray, stool examination, blood tests and pap smears have no counterparts for the early detection of cancer in children; and the diagnosis of cancer is often incidental, and by that time, the majority of cancers in children are in advanced stage [9,16,17,18,19]. Histologically many of the malignant pediatric tumors are unique, with primitive (embryonal) microscopic appearance and exhibit features of organogenesis specific to the sites of tumor origin, so they are frequently designated as blastomas [1,2].Also owing to their primitive histological pictures, they are referred to as small round blue cell tumors, which are characterized by sheets of small cells with round nuclei. [1,2,4,20]

PATIENTS AND METHOD:

During a period of one year from July 2003 through August 2004; (175) biopsies of children in Mosul with solid tumors were Collected. Patient's age ranged from new born to 14 years. The surgical specimens were collected from; Al-Salaam teaching hospital, Al-Zahrawi teaching hospital, Al-khansa teaching hospital and few private laboratories.

The tissues were fixed in (10%) formalin , processed by the standard methods ; and a 5 Micron thick sections were stained with hematoxylin-eosin stain.The clinical data of these patients were collected from the request form, which included name, age, sex, site of tumor, and other relevant information.

RESULT:

A total of (175) children with solid tumors were included in this prospective study. Their ages ranged from newborn to 14 years, with mean age of (8.1) years. The ages of the patients was divided into three quinquennia of childhood; (0-4) year, (5-9) year , (10-14) year .

There were (92) cases of Benign tumors forming (52.5%) of the total, and (83) cases of malignant tumors, making (47.4%) of the total; with (95) males and (80) females, the ratio was (1.1:1) Table(1) .

Of the total (92) cases of benign tumors, (36) cases were Soft tissue tumors (39.1%); followed by Bone tumors (23) cases (25%), GIT tumors (11) cases (11.9%), Ovarian tumors (7) cases (7.6%), Oral tumors (6) cases (6.5%) , Breast tumors (4) cases (4.3%), Nasopharyngeal tumors (3) cases (3.2%) and Skin tumors (2) cases (2.1%). Table (2).

There were (42) males and (50) females ,with a ratio of (0.8:1) Table (2) .

Regarding malignant tumors, The patients were groped in relation to the three quinquennia into; 25, 34, 24 cases respectively Table (3) .Malignant lymphoma 20 cases (24.09.1%), followed by CNS tumors 14 cases (16.8%), malignant bone tumors 11 cases (13.2%), Nephroblastoma 9 cases (10.8%) , Retinoblastoma 8 cases (9.6%)

Neuroblastoma 7 cases (8.4%) , Germ cell tumors 4 cases (4.8%), Soft tissue tumors 3 cases (3.6%), Thyroid papillary carcinoma 2 cases (2.4%), and miscellaneous malignant tumors 5 cases (6.02%) Table (3) .

Of a total (83) cases of malignant tumors, there were (53) males and (30) females, with a ratio of (1.7:1) Table (3) .

The histopathological types of soft tissue tumors in relation to numbers ,age , sex of patients , sites and male to female ratio were shown in table (4).

The histopathological types of bone tumors in relation to numbers ,age , sex of patients , sites and male to female ratio were shown in, table (5).

The histopathological types of Miscellaneous benign tumors in relation to sites and numbers of patients were shown in table (6).

The histopathological types of Lymphomas in relation to numbers ,age , sex of patients and male to female ratio were shown in table (7) .

The histopathological types of CNS tumors in relation to numbers ,age , sex of patients and male to female ratio were shown in table (8) .

Neuroblastomas in relation to numbers ,age , sex of patients ,site and male to female ratio were shown in table (9) .

The histopathological types of Germ cell tumors in relation to numbers ,age , sex of patients and site were shown in table (10) .

The histopathological types of Miscellaneous malignant tumors in relation to sites ,sex , age and numbers of patients were shown in table (11).

Comparison of relative frequencies of childhood tumors between the current study and other studies is shown in table (12).

Table (1):Types of pediatric tumors ,in relation to sex , number of patients and relative frequencies

Types	males	females	Total no.	%
1-Benign tumors	42	50	92	52.57
2-malignant tumors	53	30	83	47.43
Total	95	80	175	100

Table (2):Benign solid pediatric tumors sites ,sex and number of patients ,and relative frequencies

Sites	male	female	Total no.	%
1-Soft tissue tumors	13	23	36	39.1
2-Bone tumors	14	9	23	25
3-GIT tumors	9	2	11	11.9
4-Ovarian tumors	-	7	7	7.6
5-Oral tumors	3	3	6	6.5
6-Breast tumors	-	4	4	4.3
7-Nasopharyngeal tumors	3	-	3	3.2
8-Skin tumors		2	2	2.1
Total no.	42	50	92	100

Table (3):Malignant solid pediatric tumors types ,age, sex and number of patients ,male :female ratio and relative frequencies

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Types	0-4 y		5-9 y		10-14 y		Male	female	M:F	Total No.	%
	m	f	m	f	m	f					
1-Lymphoma	3	3	5	-	7	2	15	5	3:1	20	24.09
2-CNS tumors	3	-	8	-	2	1	13	1	13:1	14	16.8
3-Bone tumors	2	-	1	1	5	2	8	3	2.6:1	11	13.2
4-Nephroblastoma	1	1	5	2	-	-	6	3	2:1	9	10.8
5-Retinoblastoma	1	5	1	1	-	-	2	6	1:3	8	9.6
6-Neuroblastoma	-	4	1	2	-	-	1	6	0.16:1	7	8.4
7-Germ cell tumors	1	1	-	-	1	1	2	2	1	4	4.8
8-Soft tissue tumors	-	-	1	1	1	-	2	1	2:1	3	3.6
9-Thyroid papillary carcinoma	-	-	1	-	1	-	2	-	-	2	2.4
10-Miscellaneous	-	-	2	2	-	1	2	3	0.6:1	5	6.02
Total	11	14	25	9	17	7	53	30	1.7:1	83	100

Table (4):Soft tissue tumors , types ,number, age and sex of patients, sites , male to female ratio .

Histopathology	0-4y m	0-4y f	5-9y m	5-9y f	10-14y m	10-14y f	Sites of tumors Head &neck	trunk	upper limb	lower arm	male.	Female	M:f	Total No.	%
-Capillary hemangioma	2	4	3	2	-	4	7	2	4	2	5	10	0.5	15	41.6
Cavernous hemagioma	-	-	1	-	1	-	-	-	1	1	2	-	-	2	5.5
lymphangioma	1	2	2	3	-	-	2	1	3	2	3	5	0.6	8	22.2
neurofibroma	-	-	-	-	1	1	1	-	1	-	1	1	1	2	5.5
schwannoma	1	1	-	-	-	-	1	-	-	1	1	1	1	2	5.5
lipoma	-	-	-	-	-	2	-	1	-	1	-	2	-	2	5.5
angiolipoma	-	-	-	-	-	1	-	-	-	1	-	1	-	1	2.7
benign fibrous histiocytoma	-	2	-	-	-	-	-	-	1	1	-	2	-	2	5.5
eosinophilic granuloma	1	-	-	-	-	-	-	-	-	1	1	-	-	1	2.7
infantile hemangio-pericytoma	-	1	-	-	-	-	-	-	-	1	-	1	-	1	2.7
Total benign	5	10	6	5	2	8	11	11	10	11	13	23	0.56	36	92.3
embryonal rhabdomyo-sarcoma	-	-	-	1	1	-	2	2	-	-	1	1	1	2	-
malignant fibrous histiocytoma	-	-	1	-	-	-	-	-	1	-	1	-	-	1	-
Total malignant	-	-	1	1	1	-	2	2	1	-	2	1	2:1	3	7.6
Total no. of soft tissue tumors	5	10	7	6	3	8	13	4	11	11	15	24	0.62	39	100

Table (5):Histopathology of bone tumors ,numbers, age ,sex of patients , sites ,&relative frequency

Histopathology	0-4 y m	0-4 y f	5-9 y m	5-9 y f	10-14 y m	10-14 y f	Long bones Epi	Long bones Dia	Long bones Meta	Long bones Physis	Short Bones	Flat Bone	M:f	Total No.	%
1 -Echondroma	-	-	-	-	4	5	-	-	8		-	1	0.8:1	9	39.1
2-Enchondroma	-	-	-	-	2	-			-		1	-	-	2	8.6
3-Osteoma	1	-	1	-	-	-			-		-	2	-	2	8.6
4-Non ossifying fibroma	-	-	2	-	3	3	-	1	7		1	-	1.6:1	8	34.7
5-Ossifying Fibroma	1	-	-	-	-	1	-	-	1		-	1	1	2	8.6
							-	-							
							-	-							
Total benign	2	-	3	-	9	9	-	1	16		2	4	1.5:1	23	67.6
1- Ewing's sarcoma	2	-	-	1	2	1	-	-	5		-	1	2:1	6	54.5
2-Osteogenic sarcoma	-	-	1	-	2	1			4		-	-	3:1	4	36.6
3-Giant cell Tumor	-	-	-	-	1	-	-	-	1		-	-	-	1	9.09
							-	-							
Total malignant	2	-	1	1	5	2	-	-	10		-	1	2.6:1	11	32.4
Total no.	4	-	4	1	14	11	-	1	26		2	5	1.8:1	34	100

Table (6):Miscellaneous benign tumors , histopathological types, sites and number of patients

Histopathology	Number
Skin tumors	2
a\Pilomatrixoma	1
b\Pilar tumor	1
2-GIT tumors	11
a\Juvenile rectal polyp	8
b\Adenomatous polyp	3
3-Breast (fibroadenoma)	4
4-Oral cavity	6
a\Capillary hemangiomas	3
b\Ameloblastic fibromas	2
c\Odontogenic myxoma	1
5-Nasopharyngeal tumors	3
a\ Capillary hemangiomas	2
b\Angio fibroma	1
6-Ovarian tumors	7
Benign cystic teratoma	4
serous cyst adenomas	3

Table (7):Lymphomas, histological types, sites, age and sex of patients, M:F ratio and relative frequencies.

Histopathology	0-4 y m	0-4 y f	5-9 y m	5-9 y f	10-14 y m	10-14 y f	M:F	Total No.	%
I-Nodal lymphoma	-	1	2		6	1	4:1	10	50
a-Hodgkin lymopoma b-NHL	- -	- 1	1 1	- -	2 4	- 1	- 2.5	3 7	30 70
II-Extra nodal lymphoma (NHL)	3	2	3	-	1	1	-	10	50
Total lymphoma	3	2	5	-	7	3	3:1	20	100

Table (8): CNS tumors histopathological types, age, sex and no. of patients and relative frequencies

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Histopathology	0-4 y m	0-4 y f	5-9 y m	5-9 y f	10-14 y m	10-14 y f	Total No.	%
1- Astrocytomas 2-Mixed glioma 3-Medulloblastoma	2 - 1	-	5 1 2		1 - 1	1	9 1 4	64.2 7.1 28.5
Total	3	-	8	-	2	1	14	100

Table (9):Neuroblastoma ,sites, sex and number of patients and relative frequency.

histopathology	0-4 y m	0-4 y f	5-9 y m	5-9 y f	10-14 y m	10-14 y f	M:F	Total No.	%
Retroperitoneal Posterior mediastinal	-	3 1	1	2	-	-	0.2:1	6 1	85.7 14.3
Total no.	-	4	1	2	-	-	0.16:1	7	100

Table (10):Germ cell tumors ,types, age and sex of patients , site and relative frequency

Histopathology	0-4 y m	0-4 y f	5-9 y m	5-9 y f	10-14 y m	10-14 y f	Total No.	%
I-Gonadal tumors	1	-	-	1	1	4	7	87.5
II-Extragonadal sarcrococygeal malignant teratoma	-	1	-	-	-	-	1	12.5
Total no. germ cell tumors	1	1	-	1	1	4	8	100

Table (11):Miscellaneous malignant tumors, sites, types, sex, age, and number of patients.

Types	Site	Sex M	Sex F	Age(year)	Total no.
1-Pheochromocytoma	Adrenal gland	-	1	6	1
2-Plasm cell tumor	Nose	1	-	7	1
3- Langerhans' cell Histiocytosis .	L.N.	-	1	6	1
4-Sequamous cell carcinoma	Eye	1		7	1
5-Mucoid adenocarcinoma	Ovary		1	14	1
Total no.		2	3		5

Table (12):Comparison of relative frequencies of childhood tumors between current study and other studies

Histopathology	Baghdad % (5)	Mosul 1980-87 % (8)	Mosul 1999 % (21)	Current study %
Lymphoma	43.9	48.5	35.7	24.09
CNS tumors	12.4	1.02	14.29	16.8
Bone tumors	9.3	13.3	7.14	13.2
Soft tissue tumors	8.7	7.7	8.5	3.6
Skin tumors	6.1	-	-	-
Neuroblastoma	4.8	8.2	7.14	8.4
Retinoblastoma	5.6	4.6	4.29	9.6
Wilm's tumors	5.8	9.2	8.5	10.8
Germ cell tumor	1.9	5.1	7.14	4.8
miscellaneous	1	0.52	2.8	6.02
Hepatoblastoma	0.5	1.5	-	-
GIT tumor	0	0	4.29	-
Total no.	378	196	70	83

Table 13: Incidence of pediatric tumors in different countries compared with the current study

histopathology	Australia (22)	U.K. (22)	Africa (22)	PapuaNew Guine-a (22)	Florida(23) NO.	Crude Rate	U.S.A(24) 1973- 1982 white	black	U.S. (3) 1960-88	Japan 1980-1992 (25)	Philippines 1983-1992 (25)	Denmark 1983-1991 (25)	UK 1978-1991 (26)	USA (SEED) 1983-1992 (25)	Jordan 1996-98 (27)	Current Study
1-Lymphoma	16.5	12.3	53.3	47.7	185	1.52	16.4	9.8	18	10.6	7.1	11.8	11.3	15.1	19	24.09%
a\Hodgkin disease					70	0.57	7.4	5.2	8							15%
b\NHL					115	0.94	9.1	4.6	10							85%
2-CNS tumors	32	24.1	1.4	3.1	298	2.44	24.5	21.3	28	21.1	9.6	38.8	27.0	31.8	18.8	16.8%
3-Retinoblastoma	0.8	4.4	8.1	10.5	51	0.42	3.3	4.3	4	5	7.7	6.0	3.7	4.9	3.8	9.6%
4-Bone tumors	} 13.2	}20.	}16.4	}16.1	78	0.64	6.3	4.8	6	4	4	4.5	5	6.4	4	13.2%
5-Soft tissue tumors	}	1	}	}	103		8	7.7	10	6.9	4.2	10.5	7.5	10	3.6	3.6%
6-Neuroblastoma		}				0.84										
7-Wilm's tumor	13.4		2.4	7.4	111		10.5	8.8	12	12.6	2.3	11.9	8.2	13.2	6.6	8.4%
8-Germ cell tumor	10.4	10.7	7.9	4.02	106	0.91	7.8	11.0	9	4.2	4.6	10.4	7.7	10.1	4.8	10.8%
9-Liver	8.4	7.7	4.2	6.5	-	0.87	4.0	3.9	5	7.5	3.6	4.7	3.6	4.3	4.2	4.8%
10- Miscellaneous		8.1				-										
	1.9		1.7	3.7	-		1.5	1	2	2.5	2.2	1.8	1.1	2.3	-	-
	3.2	0.43	4.5	1.9	95	-	1.3	0.2	6	3.4	7.4	5.2	3.3	5.3	8.2	6.02%
		12.1				0.78										
Total	1074	701	707	323	1027	12.77				116.3	100.8	158.7	118.3	150.3	113.8	83

DISCUSSION:

Benign tumors of 92 cases (52.5%) are more common than malignant tumors 83 cases (47.4%) (Table 1) , which is comparable with others [1,2,4] . Females are more frequently involved than males with a ratio of (1:0.8) (Table 1). Virtually any benign tumor can be encountered in children, but still hemangiomas and lymphangiomas are the commonest [1,4] . Hemangiomas of 22 cases and lymphangiomas of 8 cases rank first (32.6%) among the benign tumors(Table 2,4,5,6). However these data don't reflect the actual frequencies of benign tumors [1,2,4,21] , as many cases are not biopsied because they are either asymptomatic or regress spontaneously[1,2,4] .

Regarding malignant tumors, male to female ratio is (1.7:1) (Table 3).Lymphomas are the commonest malignant solid pediatric tumors in Iraq (43.9%)(Table 12)(5,8,21) . With 20 cases (24.09%) (Table 3), lymphomas are the prevailing cancers in our study , which is in common with other studies from Iraq, Saudi Arabia, Jordan, Africa and New Guinea (Table 13) ;(21-27) . On the other hand their relative frequency is much higher than those in European countries, U.S.A, Japan, Philippine,and Australia(Table13) ;(21-27) . This regional variation may be due to; 1- infection by oncogenic viruses such as-EBV- (1,2) and. 2- the role of falciparum malaria,in the Burkitt's lymphoma (21-27) .Of the 20 cases of lymphomas ,there were 17 NHL and 3 hodgkin's lymphoma(Table 7) ,forming a ratio of (5.6:1) similar to other reports from Jordan, USA, Saudi Arabia (Table 13) and others (3,8,21-27) .seven cases were nodal and 10 were extra nodal (Table 7) . Males were more frequently involved in non-Hodgkin lymphoma than females in a ratio of (2.4:1) (Table 7) . This prevalence of extra nodal lymphoma and male predominance are identical with others. Burkitt's lymphoma is the most common childhood tumor in central Africa and New Guinea (1,2,4). In the current study there were eight cases of .Burkitt's lymphoma (Table7); evenly distributed at the ileocecal junction and the Jaw which is, comparable to others [1,2,4]. The three cases of Hodgkin's lymphoma were of nodular sclerosing type and involved cervical lymph nodes and all the patients were males and no case was reported in the first age group(Table 7),these are comparable to other reports which revealed that Hodgkin's lymphoma is usually nodal, and the nodular sclerosing variety is the most frequent pediatric form accounting for (50%) of childhood cases [1,2,4,21-23] . CNS tumors ; are the third commonest childhood cancer in Iraq [23,24]. In western countries they rank first(Table 13) [23,24] .With 14 cases in the current study, CNS tumors came second after lymphoma forming (16.8%) of the malignant tumors (Table 3) , with male to female ratio of (13:1) . All cases of CNS tumors are intracranial as reported by others [5,7,22-25] . On the other hand studies from Africa, New Guinea (Table 13) show much lower frequency [8,23,25] this places our frequency between higher western figures and lower African figures (Table 13), (25,26) .Comparing our results with a previous study done in our locality in the period (1980-1987) (Table 12) , there is striking rise in relative frequency of CNS tumors among childhood cancers, the figure has risen from (1.02%) to (16.8%), about sixteen fold; definitely out of proportion to the increase of Mosul childhood population in this period. This may be attributed to , either, a genuine rise which may be due to some environmental factors [1,2], or to more operations performed since 1988, as previously most of the cases were referred to Baghdad for management [5,8,23,24]. Malignant bone tumors ranked third with 11 cases (13.2%) of malignant childhood tumors (Table 3)with male to female ratio of (2.6:1). This frequency is relatively higher than the incidence of bone tumors in western countries, Japan,, Philippine ,and Jordan (Table 13),(21-26) .Nine cases of Nephroblastoma (Table 3) were encountered forming (10.8%) of the primary pediatric malignant tumors in this study . This frequency is comparable to the incidence in Australia, USA, and Denmark(Table 13) ; [8,24,25].There were 7 cases of Neuroblastoma comprising (8.4%) of the total malignant tumors(Table 3) .They are one of the most common extracranial solid tumors in children [1,2,4], and approximately 500 new cases are diagnosed each year in USA [2 ,4,22-25] .Although the 5-year survival rate was improved from (25%) in 1960s to almost 60% in late 1980s, still neuroblastoma account for at least 15% of childhood cancer death (19). Neuroblastoms are usually encountered in young children of both sexes and over
80% are detected in children under the age of 4 y [1,2] . Our findings are more or less similar as more than (50%) of the cases are in the first age group (Table 3,9) , [1,2,4] Six cases (85.7%) were retroperitoneal presented as abdominal mass, and only one case was posterior mediastinal (Table 9), which were comparable to other studies in which about (70%) of NB, occur in the retroperitonium [1,2]and the majority involve adrenal gland, and the second most common location being the paravertebral chain of the sympathetic nervous

system in the posterior mediastinum [1,2,4].In Japan with an incidence rate of NB, of (12.6 %) (7), urinary catecholamine metabolite screening program was established to discover patients at an early and non-advanced stage of the disease (77).Retinoblastoma is the most common primary intraocular tumor in children [1,2,4] ,It's frequency is approximately 1/17000 live birth [1,2,4,18,19] .It is a tumor of infancy and childhood [1,2], and the risk for retinoblastoma decreases with age and over 90% of cases being diagnosed before the age of 7 years [18,19]. In the current study 8 cases of unilateral retinoblastomas were reported forming (9.6%) of all malignant tumors (Table 3) ,with relatively high frequency at age 0-4 y, and male to female ratio 0f 1:3 (Table 3) . The relative frequency of (9.6%) is higher than those reported in Jordan (3.8%), and in USA (4.9%) (Table 13) . Comparing our results with a previous studies done in our locality(Table 12); [5,21] there is striking rise in relative frequency of retinoblastoma among children, the figure has risen from (4.6%),to (9.6%) about double fold increase .This could be either due to more operations performed; or the rise is genuine which may be attributed to some environmental factors [1,2,4] . Optic nerve invasion was reported in 6 cases, which is a bad prognostic sign (1,2,4,) Most cases in the developed countries are diagnosed before extraoccular spread had occur (21-25).

Of the 8 cases of germ cell tumors (4.5%) of all pediatric tumors(table 10) , (87.5%) were gonadal involving ovaries and testes while one case (12.5%) was extragonadal .In general, Germ cell tumors constitute approximately (20%) of all ovarian tumors [1,2] and most of them are seen in children, and approximately (95%) are benign cystic teratomas [1,2,4],We encountered 4 cases of benign mature cystic teratoma (80%) in this study (Table 10) , [1,2,426-27].

There were only 3 cases of Malignant soft tissue tumors, two cases of Thyroid papillary carcinomas and one case of squamous cell carcinoma reported in a patient with xeroderma pigmentosum [1,2] (Table 3,4,11).

CONCLUSION:

1-Benign tumors are more frequent than malignant ones ,with hemangiomas being the prevailing one.

2-Lymphomas constitute the commonest malignant tumors with predominance of non Hodgkin variety.

3-Among the reported tumors with noticeable rise in relative frequency are CNS tumors and Retinoblastomas. This rise may be due to genuine increase in incidence.

4-On comparison with others ,some of our results were comparable while other results were not . Frequency of lymphoma was more or less similar to African's and those from New Guinea ,but not with frequency from Western countries . On the other hand frequency of CNS tumors in this study was placed between high western figures and low African figures.

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