PATTERN OF SOLID PAEDIATRIC MALIGNANT NEOPLASM AT LUMHS, JAMSHORO, PAKISTAN

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Background: To evaluate pattern and frequency of solid malignant tumour in paediatric age group in our region. **Methods:** A retrospective study of 113 patients, whose surgical biopsies submitted in histopathology section of Pathology department, LUMHS Jamshoro from January 2001 to December 2005. **Results:** Total of 113 cases, 61 male and 52 female children in age group from 4 months to 15 years were diagnosed as solid malignant tumour with M/F ratio of 1.79:1 and mean age of 6.6 year. Maximum no. of patients was in 0–4 age 50.4%, followed by 32.7% in 4–9 and 16.8% in 10–15 years. The five most common tumours were Retinoblastoma 38.9%, Wilm's tumour 13.2%, Brain tumour (Glial tumours) 10.6%, Hodgkin disease 9.7% and soft tissue sarcomas 9.7%. Retinoblastoma and Wilm's tumour were common in 0–4 year age group, where as rest of tumour were more frequent in 5–9 and 10–15 years age group. Brain tumours and soft tissue sarcomas were common in females, while Hodgkin's disease was more common in males. **Conclusion:** Retinoblastoma was most common solid malignant tumour in early age group. It calls for ophthalmologic screening of all children below 1 year and high risk children until the age of 7 year, in order to detect retinoblastoma as early as possible**.**

Keywords: Paediatric cancer; Retinoblastoma.

INTRODUCTION

Cancer in childhood account for less than 1% of all cancers and is the second most important cause of death for children aged less than 15 years.[1] Malignant solid tumours constitute a major cause of morbidity and mortality in children and comprise about half of all childhood malignancies.[2]

The study into the regional variations of a neoplasm may provide important clues toward its etiology.[3] Liaquat University of Medical and Health Sciences is a tertiary care hospital and pathology department is a major referral centre for biopsies of patients of Hyderabad district and other areas of lower Sindh.

Although exact incidence rate cannot be provided by a hospital based study, the information is useful in showing patterns of childhood malignancies in our region.

A five year study is presented to evaluate pattern and frequency of solid malignant tumours in Paediatric age group.

MATERIALS AND METHODS

Histopathological records of all cases of solid malignant tumour of children under 15 years of age which were received and diagnosed during last 5 years from January 2001 to December 2005 are included in this study. The tumours were analysed according to age, sex and histopathological diagnosis. All tumours were diagnosed on routine Haematoxylin and Eosin staining.

RESULTS

Sex distribution, age groups, histopathological types and mean ages are displayed in Table-1&2.

Table-1: Types of Solid Paediatric Malignant Tumours

TYPE	Number of cases	%
Retinoblastoma	44	38.9
Wilm's tumour	15	13.2
Brain tumour	12	10.6
Hodgkin's disease	11	9.7
Bone tumour	6	5.3
Soft tissue tumour	11	9.7
NHL	3	2.6
Gonadal tumours	3	2.6
Miscellaneous	8	7.0
Total Number of cases	**113**	**100**

Out of 113 cases, 61 (53.9%) were males and 52 (46.1%) were females with over all male to female ratio was 1.79:1.

Break up of miscellaneous cases, gonadal tumour, Bone tumour and NHL according to age, sex and mean age are portrayed in Table-2 and 3 respectively.

Rhabdomyosarcoma was more common among other soft tissue sarcomas (Table-4).

Hodgkin's disease was more common in Males and also in age group of 10–15 years. The ages of children ranges from 4 months to 14 years. The most commonly involved age group was 0–4 years (50.4%) and least involved was 10–15 years (16.8%). Retinoblastoma and Wilm's tumours were mostly found in 0–4 years age group.

Table-2: Distribution of tumours according to age groups, sex and mean ages

Tumour	Age groups			M	F	M:F	Mean age (years)
	0–4	4–9	10–15				
Retinoblastoma	34	10	-	20	24	0.8:1	3.6
Wilm's tumour	9	6	-	10	5	2:1	3.2
Brain tumour	-	11	1	5	7	0.7:1	7.6
Hodgkin's disease	2	4	5	8	3	2.6:1	7.7
Bone tumour	1	2	3	5	1	5:1	4.2
Soft tissue tumour	6	-	5	3	8	0.3:1	6.6
NHL	-	1	2	3	0	3:1	11.3
Gonadal tumours	1	-	2	1	2	0.5:1	8.6
Miscellaneous	4	3	1	6	2	3:1	6.7
Number %	57 (50.4)	37 (32.7)	19 (16.8)	61	52	1.79:1	6.6

Table-3: Miscellaneous cases (8 cases): Types, Sex and mean age

NHL (extra nodal)	M	F	Mean Age	Number
* Intestine	3	-	7.7	4
** Tonsil	1	-		
Adenocarcinoma				
* Intestine	2	-	8.6	3
** Parotid gland	1	-		
Follicular Carcinoma Thyroid	-	1	12.0	1

Table-4: Soft tissue sarcomas (11 cases): Histological types, sex and mean age

Type	M	F	Mean Age	Number
Fibrosarcoma	1	2	6.0	3
Chondrosarcoma	1	2	8.3	3
Rhabdomyosarcoma	1	3	4.8	4
Fibrous histeocytoma	-	1	12.0	1

Retinoblastoma which made up the bulk of our series was diagnosed in 44 cases (38.9%) with slight increase in female child and with mean age of 3.6 years. Brain tumours were common in age group of 4–9 years with M/F ratio of 0.7:1 and astrocytoma was most common histological type (Table-5).

Table-5: Histological subtype of Glial tumour (12 cases)

T y p e.	M	F	Number	%
Astrocytoma	3	7	10	83.3
Ependymoma	1	-	1	8.3
Medulloblastoma	1	-	1	8.3

DISCUSSION

Like many of the studies from different parts of the country,[2,5,7,9] the present study also revealed male preponderance with over all male to female ratio of 1.79:1.

Retinoblastoma and Wilm's tumour occurred more commonly in early childhood as compared to brain tumour, Hodgkin's disease and soft tissue sarcomas which were common in older age group.

Retinoblastoma was the most frequent tumour of our study constituting 38.9% of total cases and is comparable with the study of Lahore group[4] and PIMS Islamabad study[15] and it indicates the possible existence of a genetic trait in population of Pakistan with some regional variations[4].

This study differs from[5-6,9], which showed lymphomas, as most frequent childhood malignancy and it correlates with[7,8,10], which revealed incidence of retinoblastoma at mean age of 3.8 and 3.4 and 3.9 years respectively.

Brain tumours are more common in USA[4,7] and Italy[3], is the third common tumour in our series, but differed from studies conducted by SKMCH & RC Lahore[16], which showed Brain tumour ranks 9th among top ten malignancies seen in children age group. This study also correlates with[14], which showed astrocytoma as common intracranial childhood tumour, but there is disparity between age groups, as findings of our study showed most of brain tumours in 4–9 year age group as compared to 0–4 years and also slight increase in M/F ratio. The discrepancy may be due to some specific etiological agents existing in those regions.

There are also variations in relative frequencies of different types of lymphoma in different parts of the World. We observed that Hodgkin's disease was more common than Non-Hodgkin's lymphoma and it correlates with other studies from Pakistan[16,17] but it is in contradiction to reports from abroad[3,11,12] where NHL is more common than HD.

CONCLUSION

We conclude that there are certain notable differences between tumours of our study and those reported from other parts of the country and World.

In our study retinoblastoma is most frequent childhood tumour, which may be due to small series and also because of availability of well-established ophthalmological surgical facilities in our set up.

In order to detect retinoblastoma as early as possible, health education for parents and health providers and also genetic testing for siblings and children of retinoblastoma cases will be helpful. Future health care planning should focus on neonatal

ophthalmologic screening, handling of parents and children's emotional reactions and cosmetic rehabilitation for surviving retinoblastoma patients.

REFERENCES

1. Lacour B, Degandes E, Mallol N, Sommelet D. Lorraine childhood cancer registry : Incidence Survival 1983-1999. Arch Pediatr 2005;12:1577–86.
2. Qureshi S, Qadeer N. The current trend of malignant solid tumor in children's hospital. J Pak Inst Med Sci 1990;(2):65–7.
3. Patil PS, Elem B, Gwavava NJ, Urban MI. The pattern of paediatric malignancy in Zambia (1980-1989): a hospital based histopathological study J Trop Med Hyg 1992;95(2):124–7.
4. Haneef SM, Ashraf M. Childhood malignant disease at Lahore. Pak Paediatr J 1980;4:170–8.
5. Abdul Rahim Siyal, Sher Mohd Shaikh, Shankar Lal Rathi. Pediatric solid cancer: a Larkana experience. Pak J Med. Res 2000;39(4):151–3.
6. Shah SH, Pervez S, Hassan SH. Frequency of malignant solid tumors in children. J Pak Med Assoc 2000;50(3):86–8.
7. Ud-Din.N, Mushtaq S, Mamoon N, Khan AH, Malik IA. Morphological spectrum of ophthalmic tumors in Northern Pakistan. J Pak Med Assoc 2001;51(1):19–22.
8. Mejia Arangure JM, Flores Aguilar H, Juarez Munoz I, Vázquez Langle J, Games Eternod J, Pérez Saldívar ML *et al*. Age of onset of different malignant tumors in childhood. Rev Med Inst Mex Seguro Soc 2005;43(1):25–37.
9. Khan SM, Gillani J, Nasreen S, Zai S, Pediatric tumors in North West Pakistan and Afghan refugees. Pediatr Hematol Oncol 1997;14(3):267–72.
10. Bhurgri Y, Muzaffar S, Ahmed R, Ahmed N, Bhurgri H, Usman A, *et al*. Retinoblastoma in Karachi, Pak Asian Pac J Cancer Prev. 2004; 5(2):159–63.
11. Pollock BH, Krischer JP, Vietti TJ. Interval between symptom onset and diagnosis of pediatric solid tumors. J Pediatr 1991;119:725–32.
12. Roush SW, Krischer JP, Pollock NC, Cox MW, Pollock BH, Bayer J. The incidence of pediatric cancer in Florida; 1981-86. Cancer 1992;69:2212–9.
13. Mosso ML, Colombo R, Giardano L, Pastore G, Teeracini B, Magnani C. Childhood cancer registry of the province of Torino Italy. Survival, incidence, and mortality over 20 years. Cancer 1992;69:1300–6.
14. Shah SH, Soomro IN, Hussainy AS, Hassan SH. Clinico-morphological pattern of Intracranial tumors in children. J Pak Med Assoc 1999;49(3);63–5.
15. Tanwani AK, Ahmed I, Qureshi AM. Histological pattern of childhood tumors at children Hospital PIMPS Islamabad. J Pak Inst Med Sciences 2002;13(2):694–7.
16. Mahmood S, Rasheed J, Sabeena A, Faraz R, Sadiq S, Tahir N *et al*. Top 10 malignancies seen among children age ≤18 years. Cancer statistics at Shoukat Khanum Cancer Hospital and Research Centre Lahore. 2004.
17. Khan HI, Abdullah A. Frequency of childhood cancer. Pak Paed J 2001;25(2):71–1.

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