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Research Article

CLINICO-PATHOLOGICAL CORRELATION OF TUMOURS IN PEDIATRIC AGE GROUPS

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ABSTRACT

Childhood neoplasms comprise a diverse array of malignant tumours. The present study is undertaken to observe the frequency age/sex wise distribution and to study and correlate clinical and histopathological features of pediatric tumors with the exclusion of leukaemias. This is a retrospective study of the tumors encountered in (0- 15) year pediatric age group during period of 5 years in tertiary health care centre. Surgical specimens were obtained in fixative (10% formalin). After gross examination, sections were taken, tissue processing was done, corresponding blocks were prepared cut and stained with hematoxyline and eosin stain. Out of 209 cases of pediatric age group tumors 163 (77.99%) were benign and 46 (22%) were malignant with benign to malignant ratio 3.54%. In present study most common age group affected was 10-15 years. Out of total 46 cases of malignant pediatric tumors 27 cases were male and 17 were female with male to female ratio 1.58. Lymphomas and retinoblastomas were the most common malignant tumors reported in present study followed by kidney bone and soft tissue tumors,

Keywords: Neoplasm, Tumor, Benign, Malignant, Childhood Malignancy.

INTRODUCTION

Childhood neoplasms comprise a diverse array of malignant and non-malignant tumors arising from disorders of genes involved in control of cellular growth and development. Although a number of genetic conditions are associated with elevated risk for childhood cancers, such conditions are believed to account for less than 5% of all occurrences².

Cancer arises through a series of somatic alterations in DNA that result in unrestrained cellular proliferation. Most of these alterations involve actual sequences changes in DNA (i.e. mutations)².

Cancer is essentially a disease of adults, yet it is one of the common killers in childhood. In western countries, cancer is next only to trauma as a cause of mortality in children under 15 years of age. In India, although infection and malnutrition are the major factors contributing to morbidity and mortality, malignancies are coming into greater focus because of preventive measures being taken for the former².

Benign tumors are more common than malignant tumors. Most benign tumors are of little concern but sometimes they can cause serious problems due to their location or rapid increase in size³.

Several syndrome are associated with an increased risk of developing malignancies, which can be characterized by different mechanisms. One mechanism involves the inactivation of tumor suppressor genes, such as Rb in familial retinoblastoma.

A second mechanism responsible for inherited predisposition to develop cancer involves defects in DNA repair. Syndromes associated with an excessive number of broken chromosomes due to repair defects include Bloom syndrome Ataxia-telangiectasia and Fanconi's anemia.

AIMS AND OBJECTIVES

This is a retrospective study of the tumors encountered in pediatric age group during the period of January 2010 to January 2014. The objectives of this study are :

1. To study the frequency of pediatric tumor.
2. To study the incidence of benign and malignant tumors of pediatric age group.
3. To find out male to female ratio of pediatric tumors.
4. To study clinical and histopathological features of pediatric tumors.
5. To study the various histopathological appearances and patterns of tumors in pediatric age group.

MATERIALS AND METHODS

The Present Study is a retrospective study carried out in Department of Pathology of a tertiary health care centre from January 2010 to January 2014.

209 cases of pediatric solid tumor diagnosed clinically and histopathologically are included in present study. Only those cases were selected for study which clinical examination had

been subjected to biopsy or surgery and subsequently to histopathological examination with the exclusion to Leukemias. The tissues were fixed in 10% formalin and processed through standard paraffin embedding technique. Appropriate sections were taken and stained by routine hematoxylin and eosin. Special stains were done wherever necessary. They were further examined microscopically.

RESULTS

Table 1: Ratio of benign and malignant tumors in pediatric age group in present study

Benign Tumors (B)	Malignant Tumors (M)	Ratio (B:M)
163	46	3.54:1

Out of 209 cases in pediatric age group, 163 (77.99%) were benign and 46 (22%) were malignant. Ratio of Benign to Malignant tumor was 3.54% in present study.

Table 2: Incidence of overall malignant tumors according to age distribution

Age Group	No. of Cases	Percentage
0-4 years	15	32.60%
5-9 years	13	28.26%
10-15 years	18	39.13%

In present study, most common age group affected was 10-15 year (39.13%) followed by 0-4 years (32.60%) and 5-9 years (28.26%).

Table 3: Male to female ratio of overall pediatric tumors

Male (M)	Female (F)	Ratio (M:F)
142	67	2.11:1

Out of total 209 cases of overall pediatric tumors 142 were male and 67 were female with male to female ratio 1.58:1.

Table 4: Male to female ratio of malignant pediatric tumor in present study

Male (M)	Female (F)	Ratio (M:F)
28	18	1.55:1

Out of total 46 cases reported in category of malignant pediatric tumor, 28 were male and 18 were female giving male to female ratio of 1.55:1.

Table 5: Various malignant tumors in present study

Sr. No.	Tumor Type	No. of Cases	Percentage
1	Retinoblastoma	8	17.39%
2	Kidney Tumor	7	15.21%
3	Teratomas	5	10.86%
4	Lymphomas	8	17.39%
5	Bone Tumors	5	10.86%
6	Soft Tissue Tumor	6	13.04%
7	Gonadal Tumor	3	6.52%
8	Carcinomas	1	2.17%
9	Unknown Primary	3	6.52%
10	Others	-	-
Total		46	100%

Lymphomas and Retinoblastomas were the most common malignant tumors reported in present study followed by kidney, bone and soft tissue tumors.

DISCUSSION

Various studies of Banergee et al. (1986)³, Sharma et al. (2004)⁴, Akhiwu et al. (2009)⁵, Akinde et al. (2009)⁶ and Tanko et al. (2009)⁷ recorded the ratio of benign to malignant pediatric tumor in the range of 0.9 :1 to 2.28 :1. In present study, ratio of benign to malignant pediatric tumor was 3.54:1.

So from the above observations it is clear that findings of present study are comparable with results of previous studies. In present study, most common age group affected was 10-15 year (39.13%) followed by 0-4 year (32.60%) and 5-9 year (28.26%).

In Jabeen et al. (2010)⁸ study, most common age group affected was 10-15 year (471 cases / 37.7%) followed by 5-9 year (392 cases / 31.4%) and 0-4 year) 387 cases / 30.9%). This is in accordance with the present study.

In studies of Jassawalla et al. (1988)¹¹, Memon et al. (2007)¹² and Akhiwu et al. (2009)⁵ most common age group was 0-4 year followed by 10-15 year and 5-9 year.

In studies of Venugopal et al. (1981)⁹, Ramamurthi et al. (1986)¹⁰ and Jussawalla et al. (1988)¹¹. Male to Female ratio were 1.33 :1, 1.51 :1 and 1.7 :1.

Male to female ratio of malignant pediatric tumors in present study was 1.58 :1. Lymphomas (17.39%) and Retinoblastomas (17.39%) were the most common tumors reported in present study followed by kidney (15.21%), soft tissue tumors (13.04%).

Memon et al. (2007)¹² reported 12.4% incidence of lymphomas which is low as compared to present study.

Similarly, Akhiwu et al. (2009)⁵ recorded 33.3% incidence of lymphomas which is more as compared to present study.

The incidence of retinoblastoma was 17.39% (same as lymphoma) in present study which is similar to observations by Jain et al. (1975)¹³, Akhiwu et al. (2009)⁵ and Jabeen et al. (2010)⁸.

Kidney tumor comprised of 15.2% of all pediatric malignant tumors which is comparable with the incidence recorded in studies by Venugopal et al. (1981)⁹, Memon et al. (2007)¹².

In present study, 13.04% cases of pediatric malignant tumors were of soft tissue origin. Incidence in various studies Venugopal et al. (1981)⁹, Banerjee et al. (1986)³, Memon et al. (2007)¹² and Akhiwu et al. (2009)⁵ ranged from 9.8% to 14.3%.

The result of present study is comparable with the results of previous studies.

In present study, all cases of fibroadenoma presented in female in the age group of 10-15 year.

The age incidence of fibroadenoma and histopathological findings of present study are comparable with Ackerman (2005)¹⁴ and Rosen (2009)¹⁵.

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