

## Patterns of Childhood Solid Malignant Tumours in Paediatric Surgery Department of Mymensingh Medical College Hospital

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**Abstract:** **Background:** Childhood malignancies are becoming an emerging paediatric problem in Bangladesh. They are very much different from adult malignancy in their nature and distribution. This is a seven years retrospective study on patterns of childhood solid malignant tumours in paediatric surgery department of Mymensingh Medical College Hospital. **Objectives:** The objective of this study is to determine the types of malignant patients admitted in the paediatric surgery department of Mymensingh Medical College Hospital during the study period and also their age and sex distribution. **Methods:** This is a retrospective study of seven years duration from January 2017 to December 2023 in paediatric surgery department of Mymensingh Medical College Hospital. All admitted patients having solid malignant tumour aged up to 15 years diagnosed by means of histological or cytological study were included in this study. **Results:** 100 solid malignant tumour patients were admitted during the study period. 68% patients were male and 32% patients were female, with a male female ratio of 2.1:1.69 patients (69%) were below 5 years of age and 31(31%) patients were between 5 to 15 years of age. In this study, Wilms' tumour or Nephroblastoma was the most prevalent malignant tumour, that was 40 in number (40%), followed by Neuroblastoma 28(28%), Lymphoma in abdominal site 12 (12%), Testicular tumour 9(9%), malignant sacrococcygeal teratoma 5(5%), Rhabdomyosarcoma 3(3%), Hepatoblastoma 2(2%) and one malignant gastric teratoma. **Conclusion:** From this study it was found that, Wilms' tumour is the most common Paediatric solid malignancy. Malignant gastric teratoma can rarely occur in paediatric age group.

**Keywords:** Childhood malignancy, solid tumour, Paediatric.

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### INTRODUCTION

Childhood malignancy differs markedly from adult malignancy in their nature, distribution, presentation

and prognosis [1]. The incidence and type of childhood malignancy also vary greatly throughout the world [1]. Neoplasia of childhood occupies a

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numerically important group and remains one of the major causes of death in children between the age of 1 – 15 years [2]. Rapid and accurate diagnosis of childhood tumours has become increasingly important as more specific chemotherapeutic regimens have evolved [3].

Though the incidence of childhood malignancy is lower in comparison to adult malignancy, in recent years the malignancy incidence in paediatric population has been dramatically increased [4]. Malignant solid tumours constitute a major cause of morbidity and mortality in children and comprise about half of all childhood malignancies [5]. This study is a 7 years retrospective case study from January 2017 to December 2023 and it is carried out in the Department of pediatric surgery, Mymensingh Medical College Hospital to determine the pattern of childhood solid malignant tumours admitted in this Department. Although it is not possible to provide exact incidence rate by a single hospital-based study, this study report will be useful in some extent to show the patterns of childhood solid malignancy in this region.

**MATERIALS AND METHODS**

This is a retrospective case study of 100 patients whose surgical biopsies were submitted in histopathology section of Pathology Department Mymensingh Medical College Hospital from January 2017 to December 2023. Data was collected by using hospital records like operation register. All children having solid malignant tumour aged up to 15 years diagnosed by means of histological or cytological examination admitted in the Department of pediatric surgery, Mymensingh Medical College Hospital from January 2017 to December 2023 were included in this study.

**RESULTS**

During the study period between January 2017 to December 2023, total 100 malignant cases were admitted in the paediatric surgery department of Mymensingh Medical College Hospital. Among

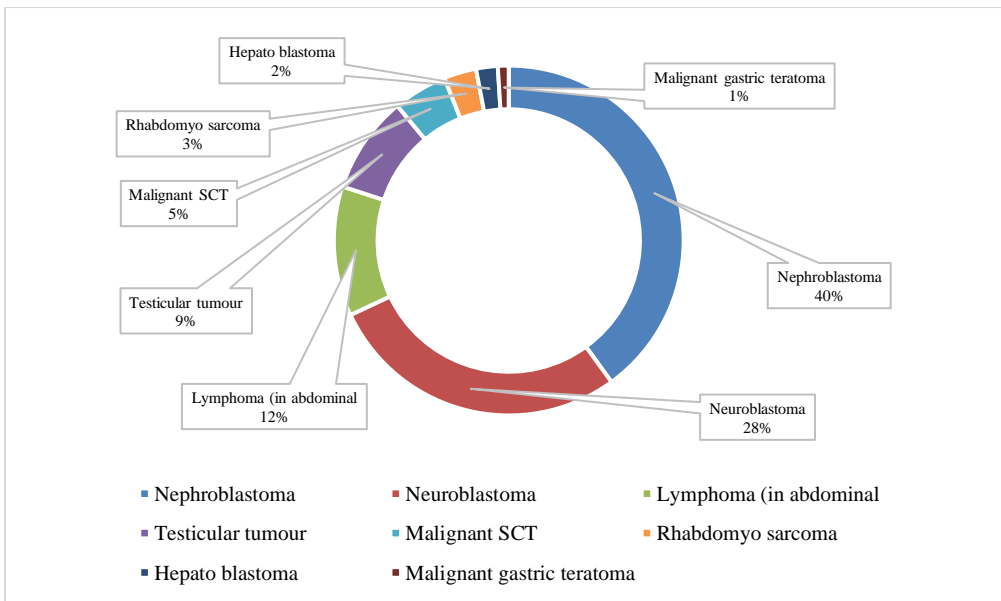
them 68 were male(68%) and 32 were female (32%) with a male female ratio of 2.1:1. 69 patients were below 5 years of age (69%) and 31 patients were between 5 to 15 years of age (31%). In this study, Wilms’ tumour was the most prevalent tumour that was 40 in number (40%), followed by Neuroblastoma 28(28%), Lymphoma in abdominal site 12(12%), Testicular tumour 9(9%), Malignant Sacrococcygeal teratoma 5(5%), Rhabdomyosarcoma 3(3%), Hepatoblastoma 2(2%) and one Malignant gastric teratoma. The patterns of childhood solid malignancies are shown in bar diagram below. Out of 40 Wilms’ tumour patients, 24 were male (60%) and 16 were female (40%). 32 patients were below 5 years (80%) and 8 patients were between 5 to 15 years of age (20%). Out of 28 Neuroblastoma patients, 20 were male (71.4%) and 8 were female (28.5%). 23 patients were below 5 years (82.1%) and 5 were between 5 to 15 years of age (17.8%).

There were 12 lymphoma patients (in abdominal site), among them 9 were male (75%) and 3 were female (25%). Out of 12 lymphoma Cases, 7 cases were non-Hodgkin ‘s lymphoma (58.33%) and 5 cases were Hodgkin ‘s lymphoma (41.66%). Hodgkin’s lymphoma was more common in male child and also in age group 5-15 years. Two patients were below 5 years (16.66%) and 10 patients were between 5 to 15 years of age. (83.33%).

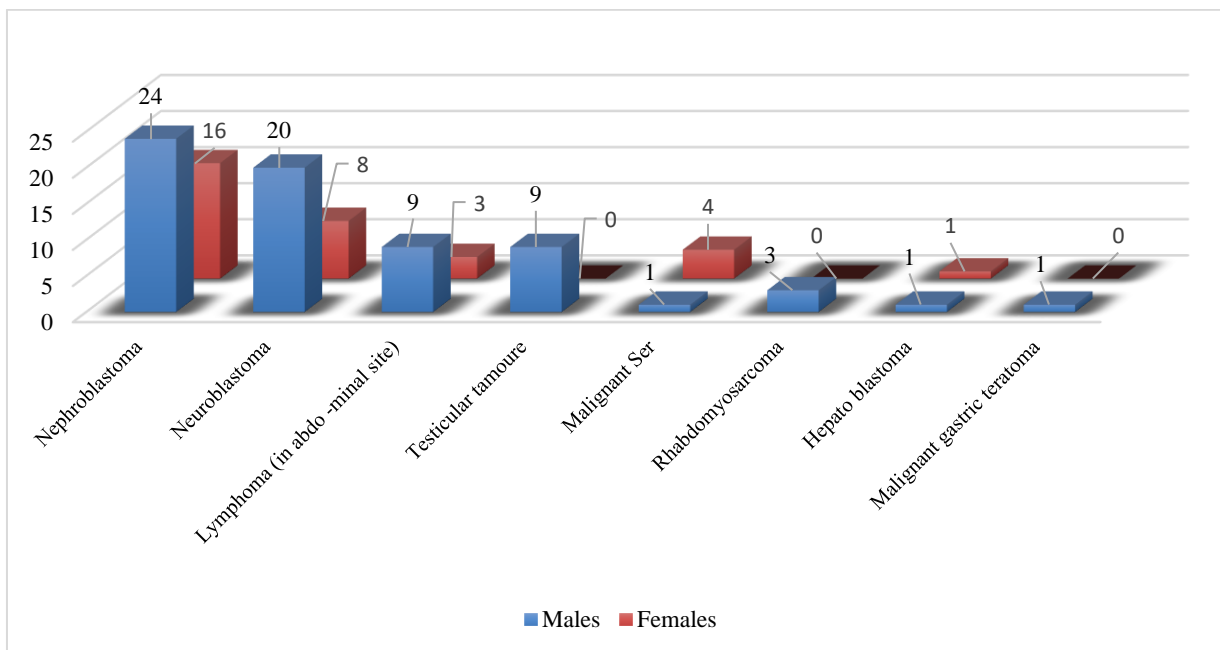
Out of 9 testicular tumour, two patients were below 5 years (22.22%) and 7 patients were between 5 to 15 years of age (77.77%). Among the 5 malignant sacrococcygeal teratoma, one is male (20%) and 4 is female (80%). All are between 5 to 15 years of age. In case of Rhabdomyosarcoma, all three patients were male and between 5 to 15 years of age. There were 2 hepatoblastoma patients, between them 1 is male (50%) and one is female (50%). All were between 5 to 15 years of age. Interestingly, in this study, one gastric teratoma patient was found. It was a male child and age was 10 years. Although most of the gastric teratoma is benign lesion, but this case was histologically proven as malignant teratoma.

**Table: 1: Types of Paediatric/Childhood solid tumors**

| TYPE                         | Number of Cases | %           |
|------------------------------|-----------------|-------------|
| Nephroblastoma               | 40              | 40%         |
| Neuroblastoma                | 28              | 28%         |
| Lymphoma (in abdominal       | 12              | 12%         |
| Testicular tumour            | 9               | 9%          |
| Malignant SCT                | 5               | 5%          |
| Rhabdomyo sarcoma            | 3               | 3%          |
| Hepato blastoma              | 2               | 2%          |
| Malignant gastric teratoma   | 1               | 1%          |
| <b>Total number of cases</b> | <b>100</b>      | <b>100%</b> |



**Figure I: Pie Chart Showed Distribution of Types of Paediatric/Childhood Solid Tumours (N=100)**



**Figure II: Bar Chart Showed Distribution of Paediatric Solid Malignancies by Sex (N=100)**

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

| Tumours                        | Age group |            | Sex  |        | M: F   | Mean age Years |
|--------------------------------|-----------|------------|------|--------|--------|----------------|
|                                | 0-5 years | 5-15 years | Male | Female |        |                |
| Nephroblastoma                 | 32        | 8          | 24   | 16     | 1:5:1  | <b>4.83</b>    |
| Neuroblastoma                  | 23        | 5          | 20   | 8      | 2:5:1  |                |
| Lymphoma (in abdo -minal site) | 2         | 10         | 9    | 3      | 3:1    |                |
| Testicular tamoure             | 2         | 7          | 9    | 0      | 9:1    |                |
| Malignant Ser                  | 0         | 5          | 1    | 4      | 0.25:1 |                |
| Rhabdomyosarcoma               | 0         | 3          | 3    | 0      | 3:1    |                |
| Hepato blastoma                | 0         | 2          | 1    | 1      | 1:1    |                |
| Malignant gastric teratoma     | 0         | 1          | 1    | 0      | 1:1    |                |
| Number                         | 59        | 41         | 68   | 32     |        |                |
| %                              | 59%       | 41%        |      |        |        |                |

## DISCUSSION

This study shows that, 100 malignant solid tumour patients were admitted in 7 years, between January 2017 to December 2023 in the Department of Pediatric surgery, Mymensingh Medical College Hospital. This gives an average of 14 patients per year. This result is almost similar to other studies [6]. 68 patients were male (68%) and 32 patients were female (32%), with a male female ratio of 2.1:1. which meets the Asian and African trend [3, 4]. 69 patients were below five years (69%) and 31 patients were between 5 to 15 years of age. (31%). This data correlates with other similar studies [4] Embryonal tumours, such as Nephroblastoma, Neuroblastoma occurs mainly in less than 5 years of age group, while lymphoma, testicular tumour, Rhabdomyosarcoma, hepatoblastoma, gastric teratoma mainly occurs in more than 5 years of age group.

In this study, the most common malignant tumour was Wilms' tumour, that was 40 in number (40%). It meets the Asian trend of childhood solid malignancy [5]. Although in some African studies, it is also shown that, Wilms' tumour is the commonest childhood solid malignant tumour, [7], but most of the African and American reports showed that, either lymphoma or Rhabdomyosarcoma is more common in those countries [1]. The second most common tumour in this study was Neuroblastoma. (28%). Although Neuroblastoma was shown as a rare variety in various studies in Asia, Africa and America, but this study shows that this is not very rare in our country [8]. Lymphoma comprises 12% of the total number of patients, which meets the current trend [3] Among them, 7 cases were non-Hodgkin's lymphoma (58.33%) and 5 cases were Hodgkin's lymphoma, which is similar to other studies [3]. Majority of the lymphoma patients were male and in between 5 to 15 years of age that is 10 patients among 12 (83.33%), which is similar to the observation by surveillance, Epidemiology and end results (SEER).

Surprisingly, in this study, it is observed that testicular malignancy comprises a fair number of childhood solid tumours, which is 9 in number (9%). Among them, two patients were below 5 years and 7 patients were between 5 to 15 years of age. (22.22% and 77.77% respectively). This is similar to other studies [9].

Histologic subtypes of testicular tumour varies from malignant teratoma 5 (55.55%), yolk sac tumour 3 (33.33%) and small round blue cell tumour one. (11.11%). In this study, Sacrococcygeal teratoma comprises a large number of childhood solid malignant tumours and most of them were in benign form. Among them, 5 cases shown malignant transformation (5%). Other One is male (20%) and 4

is female patients (80%) which is similar to All malignant Sacrococcygeal teratoma are in between 5 to 15 years of age, which meets the trend [8].

Next common solid malignant tumour is Rhabdomyosarcoma, which is three in number (3%). All three are males (100%) which is competent with other studies. (BSMMU) All are more than 5 years of age. Among them, two patients developed Rhabdomyosarcoma in left lower limb and 1 in the bladder prostatic site. Two Hepatoblastoma patients were detected in this study (2%). One is male (50%) and one is female (50%). Both are more than 5 years of age.

One gastric teratoma with malignant transformation was included in this study series (1%), which was male and 10 years of age. Histologically it was immature gastric teratoma. Actually, gastric teratoma are rare neoplasms, which accounts for <1% of all teratomas in children [10].

## CONCLUSION

Although this is a single center study, it can draw a picture of patterns of childhood solid malignant tumours in this region. From this study it can be concluded that, Wilms' tumour is the most common solid malignancy and malignant gastric teratoma, although rare can occur in children as well. Testicular malignancies need more attention.

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