ORIGINAL ARTICLE

Various Malignancies Amongst Children Presenting to Pediatric Unit of Tertiary Care Center

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ABSTRACT

Childhood malignancies are slowly rising critical medical issue with low rate of survival. Despite of its variability in frequency and distribution with respect to its types, very few studies have addressed this aspect in Pakistan. In order to understand the factors to help in management and increase success rate of treatment, frequency and patterns of different types of malignancies in our settings should be understood well.

Aim and Objective: To find out the frequency of various malignancies amongst children presenting to pediatric unit of tertiary care center.

Materials and Methods: This descriptive cross sectional study was conducted in pediatric unit of Jinnah Hospital, Lahore, between 08-04-2021 to 08-04-2022 on 240 children. The data was collected using non-probability consecutive sampling after taking consent from the parent/guardian of the patient. Socio-demographic and clinical data was collected on a semi-structured proforma and was analyzed using SPSS v.17. Mean, Standard deviation, frequency and percentages were given for quantitative and qualitative data respectively while Chi Square test was used to find association of types of cancers with age and gender keeping a p-value<0.05 as significant.

Results: The mean age of children was 8.05 ± 4.077 years with 53.8% males. Acute leukemia (20.8%) was the commonest type of malignancy among other including Burkitt lymphoma in 18.8%, Rhabdomyosarcoma in 18.3, Non Hodgkin lymphoma in 9.2%,Hodgkin lymphoma in 7.1%,Wilms tumor in 14.2%,Neuroblastoma in 5%, Retinoblastoma in 3.3% and Yolk sac tumor in 3.3% children. Only Rhabdomyosarcoma and Acute leukemia had significant association with age groups (p-values= 0.043 & 0.014 respectively).

Conclusion: This study concludes that acute leukemia was commonest observed type of childhood malignancy (20.8%), whereas Retinoblastoma and Yolk sac tumor were the least observed ones. Only age was associated with Rhabdomyosarcoma and Acute leukemia among all types of malignancies.

Keywords: Childhood malignancies, Age group, Acute leukemia, Rhabdomyosarcoma, Retinoblastoma.

INTRODUCTION

Cancer is becoming a prevalent disease with very low survival rate and childhood cancer is now becoming alarmingly high as well.[1] Childhood cancer is quite different from adult cancer in its etiology, prognosis, types and treatment options.[2] The diversity of the prognosis of different types of cancers in children is quite different and need a fundamental and profound understanding about it.[3] The prevalence of childhood cancer varies significantly in different regions of the world. The overall prevalence of malignancies range from 40-150 in various studies.[4,5] Studies conducted in United States report the risk of childhood malignancy to be slightly higher among the male gender and white ethnicity.[6] Some studies have reported South Asian children at higher risk in Europeans regions where they are in minority groups.[7] Some common types of cancers include Leukemias (25 %) being the commonest one,[8] followed by CNS (17 %), neuroblastoma (7%), non-Hodgkin lymphoma (6%), Wilm's tumor (6 %), Hodgkin disease (5%), rhabdomyosarcoma (3%), retinoblastoma (3%), osteosarcoma (3%), and Ewing sarcoma (2%), including some other rare types as well.[9,10] If screened early, childhood cancer of various types can be managed and treated very well. The medical science has shown miracles over past two decades in increasing survival of cancer patients among children.[11] However, the risk of relapse or the quality of life of these patients in their adulthood remains a question. [12] A number of risk factors can be attributed to different types of cancers among children.[13] Genetic risk factors are predominately high, followed by family history and different clinical or environmental risk factors.[14] Medical researchers have specially focused on genetic factors and how they may potentially increase the risk of childhood malignancies in recent researches. [15] In order to understand the factors to help in management and increase success rate of treatment, frequency and patterns of different types of malignancies in our settings should be understood well.[16] Hence this study aimed to determine the frequency of various malignancies among children presenting to pediatric unit of Jinnah Hospital, Lahore.

MATERIALS AND METHODS

This cross sectional study was conducted at pediatric unit, Jinnah Hospital Lahore, between 08-04-2021 to 08-04-2022 on 240 cases. The Sample size of 240 subjects was calculated with 95% confidence level, 2.5% margin of errorand taking expected percentage of neuroblasotma as 4% (least among all). All patients of both genders with age between newborn to 15 years who presented with malignancies were included in the study through Non probability consecutive sampling. After taking informed consent, the information regarding demographic characteristics such as gender, and area of residence was taken and then diagnosis of the malignancy was found. Confidentiality of the patients was maintained through the phase of data entry and analysis on SPSS v. 17.0. Mean and standard deviation for quantitative and frequency and percentages for qualitative data was given.After stratification for confounders, chi-square test was used to see association of malignancy with different confounders keeping p-value<5% as significant.

RESULTS

From 240 patients, it was observed that the minimum age was found 1 year and maximum age was 15 years with mean and standard deviation of the age was 8.05 ± 4.077 years. Male patients were 129/240 (53.8%) while female patients were 111/240 (46.3%).(Fig:1).Burkitt lymphoma was found in 45/240 (18.8%) patients, Acute leukemia was found in 50(20.8%) patients, Hodgkin lymphoma was found in 17(7.1%), Non Hodgkin lymphoma was found in 22(9.2%), Rhabdomyosarcoma was found in 44(18.3), Wilms tumor was found in 34(14.2%), Retinoblastoma was found in 8(3.3%), Neuroblastoma was found in 12(5%) and Yolk sac tumor was found in 8(3.3%) patients. %).(Fig:2). By using chi-square test it was found that gender was not significantly associated with Burkitts lymphoma, Acute leukemia, Hodgkin lymphoma, Non- Hodgkin lymphoma, Rhabdomyosarcoma, Wilm's tumor, Retinoblastoma, Neuroblastoma and yolk sac tumor having p-values > 0.05.(Fig:3). Burkitts lymphoma, Hodgkin lymphoma, Non- Hodgkin lymphoma, Rhabdomvosarcoma, Wilm's tumor, Neuroblastoma and yolk sac tumor were also not significantly

associated with age group have p-values > 0.05 but Rhabdomyosarcoma was significantly associated with age group having p-value= 0.043 and Acute leukemia was significantly associated with age group with p-value = 0.014.(Table:1).
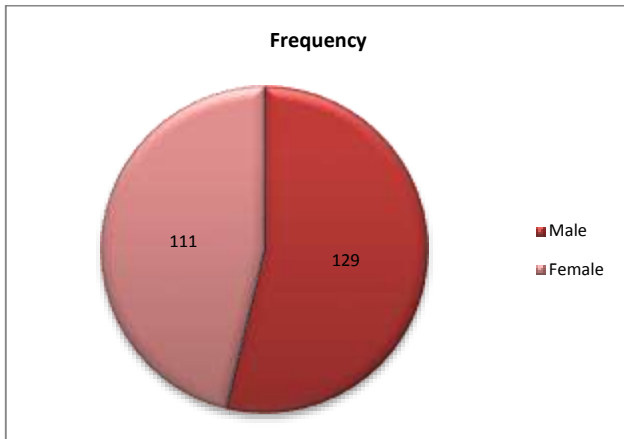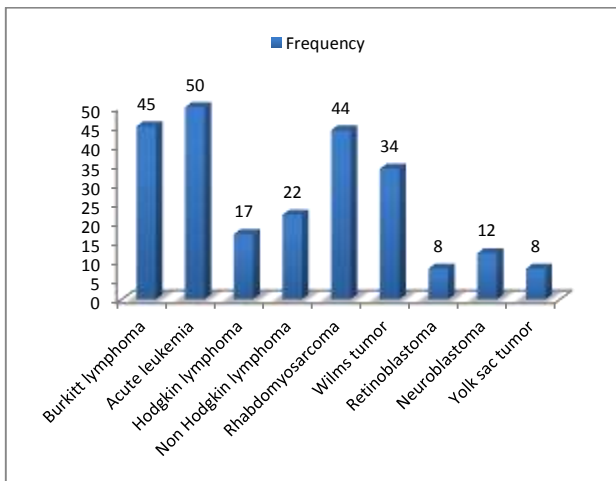

Figure 1: Gender Distribution

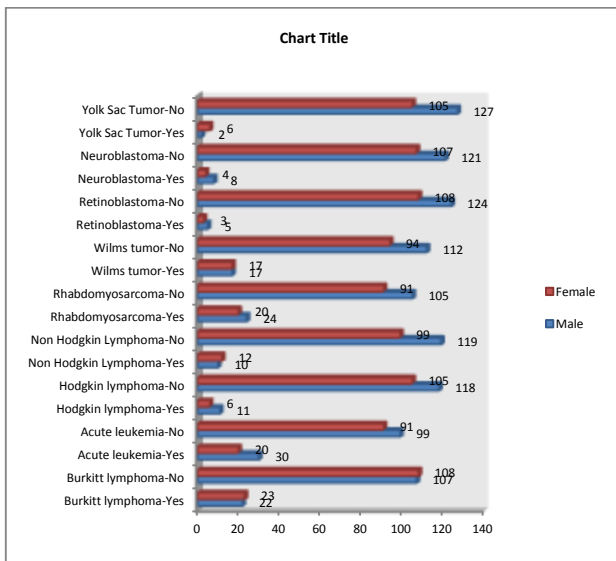Figure 2: Distribution Pediatric Malignancies (n = 240)

Figure 3: Distribution of Gender and Pediatric Malignancies (n = 240)

p-value--0.468,0.319,0.347,0.413,0.907,0.636,0.614,0.357,0.097

Table 1: Comparison of Pediatric Malignancies and age groups (n = 240)

S.No	Pediatric Malignancies		< 8 years	> 8 years	p-value
1.	Burkitt lymphoma	Yes	26	19	0.833
		No	116	79	
2.	Acute leukemia	Yes	22	28	0.014*
		No	120	70	
3.	Hodgkin lymphoma	Yes	9	8	0.588
		No	133	90	
4.	Non Hodgkin Lymphoma	Yes	13	9	0.990
		No	129	89	
5.	Rhabdomyosarcoma	Yes	32	12	0.043*
		No	110	86	
6.	Wilms tumor	Yes	23	11	0.378
		No	119	87	
7.	Retinoblastoma	Yes	6	2	0.354
		No	136	96	
8.	Neuroblastoma	Yes	8	4	0.588
		No	134	94	
9.	Yolk Sac Tumor	Yes	3	5	0.205
		No	139	93	

*Significant

Only Rhabdomyosarcoma and Acute leukemia had significant association with age groups (p-values= 0.043 & 0.014 respectively).

DISCUSSION

Childhood malignancies are rare but dangerous form of disease, which are unfortunately ignored research aspect in Pakistan.[17] The frequency and pattern of different types of cancers are varied and highly diverse due to many factors such as genetic factors, family history, gender, age group and even ethnicity.[18] It requires a lot of effort to generate exact statistics covering all these aspects of childhood malignancies as very few studies have been conducted with a large enough sample size at a multicentric level to categorize the types and patterns of different childhood cancers.[19]Hence, this study was conducted to find the frequency of different types of cancers among children and see its association with categories of gender and age etc. This was a descriptive cross sectional study conducted on 240 patients in in medical unit-I Jinnah Hospital Lahore. Non-probability consecutive sampling was used to collect data from these patients falling in our inclusion criteria. We found that the minimum age was 1 month and maximum age was 15 years with average of 8.05 ±4.077years. More Male patients were present (53.8%) compared to 46.3% female patients. In another descriptive study, that focused on gender age and treatment outcomes of 94 children with different malignancies in a tertiary care hospital found that among these 94 patients 69.1% were males whereas only 30.9% were females. They also observed that acute leukemia (34%) was commonest type of cancer and 48.94% overall mortality was observed.[20]Furthermore, in our study, Burkitt lymphoma was found in 18.8% patients, acute leukemia in 20.8% patients, Hodgkin lymphoma in 7.1%, Non Hodgkin lymphoma in 9.2%, Rhabdomyosarcoma in 18.3, Wilmstumor in 14.2%, Retinoblastoma in 3.3%, Neuroblastoma was 5% and Yolk sac tumor in 3.3% patients. Children more than 42 months of age had the most risk of tumor while those below 6 months had least risk. Among the types of tumors, Wilms' tumor was in 44%, retinoblastoma was in 20%, rhabdomyosarcoma in 9%, malignant teratoma in 8% and Yolk sac tumor in 5%. [21]Also, there was no statistical association of age and age with most of the types of cancers including Burkitts lymphoma, Acute leukemia, Hodgkin lymphoma, Non- Hodgkin lymphoma, Rhabdomvosarcoma, Wilm's tumor, Retinoblastoma, Neuroblastoma and yolk sac tumor (p-values> 0.05 for all). Only Rhabdomyosarcoma and Acute leukemia had significant association with age groups (p-values=

0.043 & 0.014 respectively). Some other studies have also shown no association of their studied type of cancer with age of child.[22,23] This study, hence gives a comprehensive statistics about the types of cancers and their potential association with age or gender.

CONCLUSION

This study concludes that Acute leukemia was commonest observed type of childhood malignancy (20.8%), followed by Burkitt lymphoma in 18.8%, Rhabdomyosarcoma in 18.3, Non Hodgkin lymphoma in 9.2%, Hodgkin lymphoma in 7.1%, Wilms tumor in 14.2%,Neuroblastoma in 5%, Retinoblastoma in 3.3% and Yolk sac tumor in 3.3% children. Most of the types of malignancies were not statistically associated with either gender or age, except for Rhabdomyosarcoma and Acute leukemia that was significantly associated with age.

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