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A COMPARATIVE STUDY OF DIFFERENT TYPES OF RETROPERITONEAL TUMORS IN CHILDREN

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Abstract:
Desired Purposes: *Purpose of this study is to make the collection of clinical data, clinical presentation and results of the surgical management for the retroperitoneal tumors variably of different types in the children.*
Design of Study: *This study was conducted as prospective study.*
Venue and Time Frame: *We performed our study in Department of Pediatric Surgery, Services Hospital, Lahore having a time frame of almost two and half years starting from Jun, 2016 and finalized in October, 2018.*
Materials and Methods: *This study was accomplished for studying the cases retroperitoneal tumor having the 60 patients for the duration of about 2.5 years. The retroperitoneal tumors that was become the part of our study was of 5 types and comprising on Neuroblastoma (NB), Wilms' tumors, Rhabdomyosarcoma, On-Hodgkin's Lymphoma (NHL) and Teratoma tumor.*
Results: *Maximum child patients of retroperitoneal tumors were the age of below the five year and typically they were of age in 1st year. Male child patients were in majority than female children. Most commonly, the patients presented with loss of appetite, abdomen anorexia and loss of weight. Wilms' tumor was found more commonly than other four.*
Conclusion: *Outcomes of our study reflects that prevalence of retroperitoneal tumors was found mostly in the age of five years. Prognostication of retroperitoneal tumors can be improved by initial diagnostics and multimodality management.*

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INTRODUCTION:

In a report of 208, 947 child patients of original cancer with follow up of years, in the mortality the driving factor that causes the expiry of 5-year child patients was yielding 67% of deaths. Mortality risk was noticed high in female child [1]. If we talked about whole world, mostly cancers in the children are malignant solid tumors and per annum almost forty thousand innovative cases are identified for cancer. Specifically, in USA the maximum causalities in age of one to fifteen-year-old children were occurred due the cancer in patients from birth to adolescence [2, 3]. There are variety of imaging and other presentations along with histological results and clinical characteristics for the retroperitoneal tumors in children. Nature of tumor, early diagnostics and the histological outputs are the main factors on which the results and treatment mode are dependent. Retroperitoneal tumors are a collective and for most matter in children [4, 5, 6, 7]. Because of the very adjacent similarity of the symptoms and presentations, the retroperitoneal tumors can be categorized as a single group, even though these have pathological separation. However indicative modalities pointedly enhanced, findings of disease are repeatedly completed late [8].

In our paper all the cases are included the retroperitoneal extent starting from 12th rib and diaphragm up to the end of pelvis. Our study has no inclusion of pancreatic, mesenteric, intestinal, lymphatic and ureteral tumors.

MATERIALS AND METHODS:

We performed our study in Department of Pediatric Surgery-II, Liaqat National Hospital, Karachi having a time frame of almost two and half years starting from Feb, 2016 and finalized in Jun, 2018. This study was accomplished for studying the cases retroperitoneal tumor having the 60 patients for the duration of about 2.5 years. The retroperitoneal tumors that was become the part of our study was of 5 types and comprising on Neuroblastoma (NB), Wilms' tumors, Rhabdomyosarcoma, Non-Hodgkin's Lymphoma (NHL) and Teratoma tumor.

The veridiction of different kinds of retroperitoneal tumors were done by following the histological findings, clinical features, radiographic and other presentations. That was consisted on complete physical checkup and investigations like abdominal ultrasound, histopathology, thorough physical examination and investigations like ultrasound abdomen, I.V.U., Verdict of various types of retroperitoneal tumors was made on the basis of history, thorough physical examination and investigations like ultrasound abdomen, I.V.U. Every patient was operated and tissue diagnosis was made by histopathology and staging of retroperitoneal tumors was done with the help of investigations like radiograph chest PA view, liver scan, bone scan. Incision was made on the abdomen transversely to explore the tumor by cutting a diagonal according to the size of tumor. While 54 patients were prospered with complete removal of the tumor.

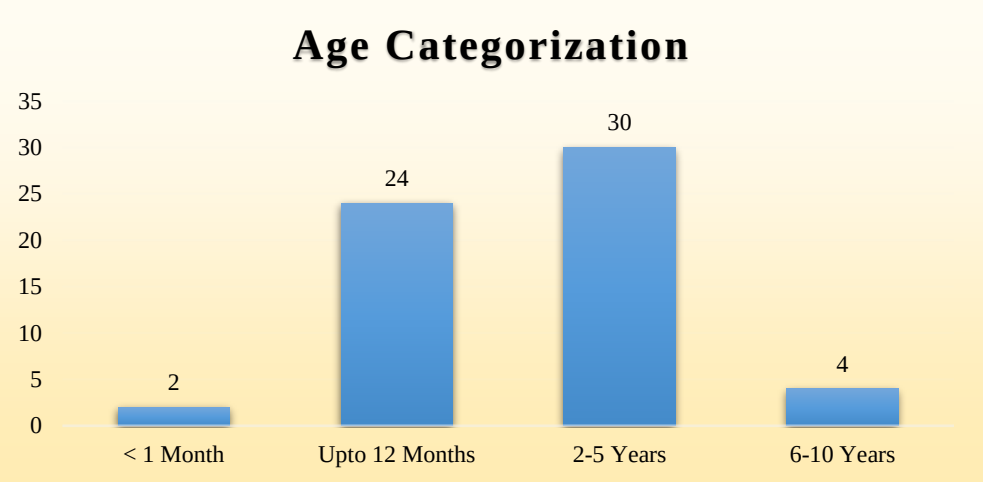
RESULTS:

Maximum child patients of retroperitoneal tumors were the age of below the five year and typically they were of age in 1st year. Data related to the age of the patients is shown in table-1 while graphical representation is also made in graph-1.

Table-1: Age Categorization

Age	Patients	Percentage
< 01 Month	02	3.33%
2 to 12 Months	24	40%
2-5 Years	30	50%
6-10 Years	04	6.66%

Graph-1: Age Categorization



During the study it was observed that male children patients were in majority than female children. When we compared the age versus gender data it was noticed that the in-majority categories male children dominated in the ratio of male and female. With respect to the types of tumors, the categorization of age versus gender is shown in the table-2.

Table-2 Age vs Gender Categorization w.r.t Types of Tumors

Type of Tumor	Mean Age	Male : Female
Wilms' tumors	3 Years	5:4
Neuroblastoma	3.5 Years	7:5
Teratoma tumor	1 Years	5:3
Rhabdomyosarcoma	04 Months	1:2
Non-Hodgkin's Lymphoma	5 Years	2:1

Most commonly, the patients presented with loss of appetite, abdomen anorexia and loss of weight.

Table-3: Modes of Presentation

Categories	=N	Percentage
Mass Abdomen	50	83.333%
Abdominal Distension	40	66.67%
Loss of Weight	40	66.67%
Anorexia	30	50%
Pain	14	23.333%
Constipation	12	20%
Vomiting	6	10%
Urine Frequency	6	10%
Urine Retention	4	6.67%
Hematuria	4	6.67%
Bleeding/Rectum	4	6.67%
Neurological Deficit	2	3.333%

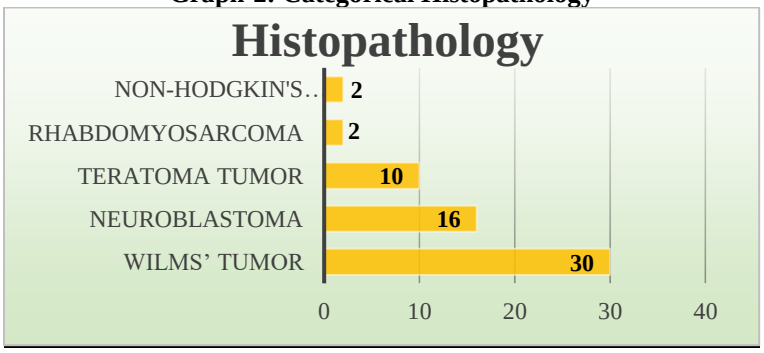
During the study it was noticed that mass size was common in maximum patients and was equal or more than ten centimeters. The findings were as renal mass found in 30 patients, adrenal found in 16, teratoma in 10, lymphoid mass in 2 and rhabdomyosarcoma in 2 patients. Categories wise data is shown in table-4 and graph-2. In this

perspective the Wilms' tumor was found more commonly than other four. Most commonly, the patients presented with loss of appetite, abdomen anorexia. In four type the abdominal mass was presented most commonly and in rhabdomyosarcoma mode of presentation was urinary retention constipation.

Table-4: Categorical Histopathology

Tumor Type	Patients	Percentage
Wilms' tumors	30	50%
Neuroblastoma	16	26.7%
Teratoma tumor	10	16.7%
Rhabdomyosarcoma	2	03.3%
Non-Hodgkin's Lymphoma	2	03.3%

Graph-2: Categorical Histopathology



Finally, all the cases referred to the pediatric oncology to evaluate and treat the cases for the follow up. Extra post-operative progression was monotonous. Delayed post-operative progression resulted the complications as show in table-5.

Table-5: Postoperative Complications

Type	Patients	Percentage
Recurrence	4	06.7%
Obstruction Adhesions	2	03.3%
Pleural Effusion	2	03.3%
Hemorrhage	1	01.67%
Wound Dehiscence	1	01.67%
Burst Abdomen	0	0

DISCUSSION:

Comparison of our study with the other studies shows the subsequent facts. When we compare the occurrence of tumors, in our study's outcomes retroperitoneal tumors happen mostly in the age of first five years with the share of 93.3%. While as per one more study, for the same age group, the malignant abdominal tumors happen in abundance with the share of 60.33% [9]. The retroperitoneal tumors that was become the part of our study was of 5 types and comprising on Neuroblastoma (NB), Wilms' tumors, Rhabdomyosarcoma, Non-Hodgkin's Lymphoma (NHL) and Teratoma tumor. So why we discussed on the prevalence of retroperitoneal tumors. The mean age of the patients those were with the diagnostics of Wilms tumor was 3 years in our study while it was 2.5 years with respect to the findings of another one and 3.6 years as per the another one. According to us, mean age of the patients of neuroblastoma was three and half years while in some other studies it was two and half year for the same tumor and more common was neuroblastoma in the early 12 months [10].The total ten patients were of retroperitoneal teratoma having mean age of one year in our results whereas in other studies the sixteen patients of retroperitoneal teratoma were the age starting from two days and ending at thirteen years. Retroperitoneal rhabdomyosarcoma was occurred in a girl with the age of 4 months [11]. For the non-Hodgkin's lymphoma presentation, we reported two five years child as the patients of non-Hodgkin's lymphoma. On

the other hand, in two other studies, the mean age was eight and nine years. We studied thirty patients of Wilms's tumor and found the gender ratio of 5:4 of male and female but in other researches it was 7:12 and equal ratio [12,13]. If we take the comparison of neuroblastoma tumor, with us the gender ratio was 7:5 while in some studies this gender ratio was 7:6 [14]. In our findings the gender ratio for the neuroblastoma tumor was 5:3 among the 10 patients of neuroblastoma tumor but in other research it was 9:7 [15]. For the last two types of rhabdomyosarcoma and non-Hodgkin's lymphoma this ratio was 1:2 and 2:1 respectively whereas the almost same results were found in some other studies [16,17]. During our study it was noticed that mass size was common in maximum patients and was equal or more than ten centimeters. The findings were as renal mass found in 30 patients, adrenal found in 16, teratoma in 10, lymphoid mass in 2 and rhabdomyosarcoma in 2 patients. In this perspective the Wilms' tumor was found more commonly than other four. Most commonly, the patients presented with loss of appetite, abdomen anorexia. In four types the abdominal mass was presented most commonly and in rhabdomyosarcoma mode of presentation was urinary retention constipation. Near to this sequence the results were found in other studies [18,19].

In our study, the preferable methods applied for the treatment of retroperitoneal tumors are the comprehensive excision and after that combined therapy method and these can be compared with other study [20]. Recommendations for selection of management methods are based on the stage and type of retroperitoneal tumors. For the treatment of Wilms' stumor, the method was leading nephrectomy with suitable procedures and after that chemotherapy and radiotherapy were adopted. Todays to treat the patients of rhabdomyosarcoma approved method are resection of whole tumor. Maximum patients of retroperitoneal teratoma can be dealt with surgery as a treatment while for the patients of rhabdomyosarcoma best method is combined therapy of surgery, irradiation and chemotherapy. Non-Hodgkin's lymphoma, in our study, is effectively cured with combination chemotherapy and supportive care. Extra post-operative progression was monotonous. Delayed post-operative progression resulted the complications as hemorrhage, recurrence, obstruction adhesions, pleural effusion and wound dehiscence.

CONCLUSION:

Outcomes of our study reflect that prevalence of retroperitoneal tumors was found mostly in the age of five years. Most commonly, the patients presented with loss of appetite, abdomen anorexia and retroperitoneal tumors. In this perspective the Wilms' tumor was found more commonly than other four. The helpful markers for diagnostics of retroperitoneal tumors were ultrasound and intravenous urography. The preferred methods of treatment in this regard were declared as surgical treatment, chemotherapy and radiotherapy. Prognostication of retroperitoneal tumors can be improved by initial diagnostics and multimodality management.

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