

Five Year Experience of Wilms Tumor at a tertiary care centre, where we stand, a developing country perspective

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ABSTRACT

Aim: To analyze demographics and fate of children with Wilm's tumor (WT) in Pakistan.

Settings & duration: In this retrospective study data of all diagnosed patients of Wilm's tumor presented to the Hematology and Oncology department of the Children's hospital Lahore during January 2009 and December 2013 was analyzed from record.

Methods: Data of all histologically proven cases of WT during the study period was collected from files. Information regarding age, gender, initial staging and outcome was recorded on Performa and analyzed by SPSS. Diagnostic workup included Ultrasound abdomen, CT scan abdomen & chest and USG guided needle biopsy in all patients. All patients were treated according to guidelines of International Society of Pediatric Oncology (SIOP) WT 2001 Protocol. Pre-operative chemotherapy and surgery followed by post-operative chemotherapy according to risk stratification was the prime treatment given to almost all patients.

Results: One hundred and seventy five cases were included in the study. Male to female ratio was 1.05. Predominant age group was 2-5 years constituting 50% (88/175) where as above 5 years and below 2 years were almost equal i.e., 44(25%) and 43(24.6%) respectively. Majority of patients presented with advanced disease stage III 36% (62/175) and IV 37(21%) while 26(15%) presented in stage II and only 5% in stage I and V each. Among the patients who received treatment 74/110 (67.2%) got cure of their disease, 20(11.4%) were succumbed while 65(37%) were abandoned with missing record. Ten patients (5%) had relapse disease.

Conclusion: Major part of the patients presented with extensive and advanced disease less than five years of age. Treatment result is reasonable with survival rate of 67% without abandonment. Enormous abandonment due to multiple social and financial reasons is a key element in declining overall survival rate that need to be addressed to improve ultimate outcome.

Keywords: Wilms tumor (WT), Abandonment, SIOP.

INTRODUCTION

Wilms' tumor also known as nephroblastoma is the most common primary pediatric renal tumor and sixth most common childhood malignancy¹. Worldwide incidence is approximately one child per 10,000 before the age of 15 years².

Median age of diagnosis of Wilm's tumor is 3.5 years ,with a peak between 3 and 4 years of age¹. Diagnostic workup of Wilms tumor includes ultrasonography abdomen, CT scan /MRI abdomen ,chest and mass biopsy but in resource limited areas just only history, physical examination and ultrasonography of the abdomen is sufficient enough

for the diagnosis. Treatment is always multidisciplinary including surgery, chemotherapy and radiotherapy³. Wilms tumor (WT) is one of the common curable paediatric solid tumor. With the advancements in the treatment strategies along with introduction of adjuvant chemotherapy a dramatic improvement in survival of WT upto 87% is observed during last few years⁴. In developed world overall survival (OS) rates are above 90% where as low income countries are still having very poor prognosis with OS only 11%-50%^{3,5}. Main contributing factors for this low survival rate are delayed presentation with extensive disease, poor nutritional status, lack of awareness, scarcity of trained personnel with very limited institutions dealing with pediatric malignancies and on top of these high rate of treatment abandonment. Limited data is available in Pakistan depicting characteristics and behavior of this curable

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pediatric solid tumor. Therefore we have planned this retrospective study to analyze demographic features and outcome of this disease in our setup . with limited resources.

MATERIALS AND METHODS

All children having histological diagnosis of wilm's tumor presented in Hematology Oncology department during the period of January2009-December 2013 were entered in study .All detail information regarding age, gender, staging and outcome was collected from their files and recorded on proformas and then analyzed.

At our Institute diagnostic workup for wilm's tumor includes ultrasound abdomen, CT scan abdomen, CT chest (to see metastasis in lungs) and needle mass biopsy .Staging and risk categorization is being done according to SIOP guidelines. At our centre we are following International Society of Pediatric Oncology (SIOP) WT 2001 Protocol for the treatment of wilms tumor. The principal treatment provided to all patients was comprised of pre-operative chemotherapy, surgery followed by post-operative chemotherapy according to risk stratification. Radiotherapy was given to some selected high risk cases. All data was entered into SPSS version 17. Chi-square test was applied and frequencies and percentages were calculated.

RESULTS

This retrospective study included one hundred and seventy five patients of WT who were diagnosed during the period of January 2009 to December 2013. Out of these one hundred and ten (63%) received treatment in Hematology /Oncology department while 65 (37%) were lost to follow up. Regarding gender distribution male to female ratio was 1.05:1

The mean age of presentation was 3 years (Median: 3.5 Years) with range of six months to 10 years. Pre-eminent age group was 2-5 years constituting 88(50%) where as above 5 years and below 2 years were almost equal i.e., 44(25%) and 43(24.6%) respectively. Most of patients 165(95%) had Unilateral disease and abdominal mass was main presenting symptom i.e., in 96% patients. Forty three (25%) patients presented with metastatic disease and lungs were commonest site of metastasis. Mostly patients presented with advance disease. Sixty two (36%) with stage III and 37(21%) with stage IV disease. On the contrary only 26(15%)

presented with stage II and 5% in stage I and V each In thirty patients stage was not mentioned

Sixty seven percent (n=117) patients received two drugs (Vincristine and dactinomycin) pre operative chemotherapy for 4 weeks while three drugs metastatic preoperative chemotherapy with addition of doxorubicin was given to 25% of patients for 6 weeks. Seventy six patients had nephrectomy done. Seventy four patients (67.2%) completed treatment successfully with median follow up from 6 months to 1 year. Twenty (11.4%) patients were expired and 10(5%) had relapse disease. A significant number of patients 65(37%) abandoned the treatment mostly during diagnostic workup or immediately after the diagnosis.

Table 1: Patient Characteristics

	n	%age
Age		
<2years	43	24.6
2-5 years	88	50
>5 year	44	25
Gender		
Male	90	51.4
Female	85	48.6
Unilateral	165	95
Metastasis at presentation		
Absent	133	76
Present	36	21
Staging		
Stage I	9	5
Stage II	26	15
Stage III	62	36
Stage IV	37	21
Stage V	8	4.6

Table 2: Outcome

Outcome	n	%age
Cured	74	67.2
Expired	20	11.4
Relapse	10	5
Progressive disease	6	3.2
LAMA /Missing data	65	37%

DISCUSSION

Wilms tumor is third common pediatric malignancy after Acute leukemias and Lymphomas being referred to our centre at CHL while worldwide it is sixth most common childhood malignancy⁶.

Median age at diagnosis is 3 years as reported in several other studies conducted worldwide and most of the patients presented between 2-5 year of

age^{7,8,9}. No gender predilection is found in our study¹⁰.

Unilateral disease is the principal presentation while almost five percent of patients presented with bilateral disease as reported in previous literature^{1,11}. Abdominal mass is the most common presentation as seen in other studies.^{7,9,12}

In resource-limited countries like Pakistan one of the key challenges in management of cancers is very late presentation with extensive disease so significant difference is observed in our study in regards to stage of presentation. Our major bulk of the patients more than 50% presented in advance stages III & IV of disease in contrast to studies in developed countries .In one study conducted in Taiwan most of patients presented in stage I & II i.e., 43.2% & 19.3% and similarly in SIOP 93-01/GPOH trial 61% presented in stage I while in our study only 5% of patients presented with stage I disease^{11,13,14}. In other developing countries like India delayed presentation with advanced disease is also reported^{12,15}.

In our study survival rate is 67% with a short term follow up of only one year. Similarly low survival rate has been reported from other developing countries¹⁶.In one study from Sub-Saharan Africa overall survival as low as 25% is reported¹⁷. In contrast OS of >90% is reported in developed countries many studies^{18,19,20,21,22,23}. One reason for this disparity in outcome is late presentation with advance disease while poor nutritional status, limited facilities and lack of awareness regarding disease are other contributing factors.

Another critical challenge in the management of wilm's tumor at our centre is overriding abandonment .A significant number 65(37%) of patients abandon the treatment. Similar observation is also seen in one study from India^{12,16}. It is another key element responsible for low survival rate. Overall mortality is 11.6% and similar observation also seen in one study from Malawi and from Pakistan^{15,24}.

CONCLUSION

A cardinal number of patients with WT presented with extensive and advanced disease below five year of age. This late presentation poses significant management challenges affecting the overall survival. Treatment outcome even with advance disease is reasonable 67 % without abandonment. Overwhelming abandonment due to multiple social and financial reasons is a crucial element in declining

the overall survival rate that need to be addressed to improve ultimate outcome. However for more precise survival rate of WT in Pakistan further studies are needed with longer duration of follow-up.

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