ORIGINAL RESEARCH PAPER

Surgery

KEY WORDS: Wilms Tumor, Radical Nephrectomy, Chemotherapy

RETROSPECTIVE STUDY OF CHILDREN WITH WILMS'TUMOR AT A TERTIARY CARE HOSPITAL IN ANDHRA PRADESH

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ABSTRACT

Wilms' tumor is one of the commonest solid tumors in children. It is otherwise known as Nephroblastoma. Commonest clinical presentation is Painless abdominal mass. The prognosis and 5 year survival rate are good for Stage I tumors and also in children with Favorable Histology. The outcome in 20 children with Wilms' tumor is studied as per the NWTG V protocol. The study was done in our institute between August 2009 and July 2012. Children with biopsy proven Wilms' tumor are included in the current study. The overall 5 year Survival rates are 80% in children with Stage I disease and Favorable Histology.

Background: Wilms' tumor was named after Carl Max Wihelm Wilms, a German surgeon, born on November5, 1867. It is also referred as Nephroblastoma, ranked 5th common malignancy [1]in frequency among all childhood malignant lesions. The annual incidence of Wilms'tumor in children younger than 15years is about 7to10 cases per million, and it accounts for 6% to 7% of all childhood Cancers. Wilms'tumor typically affects young children (median age 3.5 years). The median age-at-onset of Wilms tumor is 38 months. In National Wilms Tumor Study series the tumor diagnosed in girls 6 months later than in boys on average. Patients with bilateral tumors, aniridia, cryptorchism/hypospadias, Beck-with-Wiedemann syndrome, or intra lobar nephrogenic rests tend to be diagnosed much younger than average (median 17-27 months). A number of recognizable syndromes[2] are associated with an increased incidence of Wilms'tumor. Aniridia[3] 7.6/1000, Beckwith-Wiedemann syndrome (BWS) 8.4/1000, Hemi hypertrophy 33.8/1000, Genito urinary anomalies Hypospadias 13.4, Cryptorchidism 37.3, Hypospadias & Cryptorchidism 12.0., a review of NWTSG patients found a 7 fold increased risk for Wilms'tumor in patients with a Horseshoe kidney[4]. There is an increased risk for mullerian duct anomalies in girls with Wilms'tumor (Bryne and Nicholson, 2002).Classic Wilms'tumor is characterized by islands of compact ,undifferentiated blastema and the presence of variable epithelial differentiation in the form of embryonic tubules ,rosettes, and glomeruloid structures separated by a significant stromal component .The proportion of each of these components varies from infrequent to abundant within and among individual tumors .The coexistence of blastemal, epithelial, and stromal cells has led to use the term "triphasic" to characterize the histologic components of classic Wilms'tumor. Wilms'tumor with predominately epithelial differentiation has a low degree of aggressivenessand the majority is stage1 tumors. However these tumors may be more resistant[4] to therapy if they are diagnosed at an advanced stage. Blastema predominant tumors are highly aggressive[5], but very responsive to chemotherapy. The prognosis and 5year survival rates are encouraging if detected and treated early.

Methods: 20 children with Wilms' tumor were treated in the department of Pediatric Surgery, Andhra Medical College/King George Hospital, Visakhapatnam, Andhra Pradesh in the period 2009 to 2012.Out of the20 cases, 12 were male and 8 are female children. Children with Wilms tumor below 12 years are taken for the study. Ultrasonography, X-ray chest[6], Intra Venous Urography, Contrast Enhanced Computerized Tomography abdomen, Biopsy[7] was done in all patients. Multimodality treatment was administered i.e., surgery ,chemotherapy and Radiotherapy .

NWTS-5 Protocol was adopted in the present study.

NWTS-5: Stage1 with FH or Anaplastic Histology & Stage II with FH (CT REGIMEN EE-4A),

A.Dactinomycin (45microgram/kg), V.Vincristine (0.05mg/kg), Patients fitting into the following scenarios are treated with Nephrectomy and abdominal irradiation, and Triple drug chemotherapy
Regimen DD-4A.

NWTS-5: Stages III and IV with FH or Stages II to IV with Focal Anaplasia: CT Regimen DD-4A.
Patients fitting into the following scenarios are treated with nephrectomy. Abdominal irradiation using 10.8 Gy, and four –drug chemotherapy regimen I: Stages II to IV, diffuse anaplasia. Stages I to IV, clear cell sarcoma of the kidney.

NWTS-5: Stages II to IV with Diffuse Anaplasia or Stages I to IV with CCSK: Chemotherapy Regimen I.
C-Cyclophosphamide (14.7 mg/kg/day x 5 IV), C*-Cyclophosphamide (14.7mg/kg/day x 3 IV)

D-Doxorubicin (1.5mg/kg IV), E-Etoposide (3.3mg/kg/day x 5 IV)

V-Vincristine (0.05mg/kg IV), V*-Vincristine (0.067mg/kg IV)

XRT-Radiation therapy

***RADIOTHERAPY*:** Patients with Stages II to IV . All patients with Clear cell sarcoma of the kidney (CCSK)

Receive postoperative radiotherapy. All stage III patients are given postoperative irradiation totaling 10.8 Gy in 6 fractions.

Results: The age of patients ranged from 5months to 7years.The maximum number of cases (68%) are seen in children below 3years of age. The average age in our study is 3.2 years (Average age for males is 2.6 years and average age for females is 4.2 years) with a male to female ratio of 12:8.Out of 20 cases all are unilateral tumors with 12 (60%) being right sided tumors. Abdominal mass is the presenting feature in all cases, while weight loss (60%), loss of appetite (50%), abdominal pain and Hematuria in (20%), hypertension (15%), fever (10%) are the other symptoms. No associated syndromes are noted. The commonest Histopathological type was Epithelial predominant (80%), Blastemal predominant (10%), diffuse anaplasia and focal anaplasia 5% each. Out of 20 children 14 were of Stage I (70%), 4 were Stage II (20%), 2 were Stage III (10%) and none with Stage 4 disease[7]. Out of 20 patients, 18 children survived and 2 children succumbed. The survival rate in the present series is 80% against 96% in NWTS-5 study.

Conclusions: Wilms' tumor is the most common genitourinary malignant tumor in children. During 4 years of our study 27 cases of malignancies were recorded, among these 20 (70%) are Wilms' tumors, 4 cases are Rhabdomyosarcoma arising from pelvis, 3 cases are testicular tumors. Most of the Wilms' tumors presented

within first 3 years of age (68%).The mean age of presentation is 2.6 years where as in Breslow's study it was 3.4 years[6]. In our study males are more affected[8] than females in the ratio of 12:7 whereas in other studies[18] it was 0.9: 1.0.In our series all the tumors are unilateral.70% of tumors are in stage I. The overall survival rate was 90% compared to 96% for tumors with favorable histology.

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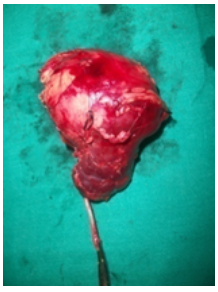

Fig.1 RADICAL NEPHRECTOMY SPECIMEN OF UPPER POLE WILMS'TUMOR(L)

Table1 : Wilms' tumor – Histopathological types

Histopathological type	*No. of cases*	*Percentage (%)*
Epithelial predominance	*16*	*80*
Blastemal predominance	*2*	*10*
Focal anaplasia	*1*	*5*
Diffuse anaplasia	*1*	*5*

Table 2: Wilms' tumor – Stage-wise distribution in the Present series and comparison with NWTS-5 series

Stage	*No. of cases in present series*	*Percentage (%) in present series*	*Percentage(%) in NWTS-5*
I	14	74	25
II	3	16	29
III	2	10	31
IV	-	-	15

Table 3: Wilms' tumor – Comparison of results

Stage	*Histology*	*No. of cases*	*% of survival*	
			Present series	NWTS-5
I	FH	10	80	95
II	FH	5	70	91
II	UH	4	Lost follow-up	88
III	UH	1	0	88

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