Original Research Paper

Volume - 11 | Issue - 08 | August - 2021 | PRINT ISSN No. 2249 - 555X | DOI : 10.36106/ijar

Paediatrics

STUDY OF DIFFERENT TREATMENT MODALITIES IN PATIENTS OF WILMS TUMOUR IN PEDIATRIC AGE GROUP

Dr. Gire Pooja	Resident Doctor, Department Of Pediatric Oncology. Government Medical College And Cancer Hospital Aurangabad.
Dr. Aditi Lingayat	Professor And Head, Department Of Pediatric Oncology Government Medical College And Cancer Hospital Aurangabad.
Dr. Puja Totala	Assistant Professor, Department Of Pediatric Oncology. Government Medical College And Cancer Hospital Aurangabad.
Dr. Aziz Farookh*	Associate Professor, Department Of Pediatric Oncology. Government Medical College And Cancer Hospital Aurangabad. *Corresponding Author

ABSTRACT **BACKGROUND:** Wilms tumor or nephroblastoma is the most common genitourinary malignant tumor in children. It is classically managed by multimodal treatment which involves surgery, radiotherapy and chemotherapy.

METHODS: It is a retrospective observational study. We reviewed the clinical records of children with wilms tumor. we excluded patients > 14 years age and the one who lost to follow up.

RESULTS:43 pediatric patients with wilms tumor were enrolled in present study. Most common age group was 1 to 5 years (65%). There was male preponderance with male to female ratio of 1.5 :1. Majority of patients (55.82%) presented in stage 3. Most common histology was intermediate risk histology found in 67.44%. Most common presenting symptom was abdominal mass seen in (41%) patients. Similarly, most common sign was abdominal lump seen in 42 patients (58.3%). We found that multimodality treatment which was combination of chemotherapy, surgery and radiation was the most common mode of therapy. The overall survival was 83.73%.

CONCLUSION: In present study, most common presenting age group for wilms tumour was 1-5 years. There was male preponderance with male to female ratio 1.5:1. Most of the patients presented in stage 3 and most common histology was intermediate risk histology. Most common symptom was abdominal mass and most common sign was abdominal lump. Most patients with wilms tumor had overall good survival outcomes with use of multidisciplinary treatment approach which uses combination of Chemotherapy, surgery and radiation therapy

KEYWORDS : Wilms tumor,radiotherapy,chemotherapy.

INTRODUCTION:

Wilms tumor is the most common malignant renal tumor in children (1). It affects one in 10,000 children and accounts for 5% of all childhood malignancies (3). The peak incidence is between 2 and 5 years of age and patients usually present with abdominal mass (4). Although inherited as an autosomal dominant mode, most patients are sporadic (1).

The most important prognostic determinants in wilms tumor management are histopathology, response to chemotherapy and clinicopathological staging (6). National Wilms Tumor Study Group (NWTSG)/Children Oncology Group (COG) and The International Study of Pediatric Oncology (SIOP) provide two different strategies for the initial treatment of Wilms tumor in children. COG recommends upfront surgery before chemotherapy. Whereas SIOP approach favours pre -operative chemotherapy for all cases except very young infant <6months of age, where primary nephrectomy is recommended. SIOP recommends whole abdominal radiotherapy for patients with intermediate risk and high-risk histology and patients with tumour rupture or peritoneal deposits. Pulmonary radiation is indicated for lung metastasis lacking complete response after 10 weeks postoperative period (1). Nowadays, there is improvement in survival due to multidisciplinary approach to treatment (2).

The aim of this article is to report information on different modalities of treatment used for Wilms tumor in our institute. Also, we studied outcome of patients. These will help in managing patients of Wilms tumor in future.

MATERIALS AND METHODS:

This is retrospective observational study conducted at Government Medical College and Cancer Hospital, Aurangabad. Patients of wilms tumour treated in paediatric oncology OPD, IPD and day care from May 2019 to May 2021 over a period of 24months were identified. Approval from institutional ethical committee was taken.

Clinical case records of all these patients were analysed in detail for demographic profile, clinical features, imaging studies, treatment received and outcome. The hospital protocol for workup of these patients included proper history and examination, laboratory studies for renal function, liver function and a complete blood count. Also, we perform Imaging studies like abdominal ultrasound/doppler ultrasound/contrast enhanced computed tomography (CECT) of abdomen to evaluate for the nature and extent of mass and CECT chest to rule out lung metastases. Patient undergoes Biopsy for histopathology and immunohistochemistry and categorised as low risk, intermediate risk and high-risk histology according to SIOP treatment approach (3). At our institute, we deliver appropriate modality of treatment in the form of chemotherapy, surgery and radiotherapy according to SIOP protocol 93-01(7). Also patient receives supportive treatment in the form of blood and blood products, antibiotics, iv fluids and GCSF as required.

We noted Outcome of all patients in the form of survivor and death.

RESULTS:

43 paediatric patients of wilms tumour were enrolled using clinical case records.

Table 1: General characteristics and clinical profile of patients with wilms tumor.

Characteristics	No of patients	Percentage
Age distribution [years]		
0-1	6	14%
1-5	28	65%
5-14	9	21%
Total	43	100%
Sex distribution		
Male	26	60.47%
Female	17	39.53%
Total	43	100%
Stage at presentation		
I	2	4.65%
II	3	6.98%
III	24	55.82%
IV	12	27.90%
V	2	4.65%
Total	43	100%

Histology		
Low risk	3	6.97%
Intermediate risk	29	67.44%
High risk	11	25.58%
Total	43	100%
Symptoms		
Abdominal mass	41	41%
Abdominal pain	17	17%
Fever	16	16%
Burning micturition	12	12%
Hematuria	8	8%
Nausea,vomiting,diarrhoea	6	6%
Total	100	100%
Signs		
Abdominal lump	42	58.30%
Hypertension	13	18.05%%
Bleeding diathesis	5	6.94%
Metastasis	12	16.66%
Total	72	100%

Table 1 shows general characteristics and clinical profile of patients with wilms tumour. In our study, most common affected age group was 1 to 5 years [28(65%)].There was male preponderance with 26(60.47%) patients being male and 17(39.53%) were females, with male to female ratio of 1.5:1.Majority of the patients were in stage 3 [24(55.82%)] on diagnosis as shown in table 1. Most of the patients 29(67.44%) had intermediate risk histology. Most common presenting symptom was abdominal mass seen in 41(41%) patients and most common sign was abdominal lump seen in 42(58.30%) patients.

Table 2: various treatment modalities used in wilms tumour.

Treatment Modalities	No of patients	Percentage
Surgery+chemotherapy+Radiation	34	79.06%
Surgery+chemotherapy	5.	11.62%
Only Chemotherapy	4	9.32%
Total	43	100%

Table 2 shows various treatment modalities used in patients of wilms tumour in our study. We found that majority of patients 34(79.06%) received combination of chemotherapy, surgery and radiation.

Table 3: Outcome of patients with wilms tumour

Outcome	No of patients	Percentage
Survivor	36	83.73%
Death	7	16.27%
Total	43	100%

Table 3 shows outcome of patients with wilms tumour. In present study, 36(83.73%) cases survived while, 7(16.27%) cases died.

DISCUSSION:

43 patients of wilms tumour were enrolled in this study. Age group between 2 to 5 years was the most common age at presentation seen in 65% patients in present study, similar to most other studies like wang J et al (1), joseph M.et al (5), Guruprasad et al (8). We found male preponderance (60.47%) in our study, which is similar to most published Indian and Asian literature like B. Guruprasad et al (8) and Hung IJ et al (14). However, Wissam Rabeh et al (2) in their study found female preponderance (62%). This could be due to different geographical location as later study was done in Lebanon.

The most common presenting symptom in our study was abdominal mass seen in 41 patients (41%), similar finding was seen in Elwira Szychot et al (3),B Guruprasad (8). Whereas abdominal pain (83%) and haematuria was the common symptom documented by Reinhard et al (13). This difference in presentation could be because this study was conducted in adult population. Most common sign in our study was abdominal lump seen in 42 patients. Similar finding was seen in Elwira Szychot et al (3), B Guruprasad (8). Most of the patients in present study presented in stage 3 (55.82%) followed by stage 4, similar to other studies like wissam Rabeh et al (2), b.Guruprasad et al(8).

However, this is in contrast to other larger studies like NWTS gssroup (15) which have bulk of their patients presenting in stage 1 and stage 2. This can be attributed to early referral and higher awareness in developed countries as this study was conducted in Philadelphia. Most common histology was intermediate risk histology seen in 67.44% patients similar to wissam Rabeh et al (2) and fadoua Rais et al (10).

In present study most commonly used treatment modality was multimodality treatment (sugery+chemotherapy+radiotherapy). Similarly, fadousa Rais et al (10) also used multimodality as most common treatment as they also treated patients as per SIOP protocol. While W. Rabeh et al (2) found combination of surgery and chemotherapy (57%) as most common treatment modality and they treated patients as per COG protocol. This difference could be attributed to different stage of presentation and different treatment protocols. Though Lopes RI et al(17) documented overall survival rate for patients treated by both guidelines is similar and around (90%). In our study overall survival was 83.73% and mortality was 16.27%. This is comparable to survival rate of 85.2% of Guruprasad et al study (8). While earlier studies like Sen S et al (16) recorded low survival of 60%.This low survival rate could be because study was conducted before advent of multimodal treatment.

CONCLUSION:

Most common presenting age group for wilms tumour was 1-5years.There was male preponderance with male to female ratio 1.5:1. Most of the patients presented in stage 3 and most common histology was intermediate risk histology. Most common symptom was abdominal mass and most common sign was abdominal lump. We found multimodality treatment was the most common treatment approach and majority of patients survived in our study. outcome of wilms tumor improved over period with use of multidisciplinary treatment approach with combination of chemotherapy, surgery and radiation therapy.

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