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Original Research Article

A Study of Histopathological Features in Wilms Tumour in Correlation with Staging

Dr. B. Pushpa[1], Dr. K. Duraisamy[2*]
[1]Professor of Pathology, Government Kilpauk Medical College, Chennai, India
[2]Associate Professor, Blood Bank, Government Royapettah Hospital, Chennai, India

***Corresponding author:** Dr. K. Duraisamy
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Abstract

Wilms' tumor is the commonest renal tumor occurring in 1:10000 children worldwide. One of the important determinants of outcome in childrens are Histopathological features it helps in assessing prognosis and treatment. It is a retrospective study 60 children found to have wilms' tumor. In our study all cases showed favourable histology 100%, triphasic pattern was seen in 43.3% and monophasic pattern accounted for 56.6% of which the epithelial predominance was seen in 38%, blastemal in 44% and FWRT in 18% which is helpful in assessing outcome of children with wilms' tumor.

Keywords: Wilms' tumor, renal, children.

INTRODUCTION

Wilms' tumor is the most common pediatric malignancy with 80% occurring in 1-5 years of age [2]. It is derived from primitive metanephric blastema and is characterized by histopathologic diversity. Classical wilms' tumor composed of blastema, tubules and stromal elements has led to term triphasic with favourable outcome [1]. Wilms' tumor also occur in biphasic or monophasic pattern.Anaplasia is rarely seen in wilms' tumor occurring less than 2 years but its presence related to the poor prognosis. Criteria for anaplasia are as follows: 1) Macronucleation characterized by atleast threefold enlargement as compared with the nuclei of adjacent tumor cells. 2) Hyperchromasia of the enlarged nuclei. 3) Markedly enlarged multipolar mitotic figures [3].

MATERIALS AND METHODS

The tumor board records and medical record of each patient treated for wilms' tumor collected from department of pathology, ICH and HC in Chennai from 1999 to 2003 and reviewed retrospectively.Total of 60 cases were taken and histological features studied with routine haematoxylin and eosin staining under light microscope. Other details like age, sex, onset, duration, size, and site were noted. Clinicopathological correlation was done.

RESULTS AND OBSERVATIONS

All cases included in our study showed favourable histology(100%).triphasic pattern accounted for 43.3% and monophasic pattern was seen in 56.6% of cases of which the epithelial predominance was seen in 38% blastemal in 44% and FRWT in 18%.

In our study the percentage of wilms' tumor with triphasic pattern was 43.2% and monophasic pattern was 46%.

Table-1: Histology criteria for prognosis

Condition	No	Histology	Number of cases
Favourable	1	Triphasic	26
Favourable	2	Monophasic a)Epithelial b) Blastemal c)FRWT	 13 15 6
Un favourable	1	Anaplasia	0
Un favourable	2	MRTK	0

Table-2: invasion

	No of cases	Histological Types
Capsule invasion	15	Wilms' tumor-Triphasic
Vascular invasion	12	Wilms' tumor-Triphasic
Capsule/Vascular invasion	27	Wilms' tumor-Triphasic
Parenchymal Invasion	14	Wilms' tumor-Triphasic
Hilus /Renal sinus Invasion	12	Wilms' tumor-Triphasic Wilms' tumor-Epithelial

In our study, stage II was found to be maximum accounting for 41.7 %, followed by stage III -36.7% , Stage I – 11.7% , stage IV – 10%. CDPN accounted for 5% of cases in our study.

Table-3: Staging

stage	Number of cases
I	7
II	25
III	22
IV	6

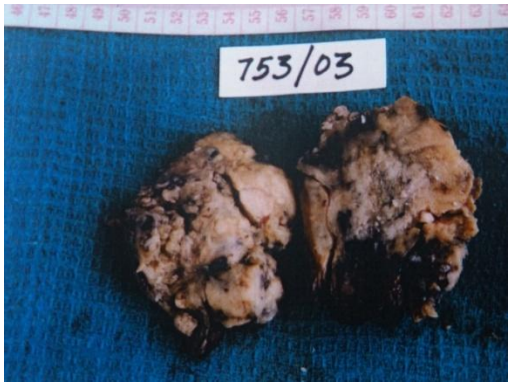

Fig-1: Gross section of tumor showing grey solid areas with haemorrhage and necrosis

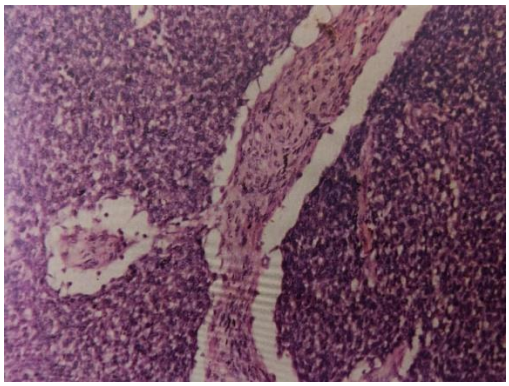

Fig-2: monophasic pattern 200x showing blastemal cells

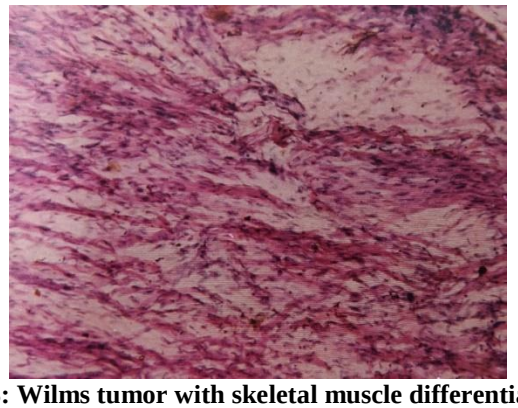

Fig-3: Wilms tumor with skeletal muscle differentiation

DISCUSSION

Wilms' tumor is the most common malignant renal tumor in children that arise from persistent primitive embryonal tissue. Approximately 80% of children with this tumor present between 1-5 years of age [2].

The incidence was 7.6% of all malignant tumors of childhood [4]. Wilms' tumor appears to more common in males with M:F ratio 4:1 (4). Left side was commonly involved (60.9%).Tumors tend to arise in the periphery of the kidney sparing the central collecting system. Children with wilms' tumor present with abdominal mass.Typical wilms' tumor is a single well circumscribed lobulated mass. The resected surface is pale tan to gray in color with foci of necrosis, haemorrhage and cyst formation. Most tumors are unicentric and solitary.

Classic wilms' tumor is triphasic containing epithelial, blastema and stromal cell lines [7]. Not all tumor however contain all cell lines. The proportion as well as degree of differentiation of cell lines is highly variable from one tumor to the next [7]. Anaplasia is rarely seen in tumors of patients younger than 2 years of age [9]. The prognosis of children with wilms' tumor is heavily dependent upon the presence of anaplasia. The percentage of wilms' tumor with triphasic pattern was 43.2% and monophasic pattern was 46%.The most important determinants of outcome in children with wilms' tumor are the histopathology and the tumor staging. In our study intracaval extension was present in one child with wilms' tumor.Hematogenous metastasis was recognised in lung,para aortic lymph nodes and liver [8]. In our study all cases had favourable histology. Wilms' tumor with favourable histology: wilms' tumor without anaplasia, wilms' tumor with focal anaplasia in any stage and wilms' tumor stage-I with diffuse anaplasia. Wilms' tumor unfavourable histology: Diffuse anaplasia stage II,III,IV.

CONCLUSION

Through better understanding of pathological diagnosis, refined surgical staging, newer and more effective radiological techniques and standardized multimodal therapies, a substantial number of children diagnosed with this highly malignant tumor can expect to survive their disease. Further use of cytogenetics and molecular genetic techniques may lead to better understanding of the oncogeneic molecular events, thereby refining risk based therapy on wilms' tumor.

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