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Original Article

Histopathological Patterns of Renal Tumours Seen in Nephrectomy Specimens: A Three Year Experience at a Tertiary Care Hospital in Western Part of Rajasthan

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ABSTRACT

Background: Renal tumours comprise a diverse spectrum of neoplastic lesion. A wide variety of both benign & malignant tumours arise from different component of renal parenchyema, notably tubular epithelium.

Aim: This study aimed to assess the pattern of renal tumours in nephrectomy specimens, observe variation if any from the conventional pattern for proper postoperative management.

Material and Methods: A hospital based three years study included 53 nephrectomy specimens received in the Department of Pathology, Sardar Patel Medical College and Associated Group of Hospitals, Bikaner, over a period of three years (January 2011 to December 2013) were subjected for histopathological examination. Specimens were processed and stained with H&E and special staining.

Results: Most common incidence was of malignant tumours in which renal cell carcinoma constitutes largest group, followed by wilm's tumour. It was observed that renal cell carcinoma 41(77.35%) was most prevalent in the 51-60 year age group. Mean age for male was 54.10 years whereas in female it was 44.55 years.

Conclusion: Renal cell carcinoma has the highest occurrence in the malignant renal cases, followed by wilm's tumour.

KEYWORDS: Malignant renal tumour, Nepherectomy, Renal cell carcinoma.

INTRODUCTION

Primary malignant neoplasm of the renal parenchyma includes renal adenocarcinoma (70-80%), nephroblastoma & various sarcomas of different histologic type. Benign neoplasms are adenoma, oncocytoma & metanephric adenoma and angiomyolipoma. Epithelial tumors are the most common comprising about 58% of all renal tumors & 87% of all malignant renal neoplasms[1]. Wilm's tumour,though ranked fifth in frequency among childhood solid tumours.Wilm's tumour is the most common chiloodhood abdominal malignancy.[2] It is seen primarily in infants, 50% of the cases before the age of 3 years and 90% before the age of 6 years[3].

Renal cell carcinoma is the most common primary malignant tumor of the kidney (85%) worldwide and constitutes 2-3% of all visceral malignancies in adults[4]. Men have higher incidence than women (approximately 1.6:1) and vast majority were diagnosed after 65 yrs.

Histologic subtype according to the Heidelberg classification[5] of Renal cell carcinoma include clear cell ("conventional") adenocarcinoma (80%), papillary (15%), chromophobe (5%), collecting duct (1%), and unclassified (4%).[6,7] Primary squamous cell carcinoma of the kidney is a very rare entity.[8] The incidence of renal squamous cell carcinoma among renal tumour is in the range of 0.5-0.8%.[9] The greatest risk factors for renal malignancies are smoking, obesity, hypertension, occupational exposure of some chemicals & long term uses NSAIDS.[10]

Common clinical presentations include pain, palpable mass and haematuria. Other constitutional symptoms are fever, weakness, weight loss & malaise.[11]

Kidney involved in various pathological processes, some of which may require its surgical removal. Nephrectomy is common procedure in surgical practice.[12] Both benign and malignant tumours occur in the kidney. The kidney

are affected by different malignant tumours: 99 percent of renal neoplasm are malignant, with renal cell carcinoma and wilm's tumour being the most common.[13] The main diagnostic tool for detecting renal cell carcinoma is ultrasound, CT scanning and MRI[14]. If the ultrasound shows a mass or cyst, a subsequent CT or MRI with intravenous contrast is the optimal test for diagnosis and staging[15]. A detailed and meticulous histopathologic examination of tumour nephrectomy specimens is essential histologic type and to record accecpted histopathological prognostic determinates i.e., tumour size, histologic subtype, nuclear grade and stage in case of malignant renal tumours[1].

The objective of this study was to assess the patterns and morphology of tumours in nephrectomy specimens in a tertiary care hospital, observe variations if any from the conventional pattern, and clinico-morphological correlation for appropriate postoperative management.

MATERIALS AND METHODS

This study was hospital based prorospective study, which was carried out in the Department of Pathology, Sardar Patel Medical College and Associated Group of Hospitals Bikaner, including all clinically suspected and microscopically verified cases in nephrectomy specimens.

Histopathological examination of surgical specimens and biopsies were carried out. A properly completed surgical pathology requisition form having patient's identification, age, sex, essential clinical data, findings, investigations such as CT scan, USG and other relevant investigations were also noted.

These biopsies were received in 10% formalin. Gross features of the specimens received, were recorded. Representative sections taken and after processing tissue was embedded in paraffin wax to make blocks after making section in microtome, staining was carried out with Haematoxylin and eosin (H & E) stain / or special stain when required.

RESULTS

This study provides a fair insight into the histological patterns of tumours in nephrectomy specimens in our institution. Among 53 cases, 34 (64.1%) men and 19 (34.84%) women. The mean age of patient at surgery was 54.10 in men and 44.55 in women.

27 Cases underwent radical nephrectomy and 26 cases underwent partial nephrectomy based on the pathological assessment of the patient undergoing surgical treatment with the preoperative diagnosis of renal tumour, 48 (90.56%) cases had malignant, 5 (9.43%) cases had benign.

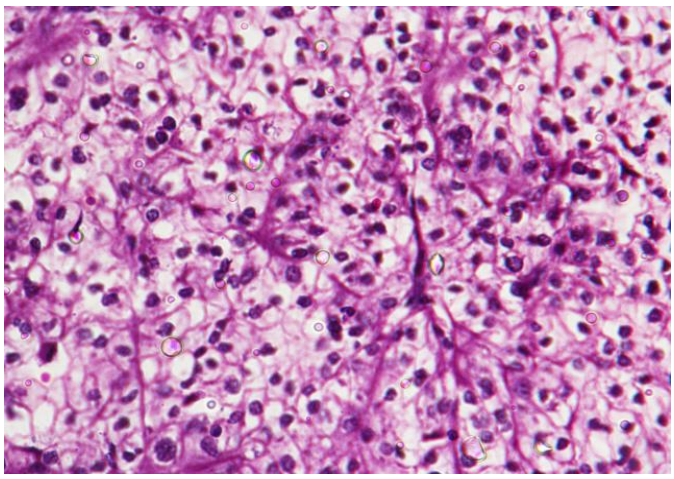

Fig 1: Renal cell carcinoma (Clear cell type).

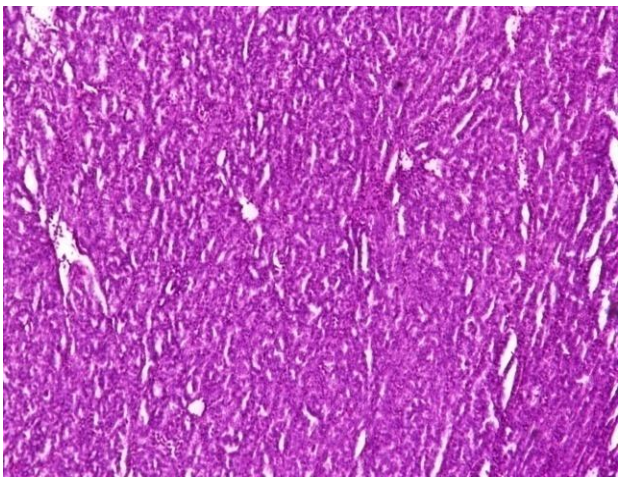

Fig 2: Papillary cell carcinoma

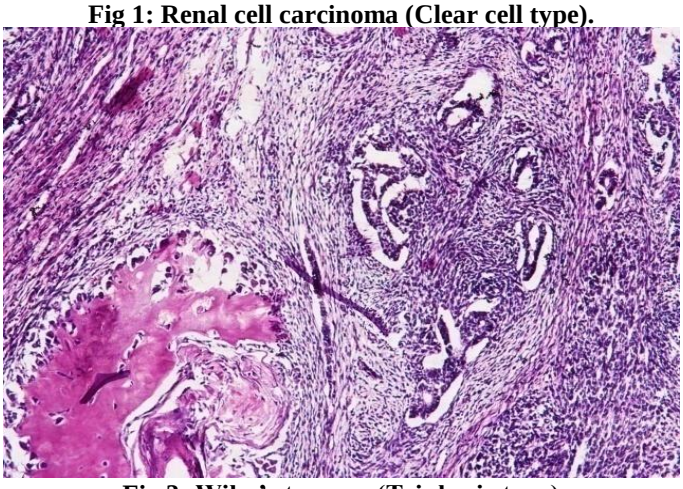

Fig 3: Wilm's tumour (Triphasic type)

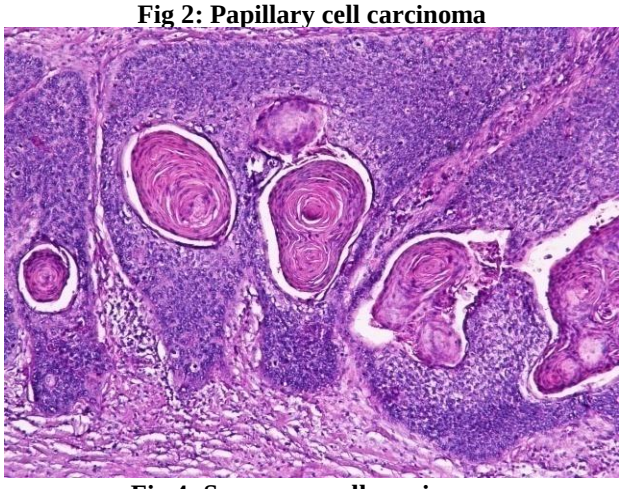

Fig 4: Squamous cell carcinoma

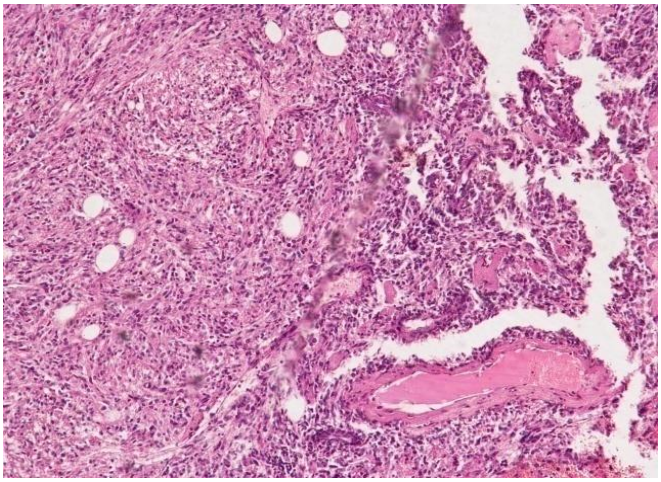

Fig 5: Angiomyolipoma

DISCUSSION

RCC, the eight most common malignancy affecting adults, accounts for between 3% to 4%, solid tumours and approximately 85-90% of all parenchymal renal tumours. RCC is most common in men then in women [ratio2:1], Most tumours present in fifth to seventh decade of life.[1] In our study maximum incidence of renal tumorous conditions is in age group 51-60 years (31.7%). This finding is consistent with study of Reddy et al[4] (27.43%). In pediatric age group incidence is (7.54%) which is comparable with study of Reddy et al[4] (8.85%) and Aimen et al[17].Incidence of both benign (9.4%) and malignant (90.56%) renal tumours is comparable with study of Gunes Mustafa et al[18] while incidence of benign neoplasm is lower and malignant neoplasm higher in study of Latif et al[1] and Reddy et al[4]. Among nephrectomy specimens, 64.15% were males and 34.82% of males, M:F=2:1 The youngest age group of renal tumour case found in one year old patient while the oldest age was a 85 year old patient. In our study, mean age of renal tumorous was 50.85±18.25 years which is consistent with study of Dinesh Pradhan et al[19] and Latif et al[1].In our study 2 cases (3.77%) of oncocytoma, 2cases (3.77%) of angiomyolipoma and one case (1.88%) of multicystic nephroma were reported and having female predilection. Transitional cell carcinoma with only one case (1.88%). It is the most common type of cancer affecting renal pelvis, originated from the urothelial lining of renal pelvis.[20] Both transitional and squamous cell carcinoma seen in male adult patient.

Table 1: Gender wise distribution of benign & malignant lesion

Lesions	Males	Females
Benign	-	5
Malignant	34	14
Total	34	19

Table 2: Age wise distribution of nephrectomy specimens

Age group (Years)	No of cases (n=53)	% Age
0-10	4	7.54
11-20	-	-
21-30	-	-
31-40	8	15.09
41-50	12	22.64
51-60	17	32.07
61-70	9	16.98
71-80	2	3.77
>80	1	1.88

Table 3: Age distribution of renal tumours

Age (Years)	Wilm's tumour	RCC	TCC	SCC	Oncocytoma	Angiomyo Lipoma	Multicystic nephroma
0-10	4	-	-	-	-	-	-
11-20	-	-	-	-	-	-	-
21-30	-	-	-	-	-	-	-
31-40	-	7	-	-	-	-	1
41-50	-	6	1	-	1	1	-
51-60	-	16	-	1	-	-	-
61-70	-	6	-	1	1	1	-
71-80	-	2	-	-	-	-	-
>80	-	1	-	-	-	-	-

Table 4: Distribution of common renal malignant tumours

Types	Numbers	%
Wilm's tumour	4	8.33
RCC	41	85.41
TCC	1	2.08
SCC	2	4.16
Total	48	100

Table 5: Incidence of different renal tumours in various studies

Studies	Year	Benign	Malignant	Total
Latif et al[1]	2011	3(6%)	47(94%)	50
Reddy et al[4]	2012	7(6.19%)	106(93.8%)	13
Gunes Mustafa et al[18]	2012	13(15.7%)	70(84.33%)	83
Our Study	2014	5[9.4%]	48[90.56%]	53

CONCLUSION

This study provides a fair insight into the histological patterns of renal tumours in nephrectomy specimens and its correlation with studies conducted across the world. Follow up of patient is suggestive to know the prognosis and further evaluation.

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