

Histopathological Spectrum of Lesions in Nephrectomies— A Five Year Study

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Abstract: ***Introduction:** The indications of nephrectomy include different conditions such as irreversibly damaged kidney in chronic infections, obstruction, calculus disease or severe traumatic injury. Other indications include unilateral parenchymal damage due to nephrosclerosis, pyelonephritis, vesicoureteric reflux and renal cell carcinoma. **Objective:** The aim of this study is to categorize the different histopathological conditions observed in the nephrectomy specimens and their clinico- morphological correlation over a period of five years so as to study the indications and prevalence of different conditions in our centre and compare with studies conducted elsewhere. **Material and methods:** A total of 65 nephrectomy specimens over a period of five years were included in our study (January 2011 to December 2015) . The clinical details and all relevant data were considered. **Result:** Benign conditions which led to nephrectomy were seen in 27 cases and malignant in 38 cases .The male: female ratio was 1.7:1. **Conclusion:** In our study the commonest indication of nephrectomy was renal cell carcinoma with a total of 30 cases followed by chronic pyelonephritis which was found in 17 cases. The relative decrease in benign cases was due to better non invasive and early management of benign conditions.*

Keywords: Nephrectomy, Histopathological study, Kidney, Benign, Malignant

1. Introduction

The kidney can be involved in a number of pathological conditions, some of them require nephrectomy. Simple nephrectomy is indicated in patients with irreversibly damaged kidney in different benign pathological conditions like symptomatic chronic infections, obstruction, calculus disease or severe traumatic injury. Nephrectomy may also be indicated to treat renovascular hypertension due to non-correctable renal artery disease or in severe unilateral parenchymal damage resulting from nephrosclerosis, pyelonephritis, vesicoureteric reflux, and congenital dysplasia.⁽¹⁾

Radical nephrectomy is the treatment of choice for patients with renal cell carcinoma⁽²⁾.

Both benign and malignant tumours can occur in the kidney. The most common malignant tumour is renal cell carcinoma, followed by Wilmstumour .Renal cell carcinomas represent 1% to 3% of all visceral cancers and accounts for 85% of renal cancers in adults. The tumour occurs most often in older individuals usually in the sixth and seventh decades of life, showing a male preponderance in the ratio of 2 to 3:1⁽³⁾.The treatment for most of the renal tumours is their surgical removal, either by radical nephrectomy or partial nephrectomy.

The common non neoplastic conditions for which nephrectomy is performed are obstructive nephropathy, chronic pyelonephritis ,hydronephrosis and xanthogranulomatous pyelonephritis.

The objective of this study was to review all cases of partial or complete nephrectomy specimens received in the department of pathology and to evaluate the different histomorphological lesions observed, along with clinical

correlation, indications and trends in the incidence of different benign or malignant condition.

2. Material and Methods

The present study was conducted in the Department of Pathology in collaboration with the Department of Urology, J .L.N. Medical College and Hospital, Ajmer over a period of five years (January 2011 to December 2015)

All nephrectomy specimens submitted to the Department of Pathology were considered in the study. The age, sex, clinical history, IVP, MRI, CT and any other relevant investigation findings were noted from patient clinical records.

Nephrectomy specimens were examined and gross sections from representative areas were taken and processed. Slides were stained by H&E and special stains as required.

3. Result

A total of 65 nephrectomies were examined over a period of five years (from January2011 to December 2015) out of which there were 41 males (63.07%) and 24 females (36.92%) . The male : female ratio was 1.70:1 (Table -1)

Table 1: Gender- wise distribution of nephrectomies

Year	male	Female	Total
2011	10	1	11
2012	11	6	17
2013	14	9	23
2014	6	1	7
2015	-	7	7
Total	41	24	65

The highest number of patients belonged to the age group 51-60 years(19 cases) followed by those in the age group 41-

50 years(17 cases) . The age wise distribution of all patients of nephrectomy is depicted in table 2

Table 2: Age wise distribution of nephrectomies

Age group	No: of cases
0-10 years	3
11-20 years	-
21-30 years	8
31-40 years	8
41-50 years	17
51-60 years	19
61-70 years	7
>70 years	3
Total	65

The different histopathological diagnosis of nephrectomies over a period of five years is shown in Table -3

Table 3: Histopathological diagnosis in nephrectomy specimens

S.No.	Histopathological diagnosis	No. of cases
1	Chronic pyelonephritis	17
2	Xanthogranulomatouspyelonephritis	1
3	Hydronephrosis	7
4	Pyonephrosis	1
5	Renal Cell Carcinoma	30
6	Wilms tumour	3
7	Urothelial Carcinoma	2
8	Squamous cell carcinoma	2
9	Oncocytoma	1
10	Malignant Melanoma	1

Nephrectomy was done for malignant tumours in 38 cases (58.46%) and for benign conditions in 27 cases (41.53%)

Table 4: Percentage incidence of benign and malignant conditions

Conditions	No of cases	Percentage
Benign conditions	27	41.53%
Malignant tumours	38	58.46%

Out of the 38 cases of malignant tumours the incidence of Renal cell carcinoma was highest with a total of 30 cases (78.94%), followed by Wilms tumour -3 cases and 2 cases each of urothelial carcinoma and squamous cell carcinoma and one case of malignant melanoma.

Table 5: Types and number of malignant conditions

S no	Malignant tumors	No of cases	Percentage
1	RCC	30	78.94%
2	Wilmstumor	3	7.89%
3	Urothelial carcinoma	2	5.26%
4	Squamous cell carcinoma	2	5.26%
5	Malignant melanoma	1	2.6%
	Total	38	

Of the benign conditions- chronic pyelonephritis was the commonest histopathological condition observed with a total of 17 cases. There were 7 cases of hydronephrosis and one case of xanthogranulomatous pyelonephritis, and one case of pyonephrosis.

There was one benign tumour –oncocytoma.

Majority of the nephrectomies were for Renal cell carcinoma (30 cases) followed by chronic pyelonephritis (17 cases)

Clinical presentation

The most common clinical presentation observed was flank pain, followed by hematuria, abdominal lump and fever.

4. Discussion

The results of this study enables us to pathologically classify the indications of nephrectomy in our centre. Out of the 65 cases of nephrectomies during the study period, 38 cases(58.45%) were malignant and 27 cases (41.53%) were benign. The relative increase in malignant cases is due to a considerable decrease in nephrectomy for benign conditions. The likely reasons for this is a better non-invasive and early management of renal stones, urinary tract infections and hypertension before complications occur hence a decrease in the need for nephrectomy in such cases. The number of male cases of nephrectomies were 63.07% and females were 36.92% with a male:female ratio of 1.7:1. This was in concordance with El malik et al who reported 61% nephrectomy specimens in males and 39% in females with M:F = 1.9:1.⁽⁴⁾ Aiman et al also reported a male preponderance in their study.⁽⁵⁾

In this study the most common indication of nephrectomy was renal cell carcinoma followed by chronic pyelonephritis.

Among the malignant cases, Renal cell carcinoma was the commonest malignancy with an incidence of 78.9% .This was similar to the studies of Popat et al who found in their study that 70% of malignant lesions were renal cell carcinoma.⁽⁶⁾ Similar findings were reported by Mohammad Rafique who observed that majority of malignant neoplasms of the kidney(97%) were renal cell carcinomas.⁽⁷⁾ Among the renal cell carcinomas left sided involvement was slightly more (19 cases) than right side (11 cases). This finding was similar to that observed by Datta et al in their study.⁽⁸⁾ Similar findings were observed by bashir et al⁽⁹⁾ and Mahesh kumar et al⁽¹⁰⁾ who reported nephrectomies for malignant conditions as 89.13% and 54.5% respectively.

In our study clear cell type of renal cell carcinoma was the commonest -25 cases(83%) followed by 3 cases of granular cell type(10%) and 2 cases of papillary type (6.6%)

There were 3 cases of Wilmstumor one was a 11 month old child another a 4 year old and yet another a 7 year old child confirming it as the commonest childhood tumour.

Primary squamous cell carcinoma is very rare only one case was reported in our study. The incidence of renal squamous cell carcinoma among malignant renal tumors is in the range of 0.5-0.8% ,as reported by Lie et al⁽¹¹⁾ and Blacher et el.⁽¹²⁾

There were 2 cases (6.6%) of urothelial carcinoma observed in our study for which nephrectomy was performed. In different studies renal pelvis tumors accounted for approximately 10% of all renal tumors.

There was one benign tumour –oncocytoma, in our study.it is estimated that oncocytomas comprise 3.2% to 7% of all primary renal neoplasms.

Among the benign non neoplastic conditions , chronic pyelonephritis was the commonest indication of nephrectomies in our study. This was similar to the findings by Adamson et al⁽¹³⁰⁾, el malik et al. There was one case of xanthgranulomatouspyelonephritis similar to the findings of popat et al.

This study provides a list of the common indications of nephrectomies in our institution and its correlation to studies conducted elsewhere.

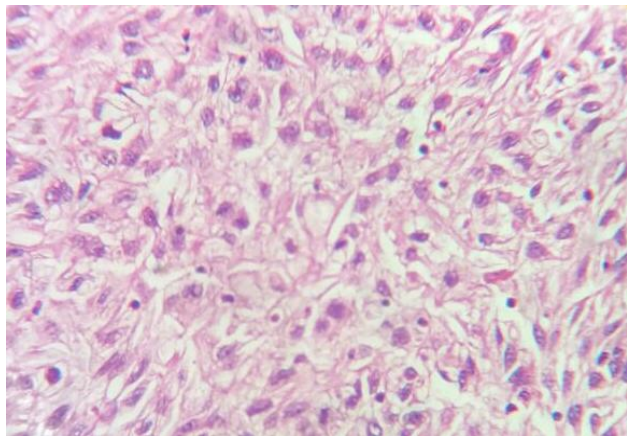


Figure 1: Renal Cell Carcinoma

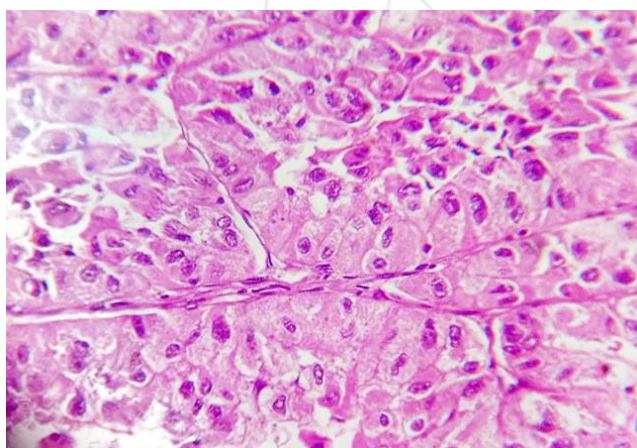


Figure 2: Renal Cell Carcinoma

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