

HISTOPATHOLOGICAL SPECTRUM OF NON-NEOPLASTIC & NEOPLASTIC LESIONS IN NEPHRECTOMY SPECIMENS

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ABSTRACT

INTRODUCTION

Nephrectomy is a common urological procedure done for a variety of conditions like chronic infections, obstruction, injury and neoplasms.

AIMS AND OBJECTIVES

To study the histopathological spectrum of non-neoplastic and neoplastic lesions in nephrectomy specimens in Manipur, India.

MATERIALS AND METHODS

This prospective study from the period of April 2013 to March 2015 was conducted in the Department of Pathology, Regional Institute of Medical Sciences, Imphal, Manipur. All the nephrectomy cases from the period of April 2013 to March 2015 were included in the study.

RESULTS

A total of 49 cases were studied during the study period. Non-neoplastic lesions comprised of 42 cases (85.71%) & neoplastic lesions was 07 cases (14.29%). Chronic pyelonephritis predominated in the non-neoplastic group & in the neoplastic group renal cell carcinoma was the commonest.

CONCLUSION

Chronic pyelonephritis is the commonest lesion in nephrectomy specimens with female predominance and renal cell carcinoma is the commonest malignant tumour encountered.

KEYWORDS

Chronic pyelonephritis, Renal cell carcinoma (RCC), Transitional cell carcinoma (TCC), Nephrectomy.

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INTRODUCTION: In urological practice, nephrectomy is a common practice. It is indicated for non-neoplastic conditions (chronic infections, obstruction, calculus disease or severe traumatic injury) and neoplasms (benign and malignant tumours). Chronic pyelonephritis, obstructive nephropathy and hydronephrosis is the most common type of nephrectomy specimen for non-neoplastic conditions¹ whereas in the neoplastic group, renal cell carcinoma or hypernephroma is the most common. It originates from the lining of the proximal convoluted tubules and accounts for more than 90% of all renal malignancies^{2,3} and approximately 2% of adult malignancies.¹ Most common malignant tumour in adults is renal cell carcinoma and Wilms tumour in childhood Urothelial tumours of calyces and pelvis are rare.⁴

The aim of this study was to study the histopathological spectrum of non-neoplastic and neoplastic lesions in nephrectomy specimens.

MATERIALS AND METHODS: After obtaining the approval of our medical ethical committee this study was conducted at Regional Institute of Medical Sciences, Imphal, Manipur & is a prospective study from April 2013 to March 2015. Required relevant clinical details were obtained from the case sheets. All the specimens were fixed in 10% formal – saline, then processed into paraffin embedded sections & stained with haematoxylin & eosin.

RESULTS: Out of 49 cases, 42(85.71 %) and 07(14.29 %) were non-neoplastic and neoplastic respectively. 20 cases (40.82 %) were males and 29 cases (59.18 %) were females [Table I]. The male to female ratio was 1:1.4. The peak age of incidence was between 41-50 years [Table II]. The youngest patient was 6 years old and the oldest patient was 75 years old. The spectrum of pathological lesions included inflammatory lesions, benign and malignant tumours. Right kidney (57.14%) was involved slightly more frequently than the left kidney (42.86%) in the 49 cases studied. Maximum number of cases (37) were of chronic pyelonephritis. Peak

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incidence was seen in the 41-50 years age group with female predominance. Out of 37 cases of chronic pyelonephritis 9 cases were associated with nephrolithiasis, 2 cases associated with ureterolithiasis and 1 each associated with pyonephrosis and hydronephrosis. Benign tumour accounted for one case which was an angiomyolipoma. Six malignant tumours were seen of which four were renal cell carcinomas. One case of Wilm's tumour and another of paediatric renal cell carcinoma were also seen [Table III].

Type of Lesion	Male	Female	Total
Non-neoplastic	16	26	42
Neoplastic (Benign)	00	01	01
Neoplastic (Malignant)	04	02	06
Total	20	29	49

Table I: Distribution of nephrectomy specimens according to gender

Age (years)	Non-neoplastic lesions	Neoplastic lesions		Total
		Benign	Malignant	
1-10	1	0	2	3
11-20	0	0	0	0
21-30	3	1	0	4
31-40	7	0	1	8
41-50	15	0	2	17
51-60	8	0	0	8
61-70	7	0	1	8
71-80	1	0	0	1
Total	42	1	6	49

Table II: Distribution of nephrectomy specimens according to age

Sl. No.	Lesion	No. of cases	Percentage
1	CPN	24	48.98%
2	CPN with Nephrolithiasis	09	18.37%
3	RCC	05	10.20%
4	Xanthogranulomatous Pyelonephritis	05	10.20%
5	CPN with ureterolithiasis	02	4.10%
6	CPN with pyonephrosis	01	2.04%
7	CPN with hydronephrosis	01	2.04%
8	Angiomyolipoma	01	2.04%
9	Wilms's Tumour	01	2.04%
	Total	49	

Table III: Distribution of nephrectomy specimens according to histopathological lesions

DISCUSSION: The present study was an analysis of 49 nephrectomy specimens. Out of the 49 cases, 42 (85.71 %) were non-neoplastic and 07 (14.29 %) were neoplastic lesions which is similar to the study by Shaila et al⁵ where non-neoplastic were 77.66% and neoplastic were 22.64%.

The male to female ratio of all the nephrectomy specimens was 1: 1.4 which is comparable with the study by Aiffa Aiman et al¹ and Mohammad Rafique.⁶ Other studies^{7,8,9,10} showed male predominance.

In the present study, there was slight predominance of right sided lesions which is in contrast to the studies done by Dutta et al¹¹ and Fadil et al.⁷ Similar findings were observed by Diniz et al.¹²

The most common indication for nephrectomy in this study was chronic pyelonephritis. Chronic pyelonephritis has been reported as the most common clinical indication in the studies by Popat et al,¹³ Adamson et al,¹⁴ El Malik et al,⁷ Kubba et al¹⁵ and Ibrahim Ghalayeni.¹⁶ In other studies, RCC and TCC combined were the leading cause for nephrectomy.¹⁷ Peak incidence was seen in the 41-50 years' age group. 9 cases (18.37 %) of the removed kidneys in this study contained stones. Five cases of xanthogranulomatous pyelonephritis were seen. The age range was 21-70 years with a female predominance. Similar findings were observed by other authors.^{18,19,20} Two cases of chronic pyelonephritis, one associated with pyonephrosis and another with hydronephrosis were seen.

Of the seven cases of renal tumours in this study only one (2.04 %) was benign. This was an angiomyolipoma that occurred in a 30 years old female patient. Six cases were malignant and four cases were renal cell carcinoma. This was similar to the findings of Mohammad Rafique et al⁶ who observed that the majority of malignant neoplasms (97%) of the kidney were renal cell carcinomas. Popat et al,¹³ in their study found that 70 % of malignant lesions were accounted for, by renal cell carcinoma. The histological types of renal cell carcinomas comprised, one case of clear cell type with grade 2 nuclear features, another was a case of papillary variant with grade 1 nuclear features, the third case was unclassified renal cell carcinoma with grade 3 nuclear features and the fourth case was a renal cell carcinoma with rhabdoid features with grade 4 nuclear features.

A case of paediatric renal cell carcinoma with grade 2 nuclear features was seen in an 8 years old boy. One case of Wilms tumour was seen in a six years old boy.

CONCLUSION: Nephrectomies done for non-neoplastic lesions were more common than neoplastic lesions of the kidney. Chronic pyelonephritis is the commonest lesion in the series with female predominance and renal cell carcinoma is the commonest malignant tumour seen.

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