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RESEARCH ARTICLE

HISTOMORPHOLOGICAL PROFILE OF NEPHRECTOMY SPECIMENS IN A TERTIARY CARE CENTRE OF RAJASTHAN: A CASE SERIES OF 100 SPECIMENS

Sudha Pankaj Meena, Vandana Pathak, *Deepti Sukheeja, Rajshree Bhati and Shahida Riyaz

Department of Pathology, Government Medical College and Asssociate Group of Hospitals, Kota, Rajasthan

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ABSTRACT

Introduction: Nephrectomy has been a standard surgical procedure in practice performed for neoplastic and non neoplastic conditions of kidney with end stage diesease.
Aim: A retrospective review of histopathological lesions encountered in different age group & genders among all nephrectomy specimens received in department of pathology.
Methodology: Study included total 100 nephrectomy cases over a period of 3 years from July 2013 to June 2016.
Result: In this study the most common lesions were inflammatory (66%), followed by malignant neoplasm (32%) and benign neoplasms (2%). Most common age group was 4th decade for inflammatory lesions, and 4th to 5th decade for malignant lesions. Mucin secreting adenocarcinoma in an adult was the rare lesion present in our study.
Conclusion: Common lesion encountered were chronic nonspecific pyelonephritis, followed by renal cell carcinoma. Mucin secreting adenocarcinoma in an adult was the rare lesion present in our study.

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INTRODUCTION

Nephrectomy is the standard operating procedure done for malignancy as well as non-functioning kidney arising due to chronic infections, obstructive causes, calculus and trauma. In this study, we review our experience of the indications, and histopathological features of patients undergoing nephrectomy.

MATERIALS AND METHODS

It was a retrospective study conducted for the period of three years.100 nephrectomy specimens were received in Histopathology section of Department of Pathology, Government Medical College, Kota, Rajasthan. All the patients who visited Surgery and Urology OPD with the complaints of Pain in abdomen, hematuria, recurrent Urinary tract infections and abdomen lump were included. Patients were examined and advised for radiological and laboratory investigations. Simple nephrectomy and radical nephrectomy were performed as per the indication.All the specimen were sent in 10 % formalin.

Corresponding author: Deepti Sukheeja,
Department of Pathology, Government Medical College and Asssociate Group of Hospitals, Kota, Rajasthan.

Gross examination was performed and various sections were taken from representative sites. Paraffin blocks were made and sections of 5 micron thickness were cut and stained with routine Haematoxylin and Eosin Stain. Special stains were done wherever required and microscopic examination was done.

RESULTS

Total 100 nephrectomy specimens were collected and charts were prepared. There were 54 males and 46 female patients (Table 1). Ratio of male: female was 3:1. The frequency of occurrence of various lesions were Non Neoplastic- 66% and Neoplastic 44% (Table 2). Nephrolithiasis was seen to be associated with both non-neoplastic and neoplastic conditions. About 40.9% of non-neoplastic conditions and 3.2% of neoplastic conditions were associated with stones (Table 3). Most common decade was 4th in inflammatory diseases. Malignancy was seen most commonly in 4th to 5th decade (Table 4). Non-Neoplastic lesions comprised of Chronic Pyelonephritis (21%) followed by interstitial nephritis (5%), xanthogranulomatous nephritis (3%), tubercular nephritis (2%), and acute necrotising pyelonephritis (1%) (Table 5). Among neoplastic lesions there were two cases, Angiomyolipoma and Oncocytoma respectively.

Table 1. Age and sex Distribution

AGE	MALE	FEMALE	TOTAL(%)
1-10	4	0	4
11-20	3	2	5
21-30	5	11	16
31-40	8	17	25
41-50	12	05	17
51-60	12	05	17
61-70	08	05	13
71-80	02	01	03
TOTAL	54	46	100

Table 2. Histopathological diagnosis of nephretomy specimens

	Diagnosis	No Of Patients	Percentage(%)
A	Non Neoplastic	66	66
B	Neoplastic-Benign Tumours		
	i) Angiomyolipoma	01	01%
	ii) Oncocytoma	01	01%
C	Neoplastic-Malignant		
1.	RCC	24	24
	i) Clear cell Type	02	02
	ii) Papillary	01	01
2.	iii) Chromophobe	02	02
3.	Transitional Cell Carcinoma	01	01
4.	Adenocarcinoma(Mucin Secreting)	01	01
	Nephroblastoma		

Table 3. Association of stones with histopathological diagnosis

Diagnosis	No Of Cases With Stones	Percentage(%)
Non-Neoplastic	27	40.9
Benign tumours	0	0
Malignant Tumours	01	3.2
Total	28	28

Table 4. Decade wise distribution of nephrectomy specimens

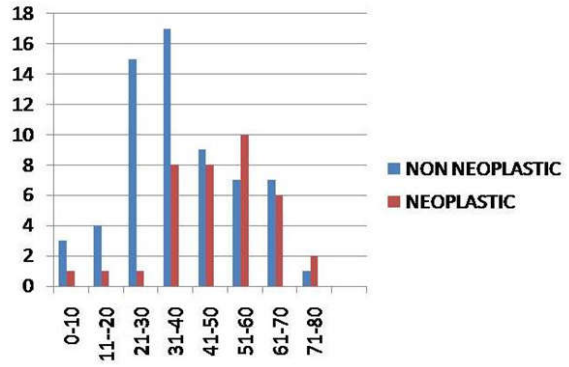

Table 5. Histopathological diagnosis of non neoplastic lesions of kidney

NON-NEOPLASTIS LESIONS	NO OF PATIENTS(n=100)	PERCENTAGE(%)
1. CHRONIC PYELONEPHRITIS WITH HYDRONEPHROSIS	21	21
2. CHRONIC PYELONEPHRITIS WITH ESRD	34	34
3. ACUTE NECROTISING PYELONEPHRITIS	1	1
4. XANTHOGRANULOMATOUS PYELONEPHRITIS	3	3
5. TUBERCULAR PYELONEPHRITIS	2	2
6. INTERSTITIAL NEPHRITIS	5	5

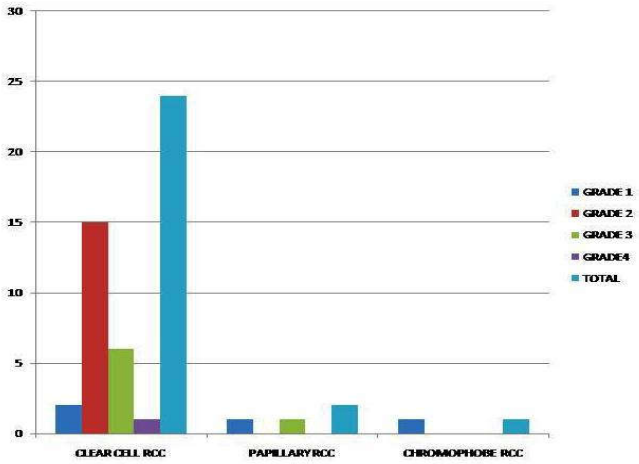

Table 6. Renal cell carcinoma with fuhrman grading

Malignant lesions included Renal Cell Carcinoma (RCC) clear cell type (24%) with maximum cases of Fuhrman's grade 2 (Table-6), papillary RCC(02%), Transitional Cell Carcinoma (02%). Single cases of Chromophobe RCC and nephroblastoma were present.We also had a rare case of Mucin secreting Adenocarcinoma of renal pelvis.

DISCUSSION

Renal diseases are common cause of morbidity worldwide. The indications of nephrectomy varies from inflammatory to benign and malignant tumours.In the present study we studied histomorphological spectrum of 100 nephrectomy specimens of which 66% were inflammatory, 32% were malignant tumours and 2% were benign tumours. Hence inflammatory pathology comprised the majority of cases in our study. The ratio of Male: Female was 3:1. Most common decade was 4th in inflammatory diseases. Malignancy was seen most commonly in 4th to 5th decade. In our study chronic pyelonephritis was the most common finding (55%). This finding was consistent with other studies. [1,2] It has been reported as the most common clinical indication in the studies by El Malik *et al(3),* Popat *et al.*, (4) and Adamson *et al.*,(5) followed by interstitial nephritis(5%), xanthogranulomatous nephritis (3%),tubercular nephritis (2%), and acute necrotising pyelonephritis(1%). Among neoplastic lesions of kidney, 2% lesions were benign comprising of angiomyolipoma and oncocytoma.renal cell carcinoma comprised of 82.7% of all malignant tumours.Various authors have done the study This was similar to the findings of McLaughlin JK *et al* who observed that the majority of malignant neoplasms (85%) of the kidney were renal cell carcinomas. [7] Maximum cases were of Fuhrman's grade 2.

One case of Wilm's tumour was seen in our study which is the most common childhood tumour.A rare case of mucinous adenocarcinoma of renal pelvis was also seen. In patients of long-standing calculi with chronic inflammation and non-functional kidney, can led to development of malignancy.They are presumed to originate from the intestinal metaplasia of the transitional epithelium.[8] Nephrolithiasis was seen to be associated with both non-neoplastic and neoplastic conditions. About 40.9% of non-neoplastic conditions and 3.2% of neoplastic conditions were associated with stones.

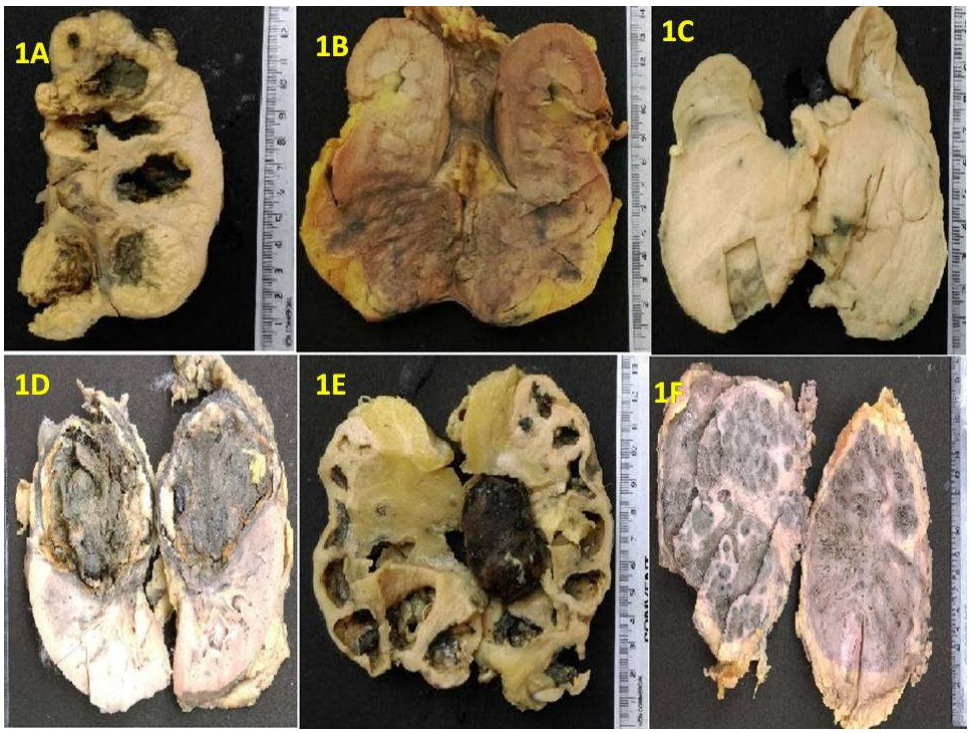

Figure 1. 1A. Gross picture of nephrectomy specimen showing Xanthogranulomatous nephritis.1B: Gross specimen of oncocytoma.1C:Wilm's Tumour.1D: Classical renal cell carcinoma1E: Mucinous adenocarcinoma with staghorn calculus. 1E: Renal cell carcinoma with rhabdoid differention

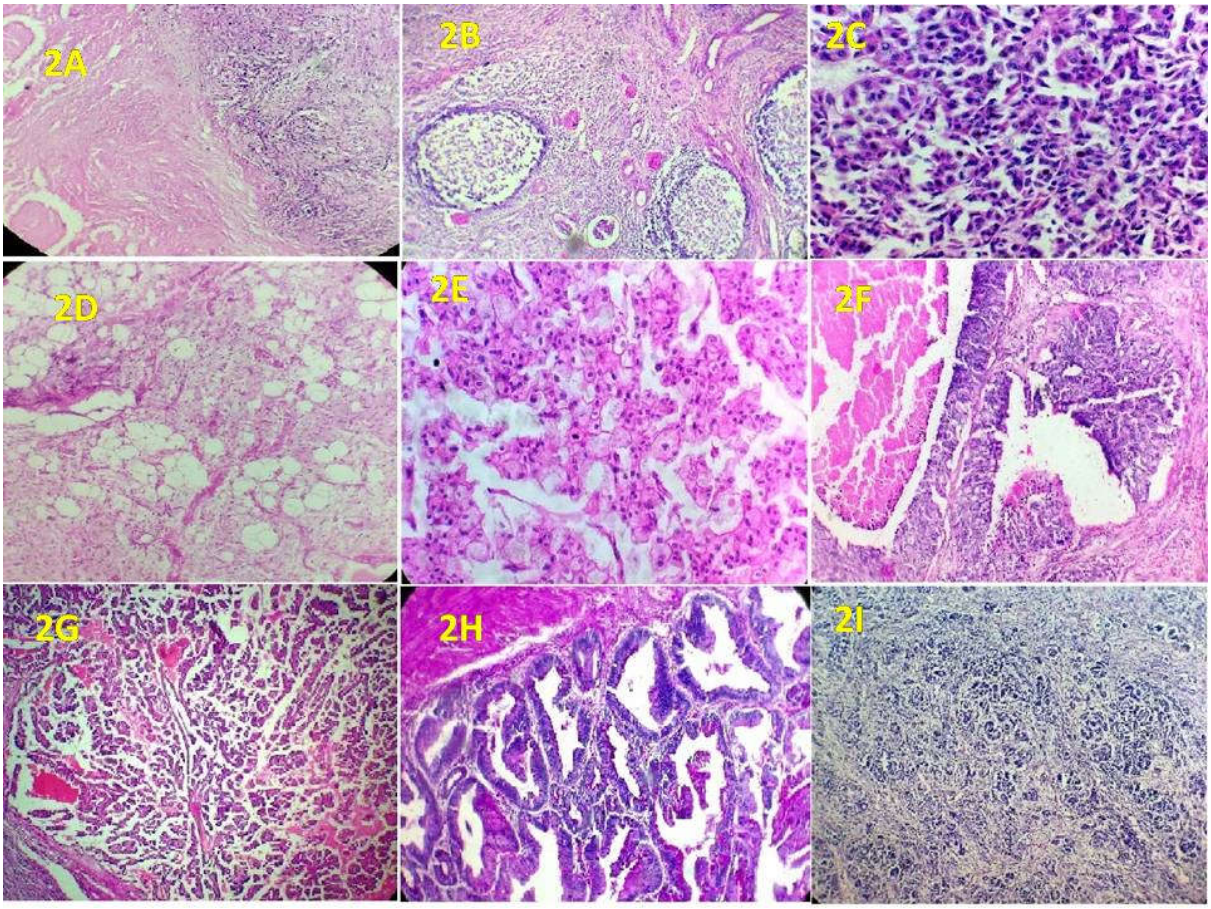

Figure 2. 2A: Hematoxylin and Eosin Stained section of Tubercular pyelonephritis showing marked caseous necrosis surrounded by epithelioid cells and lymphocytes(10x). 2B: Tissue showing glomeruli and tubules with multiple lymphoid follicles,inflammatory cells and foamy macrophages in the interstitium(10x).2C: Cells arranged in nesting pattern having abundant acidophilic granular cytoplasm(40x).2D: Tumour comprising of mature adipose tissue, tortuous blood vessels and bundles of smooth muscles(10x).2E: Tumour cells with sharply defined cell borders,abundant pale acidophilic cytoplasmwith perinuclear halo(10x).2F: Transitional cell carcinoma of renal pelvis with necrosis(10x).2G: Tumour showing renal cell carcinoma arranged in papillae with fibrovascular core(10x).2H:mucinous adenocarcinoma intestinal type(10x) 2I: Wilm's Tumour showing blastemal component and abortive tubules(10x)

Infected stone leads to tubulointerstitial inflammation and renal scarring causing chronic pyelonephritis. Such recurrent episodes lead to permanent renal damage and end stage renal disease. (Gupta *et al*., 1994)

Conclusion

Nephrectomy for non-neoplastic lesions are more commonly done than for neoplastic lesions of the kidney with chronic pyelonephritis being the commonest indication. Among malignancy, renal cell carcinoma is the commonest malignant tumour seen in kidney. Subjecting routine histopathology of all nephrectomy specimens can help in diagnosing rare malignancies even if not suspected clinically.

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