

HISTOPATHOLOGICAL SPECTRUM OF LESIONS IN NEPHRECTOMY SPECIMENS IN A TERTIARY CARE HOSPITAL IN DIBRUGARH, ASSAM

Pathology

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ABSTRACT

Nephrectomy is a frequently performed surgical procedure in urological practice, indicated for a variety of conditions such as renal calculi, chronic pyelonephritis, malignancies, urinary tract obstruction, and traumatic injuries. It is associated with a broad spectrum of morbidity and mortality. In India, there has been a notable rise in the incidence of end-stage renal disease, with many patients requiring dialysis or renal transplantation. This study sought to assess the patterns and morphology of lesions in nephrectomy specimens. The peak incidence is observed in the age group of 41-50 years (22%), Non-neoplastic conditions predominated, comprising 20 cases (74%), while neoplastic lesions accounted for 7 cases (26%).

KEYWORDS

Nephrectomy; Chronic Pyelonephritis; Clear Cell Renal Cell Carcinoma.

INTRODUCTION

Kidneys are one of the major organs of the human body that serve several essential functions. Their main function is to regulate the balance of electrolytes in the blood, along with maintaining pH homeostasis.[1] Nephrectomy is a common procedure in surgical practice. Simple nephrectomy is indicated in patients with irreversibly damaged kidney resulting from symptomatic chronic infections, obstruction, calculus, or severe traumatic injury.[2] Chronic pyelonephritis, obstructive nephropathy and hydronephrosis is the most common type of nephrectomy specimen for non-neoplastic conditions, whereas in the neoplastic group, renal cell carcinoma or hypernephroma is the most common.[3] Surgical pathologists should be aware of the importance of both correctly classifying the underlying renal neoplasm and the concomitant non-neoplastic kidney that is likely to be present in these specimens. The study was conducted to evaluate benign and malignant lesions encountered in nephrectomy specimens.[4] This study from a tertiary care hospital was undertaken to determine the most common clinical presentation, with age and sex distribution of renal tumors and to analyze the histomorphological spectrum of renal tumors from resected nephrectomy specimens.[5] Aims and Objectives: To assess the patterns and morphology of lesions in nephrectomy specimens and Clinicomorphological correlation for proper management of these lesions from nephrectomy specimens. specimens.

Materials and Methods:

This retrospective study was carried out over 1 year (from 1st July 2024 to 30th June 2025) at the Department of Pathology, Assam Medical College & Hospital, Dibrugarh, Assam, India. All the nephrectomy specimen received in the department of pathology were included. A total of 28 cases of nephrectomy specimen were studied. Patient-related information, including age, gender, clinical presentation, and radiological findings, was systematically recorded. As this was a retrospective study, all nephrectomy cases were retrieved from existing records, and the corresponding histopathological slides were re-evaluated.

RESULTS:

A total of 27 cases were studied during study period. The highest number of cases was observed in the fourth to fifth decades of life, accounting for 6 cases (22%). Non-neoplastic conditions predominated, comprising 20 cases (74%), while neoplastic lesions accounted for 7 cases (26%). Within the non-neoplastic category, chronic pyelonephritis with associated hydronephrosis emerged as the most common inflammatory lesion, contributing to 63.1% of cases. Among the malignant tumors, clear cell renal cell carcinoma was the most frequently encountered type.

Table-1: Age wise distribution of nephrectomy cases.

Histopathological Finding	Number	Percentage
Non-Neoplastic	20	73.3%
Chronic Pyelonephritis	13	63.1%
Renal Cyst	4	20%

Obstructive Uropathy	1	5%
Polycystic Kidney	1	5%
Pyonephrosis	1	5%
Neoplastic	7	26%
Wilms Tumor	4	57%
Renal Cell Carcinoma	3	43%

Age Distribution (Years)	Number	Percentage
0-10	4	15%
11-20	1	4%
21-30	3	11%
31-40	4	15%
41-50	6	22%
51-60	3	11%
61-70	5	18%
71-80	1	4%

Table-2: Histopathological spectrum of cases.

Histological Type	Number of Cases	Percentage%
Clear Cell Renal Cell Carcinoma	2	66%
Papillary Renal Cell Carcinoma	1	34%

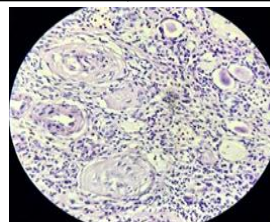


Fig1: Chronic pyelonephritis (40 X).H&E

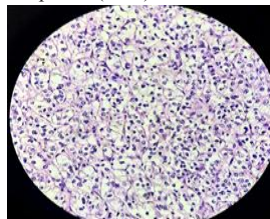


Fig2: Clear cell carcinoma (40X) .H&E

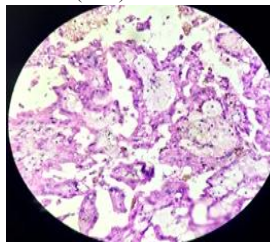
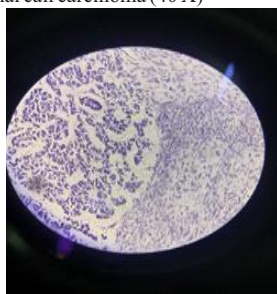


Fig3: Papillary renal cell carcinoma (40 X)**Fig4:** Wilms tumor (40 X).H&E

DISCUSSION

In the present study, out of 27 nephrectomy cases, 20 (74%) cases were non-neoplastic and 7(26%) cases were neoplastic. Similar higher incidence of nonneoplastic lesions of 63.8% and 78.1% were reported in studies done by Chitra et al^[6] and K. Ramakrishna et al^[7] respectively. by Chitra et al^[6] and K. Ramakrishna et al^[7] respectively.

In the present study, the most common indication for nephrectomy was chronic pyelonephritis (47%), followed by Renal Cyst (14%) and Wilms Tumor (14%) which was followed by Renal cell carcinoma (11%). Chronic pyelonephritis has been reported as the most common clinical indication in the studies by Popal *et al.*,^[8] Adamson *et al*^[9]

In the present study, a total of 7 (26%) malignant lesions were observed; of these, a vast majority comprised Renal Cell Carcinomas, i.e., 3 cases (42%). This was similar to the findings of Mohammad Rafique^[10] who observed that the majority of malignant neoplasms (97%) of the kidney were renal cell carcinomas.

CONCLUSIONS

A wide histopathological range of lesions comprised of neoplastic and non-neoplastic lesions was found in the current study. Wilms tumor was the most common childhood tumor and in adults renal cell carcinoma was most common malignancy whereas Chronic Pyelonephritis (CPN) with hydronephrosis was most common non-neoplastic lesion. This trend may indicate, in the present time increase in availability of early diagnosis and appropriate better treatment facilities causes decrease in need of surgical treatment for inflammatory lesions of kidney.

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