



HISTOPATHOLOGICAL STUDY OF RENAL LESIONS AT TERTIARY CARE CENTRE: A TWO YEAR RETROSPECTIVE STUDY.

Histopathology

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ABSTRACT

Introduction: Renal disease is one of the major cause of morbidity and mortality. Nephrectomy is a common procedure in urological practice done for various conditions like calculi, chronic pyelonephritis, malignancy, obstruction, injury etc. Chronic pyelonephritis with hydronephrosis is the most common type of nephrectomy specimen for non-neoplastic conditions, whereas in the neoplastic group, Renal cell carcinoma is the most common. Renal cell carcinomas encompass 1–3% of human malignancies and 75–80% of adult kidney cancers. **Materials And Methods:** A Total of 58 nephrectomy cases were studied at our department over a period of 2 years. Hematoxylin and Eosin staining was done and renal lesions were classified histologically after clinicopathological correlation. **Observation And Results:** Out of 58 cases studied, 29 were males and 29 were females and the most common age group observed was 41- 50 years for renal lesions in the present study. Chronic pyelonephritis was the most common non-neoplastic lesion while renal cell carcinoma was the most common malignancy found in the present study. **Discussion:** Out of 58 cases, 52 (89.6%) were non-neoplastic, and 6 (10.3%) were neoplastic. Similar findings were observed by Aiman A et al. **Conclusion:** Various pathological disease processes lead to permanent damage to kidney, for which nephrectomy is the only mainstay. A detailed and meticulous histopathological examination is essential to establish histological type and to evaluate histopathological prognostic determinants. In this study, non-neoplastic lesions predominate over neoplastic lesions.

KEYWORDS

Nephrectomy, Chronic pyelonephritis & Renal cell carcinomas

INTRODUCTION:

Kidneys are vital organs with multiple functions like excretory function, maintenance of salt and water metabolism and acid base balance.¹ The kidneys are affected by various disease processes some leading to permanent damage needs surgical removal of the organ i.e. nephrectomy.² The most common indication for nephrectomy is haematuria, loin pain, mass in the abdomen and a radiological evidence of minimal excretory activity of the kidney through procedures of IVP and ultrasound.³ A detailed histopathologic examination of nephrectomy specimens is essential to establish histological type of renal lesions.⁴ Kidneys are removed for conditions like obstructive nephropathy, hydronephrosis and chronic pyelonephritis & have been reported as the most frequent type of nephrectomy specimen for non-neoplastic renal diseases in both adults and children. Renal cell carcinoma accounts for approximately 2% of adult malignancies and 80-85% of malignant kidney tumours.⁵

AIM: To study the spectrum of renal lesions histopathologically.

OBJECTIVES:

1. To study the frequency of various renal lesions based on histopathological findings.
2. To correlate clinicopathologically the different renal lesions.

MATERIAL & METHODS:

All histopathological data, related to nephrectomy specimen present in the histopathology section were retrieved and reviewed. Histology slides of all cases were reviewed. Staining was done by Haematoxylin and Eosin stains. Each case was analysed with respect to age, clinical presentation and microscopic diagnosis.

Study Design:

The present study is a retrospective & observational study done in the department of pathology at Vilasrao Deshmukh Government Medical College, Latur a tertiary care centre.

Study Duration: From January 2022 to January 2024 [2 years]

Inclusion Criteria: All the nephrectomy specimens received in the histopathology section.

Exclusion Criteria: Haemorrhagic, inadequate & autolyzed samples/ biopsies were excluded. Specimen collection and processing was

routinely done in all the cases in the present study. Hematoxylin and Eosin staining was done and renal lesions were classified histologically after clinicopathological correlation.

OBSERVATION AND RESULT:

In our study a total of 58 nephrectomy specimens were received in the surgical histopathology section of department of pathology at Vilasrao Deshmukh Government Medical College, Latur, Maharashtra. 29 cases were males and 29 were females with male to female ratio of 1:1. Age group for cases was ranges from 11-20 years to 61-70 years. The highest percentage of patient belonged to age group 41-50 years. The most common lesions found in our study were non neoplastic lesions than neoplastic.

The commonest among the non-neoplastic was chronic pyelonephritis [24 cases] followed by chronic pyelonephritis with nephrolithiasis [9 cases], chronic pyelonephritis with cyst [7 cases], acute pyelonephritis [5 cases], Xanthogranulomatous pyelonephritis [4 cases] with 3 cases of interstitial pyelonephritis.

Clear cell variant of renal cell carcinoma [4 cases] was the commonest among the neoplastic lesions. It is followed by one case of each renal cell carcinoma with Sarcomatoid differentiation and metastasis from adenocarcinoma.

Table 1: Age Wise Distribution Of Renal Lesions In The Present Study

Age Group [Years]	Number of Cases [%]
0-10	0 [0]
11-20	4 [06.8]
21-30	2 [03.4]
31-40	9 [15.7]
41-50	16 [27.5]
51-60	11 [18.9]
61-70	12 [20.6]
71-80	4 [06.8]
Total	58[100]

Table 2: Distribution Of Number Of Renal Lesions Based On Histopathological Study.

Renal Lesions	Number of Cases [%]
Acute pyelonephritis	5 [08.6]
Chronic pyelonephritis	24 [41.3]

Chronic pyelonephritis with Nephrolithiasis	9 [15.5]
Chronic pyelonephritis with Renal Cyst	7 [12.0]
Interstitial Pyelonephritis	3 [05.1]
Xanthogranulomatous Pyelonephritis	4 [06.8]
Renal cell carcinoma clear cell variant	4 [06.8]
Renal cell carcinoma with Sarcomatoid differentiation	1 [01.7]
Metastasis	1 [01.7]
Total	58 [100]

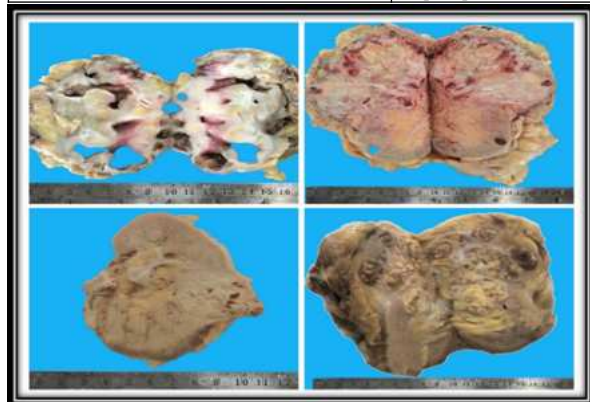


Fig 1: Gross:

A: Chronic Pyelonephritis with nephrolithiasis: showing greyish white areas with dilated pelvicalyceal system with renal stone.
 B: Xanthogranulomatous pyelonephritis: showing 2x1 cm ill-defined growth at upper pole, yellow and haemorrhagic areas with multiple cysts
 C: Renal cell carcinoma: showing circumscribed tumour of size 3.5x3cm at middle pole.
 D: Renal cell carcinoma: showing tumour of size 10x8cm at upper pole with variegated golden yellow colour appearance.

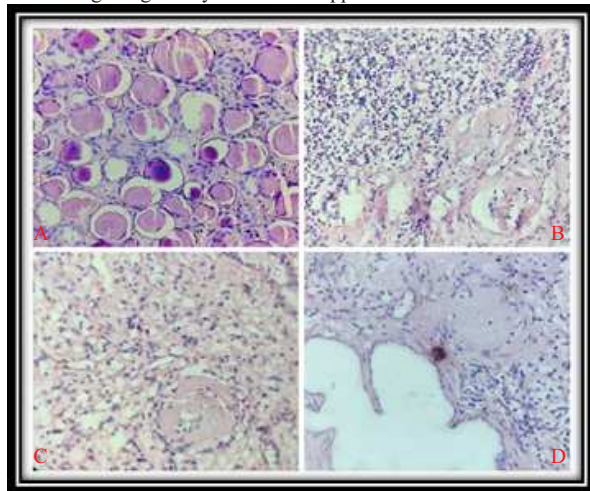


Fig 2: Microscopy: Chronic pyelonephritis:

A: shows thyroidisation of tubules. [H&E stain: 40x]
 B: shows interstitial lymphocytic infiltration. [H&E stain: 10x]
 C: shows glomerulosclerosis. [H&E stain: 40x]
 D: shows dilated pelvicalyceal system. [H&E stain: 40x]

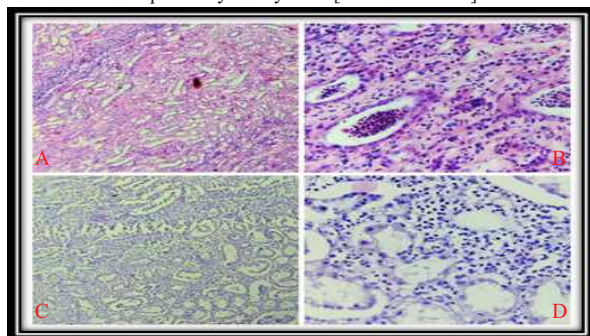


Fig3: Microscopy: A, B: Acute pyelonephritis: shows neutrophilic

infiltration in interstitium and tubules.

[H&E: A:10x; B:40x]

C, D: Interstitial pyelonephritis: shows lymphoplasmacytic infiltration in interstitium. [H&E: A:10x; B:40x]

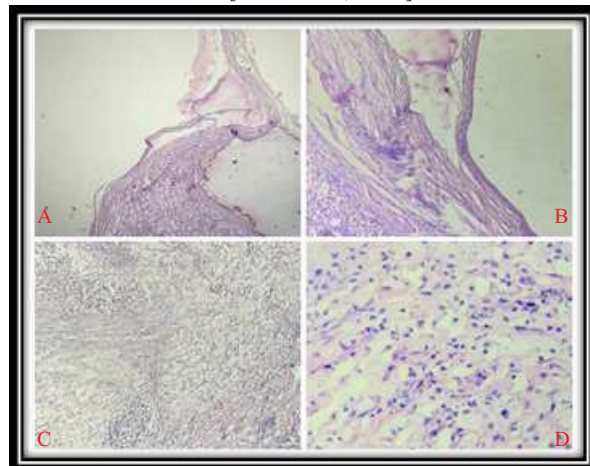


Fig: 4: Microscopy: A & B: Chronic pyelonephritis with renal cyst: shows cyst wall lining. [H&E stain: 10x]

C, D: Xanthogranulomatous pyelonephritis: shows foamy histiocytes. [H&E: A:10x; B:40x]

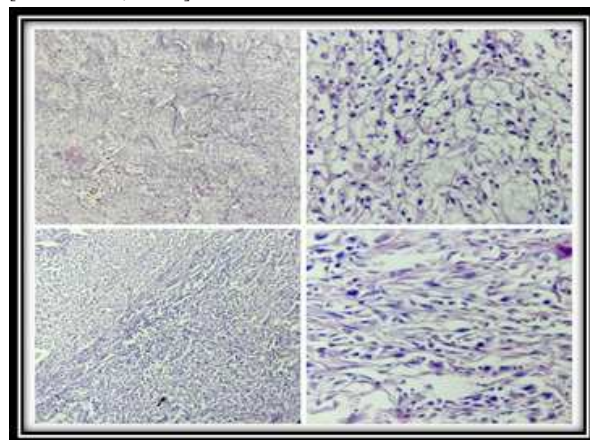


Fig 5: Microscopy: A, B: Renal cell carcinoma clear cell variant: shows cells with clear cytoplasm & distinct membrane. [H&E: A:10x; B:40x]

C, D: Renal cell carcinoma with Sarcomatoid differentiation: shows atypical pleomorphic spindle cells. [H&E: A:10x; B:40x]

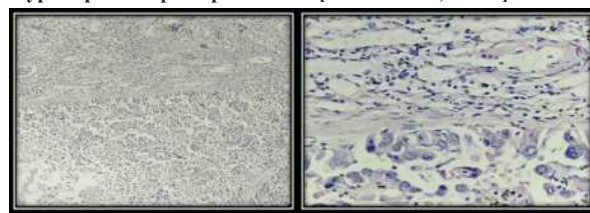


Fig: 6: Microscopy: A, B: Renal metastasis from adenocarcinoma. [H&E: A:10x; B:40x]

DISCUSSION:

In our study a total of 58 nephrectomy specimens were received in the surgical histopathology section of department of pathology at Vilasrao Deshmukh Government Medical College, Latur. 29 were males and 29 were females with male to female ratio of 1:1. This was similar to the study done by Shanmugasamy et al⁶ who found male to female ratio of 1:1 in their studies. Kishor S et al⁷ found male preponderance in his study. Shaila et al³ found slight female preponderance in her study.

The most common age group for renal lesions in the present study was 41-50 years which is similar to the study done by Shaila et al³ and B D Thaker et al⁵. Nusrat Bashir⁴ found 51- 60 year age group common for renal lesions. The most common renal lesions in the present study was neoplastic lesions which is similar to the study done by Anu Gupta et

al.¹, Vinay K.S et al.² and K D Reddy et al.⁸ The most common non neoplastic & neoplastic renal lesion in the present study was chronic pyelonephritis and Renal cell carcinoma clear cell variant respectively which is similar to the study done by B D Thaker et al.³, Shanmugasamy K⁶ and Farhat Abbas⁹.

CONCLUSION

Peak age of incidence of renal lesions were seen in 5th decade. Equal distribution of renal lesions was found in both genders. Majority of the renal lesions in our setup comprised of non-neoplastic lesion. Chronic pyelonephritis was the most common non-neoplastic lesion while renal cell carcinoma was the most common malignancy found in the present study.

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