



**ORIGINAL RESEARCH PAPER**

**Pathology**

**A RETROSPECTIVE ANALYSIS OF RENAL LESIONS IN NEPHRECTOMY SPECIMENS IN A TERTIARY CARE HOSPITAL**

**KEY WORDS:**

Nephrectomy, Non neoplastic lesions, Renal cell carcinoma.

**Dr. Sujatha J**

Department of Pathology, Government Mohan Kumaramangalam Medical College, Salem, TamilNadu, India.

**Dr. Maheshwari S\***

Assistant Professor, Department of Pathology, Government Mohan Kumaramangalam Medical College, Salem, TamilNadu, India.

\*corresponding author

**ABSTRACT**

**Aim : 1.** To analyse the various lesions in nephrectomy specimens in a tertiary care hospital in Salem, Tamil Nadu , South India .2. To categorise the lesions according to the age, gender and histology .

**Materials and methods :** It is a retrospective study of nephrectomy specimens received in the Department of Pathology ,Government Mohan Kumaramangalam Medical College over a period of five years from January 2013- December 2017. Nephrectomy specimens received during the study period were 76.

**Results :** In this study out of 76 nephrectomies, the non neoplastic lesions were 42 and neoplasms were 34. Age of the patients ranged from 10 months to 76 years.

**Conclusion :** Non neoplastic lesions were common in nephrectomies than neoplasms. Chronic pyelonephritis was the most common non neoplastic lesion. Among the neoplasms, clear cell renal cell carcinoma was the commonest.

**Introduction :**

Kidneys are paired organs surrounded by perirenal fat and gerotas fascia. Kidneys are one of the major organs that perform several essential functions including electrolyte balance and removal of metabolic waste. Kidneys also serve as endocrine organs secreting hormones such as erythropoietin, renin and prostaglandins. Renal diseases are responsible for great deal of morbidity and mortality. Renal pathology includes diverse entities like congenital diseases, cystic diseases, inflammatory conditions, obstructive uropathy and tumors (benign and malignant)<sup>1</sup>.

Nephrectomy is a common surgical procedure done in a variety of neoplastic and non neoplastic conditions. Nephrectomy can either be a simple nephrectomy or a radical nephrectomy. Simple nephrectomy is usually performed for non neoplastic diseases like severe hydronephrosis, pyonephrosis, polycystic kidneys etc. Radical nephrectomies are performed for renal neoplasms. Partial nephrectomy is usually indicated in bilateral renal cell carcinoma (RCC) or renal cell carcinoma involving solitary functioning kidney<sup>2</sup>. This study was performed to study the histomorphological spectrum of renal lesions in nephrectomy specimens.

**Aim :**

1. To analyse the various lesions in nephrectomy specimens in a tertiary care hospital in Salem, Tamil Nadu, South India .
2. To categorise the lesions according to age, gender and histology

**Materials and Methods:**

This is a retrospective study conducted in the Department of Pathology, Government Mohan Kumaramangalam Medical College, Salem, for a period of five years from January 2013 to December 2017. Total of 76 nephrectomies were received during the study period. Renal biopsies and nephrectomies received from autopsy were excluded from the study. The case records, slides and paraffin blocks were retrieved, data compiled and analysed.

**Results :**

The number of nephrectomies included in the study were 76, of which 42(55.26%) were done for non neoplastic lesions and 34(44.74%) nephrectomies were done for renal neoplasms.

Age of the patients ranged from 10 months to 76 years, high percentage of patients undergoing nephrectomy were more than 60 years of age. The percentage of males undergoing nephrectomy was higher compared to females.

**Table 1: Age distribution of Nephrectomy patients**

Age group	No. of cases	Percentage
0-10 years	10	13.15 %
11-20 years	3	3.94 %
21-30 years	6	7.89 %
31-40 years	9	11.84 %
41-50 years	13	17.10 %
51-60 years	16	21.05 %
>60 years	19	25 %

**Table 2: Sex distribution of Nephrectomy patients**

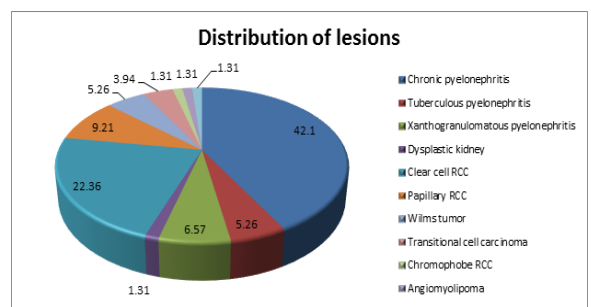
Sex	No. of cases	Percentage
Males	44	57.89 %
Females	32	42.11 %

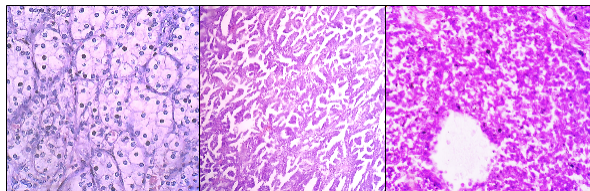
Non neoplastic diseases included 32 cases of Chronic pyelonephritis, 4 cases of Tuberculous pyelonephritis , 5 cases of Xanthogranulomatous pyelonephritis and 1 case of Dysplastic kidney.

Among renal neoplasms, 5.88% of cases were benign and 94.12 % of cases were malignant. Benign neoplasms included 1 case of Angiomyolipoma and 1 case of Oncocytoma Clear cell carcinoma was the commonest malignant neoplasm. All cases of clear cell RCC were above 40 years of age.58.82% of clear cell RCC occurred in males and 41.17% in females .

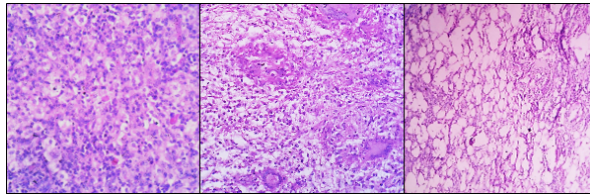
There were 7 cases of Papillary renal cell carcinoma, which included 5 cases of type I Papillary RCC and 2 cases of type II Papillary RCC .

3 cases of Transitional cell carcinoma and 1 case of Chromophobe renal cell carcinoma was noted. 4 cases of Wilms tumor were seen and the age ranged from 2.5 years to 6 years.





**FIGURE 1:** Photomicrograph showing A) Clear Cell RCC(H&E X40) B) Papillary RCC (H&E X10) C) Wilms Tumor (H&E X40)



**FIGURE 2 :** Photomicrograph showing D) Xanthogranulomatous Pyelonephritis(H&E X40) E) Tuberculous Pyelonephritis (H&E X40) F) Angiomyolipoma (H&E X40)

**Discussion:**

Results of our study were compared with other literatures. Male: Female ratio in our study was found to be 1.4: 1 showing increased incidence among males. It correlated with studies by Humera et al<sup>3</sup>, El Fadil M.A El malik et al<sup>4</sup>, Fauzialatif et al<sup>5</sup> and Nusratbashir et al<sup>6</sup>. But Abdul gafoor et al, Roufrique<sup>7</sup> reported equal incidence among both sexes.

**Table 3: Comparison of Male Female ratio:**

Study	Male: female
Our study	1.4:1
Humeraetal <sup>3</sup>	2:1
El Fadil M.A El maliket al <sup>4</sup>	1.9:1
Fauzialatifet al <sup>5</sup>	1.9:1
Nusratbashiret al <sup>6</sup>	1.7:1
Abdul gafooret al <sup>1</sup>	1:1.08
Roufrique <sup>7</sup>	1:1.05

Our study revealed that malignant tumors contribute to 94.12% of renal tumors and benign tumors constitute only 5.88%. This correlated with other studies. (Table 4)

**Table 4: Distribution Of Benign And Malignant Tumors**

Study	Benign tumors (%)	Malignant tumors (%)
Our study	5.88	94.12
Nusratbashiret al <sup>6</sup>	10.86	89.13
Abdul gafooret al <sup>1</sup>	12	88
El Fadil M.A El maliket al <sup>4</sup>	0	100
Kottadevanreddy et al <sup>8</sup>	13.33	86.66
Fauzialatifet al <sup>5</sup>	6	94
Ibrahim fathighalayini et al <sup>9</sup>	19.35	80.64

Literature states that Renal cell carcinoma is eighth most common malignancy affecting adults, accounting to 3-4% of solid tumors and approximately 85-90% of all parenchymal renal tumors.<sup>10</sup> In our study also Renal cell carcinoma constituted the predominant type. Among Renal cell carcinoma, Clear cell RCC was predominant followed by Papillary renal cell carcinoma which correlated with other studies. Most common childhood malignancy in our study was Wilms tumor and common benign neoplasms were Angiomyolipoma and Oncocytoma which also correlated with other studies.

Xanthogranulomatous pyelonephritis is severe atypical form of chronic renal parenchymal infection. Literature states that women are more frequently affected than men, with peak incidence during 6<sup>th</sup> and 7<sup>th</sup> decade.<sup>11,12</sup> Mean age of occurrence of

Xanthogranulomatous pyelonephritis is around 45 to 55.2 years.<sup>13</sup> Our study included 5 cases of Xanthogranulomatous pyelonephritis, with female predominance, which correlated with literature.

Urogenital Tuberculosis is responsible for 30-40% of extrapulmonary cases, second only to lymph node involvement. It affects men more than women with mean age of 40-70 years.<sup>14</sup> Our study included 4 cases of Tuberculous pyelonephritis. 3 were female patients and 1 male patient which did not correlate with literature. Age of the patients was between 40 – 70 years and it correlated with other studies.

**Conclusion:**

This study describes the various morphological patterns of renal lesions in our institute for a period of five years from January 2013-December 2017. Spectrum of Non neoplastic and Neoplastic lesions were observed, of which Non neoplastic lesions constitute the majority. Chronic pyelonephritis was the most common non neoplastic lesion. Renal cell carcinoma was the most common tumor in adults and Wilms tumor was common in children. A detailed examination of the nephrectomy specimen along with clinical and radiological examination is essential for a correct diagnosis.

**References:**

1. Abdulghafoor S, Abdulkareem, Bashir A, Hassawi, Ziyad Ahmed. Nephrectomy. A clinicopathological study. J Am Sci 2015; 11(8):97-101.
2. Vikram Narang, Bhavna Garg, Ashneet Walia, Neena Sood, Vineeta Malhotra. Histomorphological Spectrum of Nephrectomy Specimens- A Tertiary Care Centre Experience. NJLM 2016; Vol 5(2): 51-54.
3. Humera, Ali S, Kehar S. J Coll Physicians Surg Pak. 2015 Sep; 25(9):654-7.
4. El Malik EM, Memon SR, Ibrahim AL, Al Gizawi A, Ghali AM. Nephrectomy in Adults: Asir Hospital Experience. Saudi J Kidney Dis Transpl 1997; 8: 423-427.
5. Latif F, Mubarak M, Qazi JJ. Histopathological characteristics of adult renal tumors preliminary report. J Pak Med Assoc 2011; 61:224-8.
6. Nusrat Bashir, Yasir Bashir, Parveen Shah, Nazia Bhat, Othman Salim, Nuzhat Samoon. Histopathological study of renal tumors in resected nephrectomy specimens - An experience from tertiary care centre. National Journal of Medical Research 2015; 5(1):25-29.
7. Rafique M. Nephrectomy: indications, complications and mortality in 154 consecutive patients. J Pak Med Assoc 2007; 57(6):308-311.
8. Reddy KD, Gollapalli SL, Chougani S et al. A clinico-morphological spectrum of nephrectomy specimens - an experience from a tertiary care hospital. Int J Health Sci Res. 2016; 6(11):67-72
9. Ghalayini IF. Pathological spectrum of nephrectomies in a general hospital. Asian J Surg 2002; 25:163-9.
10. Gunes Mustafa, Gecit Ilhan, Pirincci Necip, Taken Kerem, Ceylan Kadir. Nature of Lesions Undergoing Radical Nephrectomy for Renal Cancer. Asian Pacific J Cancer Prev 2012; 13(9):4431-4433.
11. F M J Quinn, A C Dick, M T Corbally, M B Mc Dermott, E J Guiney. Xanthogranulomatous pyelonephritis in childhood. Arch Dis Child 1999; 81: 483-486
12. Craig WD, Wagner BJ, Travis MD. Pyelonephritis: radiologic-pathologic review. Radiographics 2008; 28(1):255-276.
13. Li Li, Anil V. Parwani. Xanthogranulomatous Pyelonephritis. Arch Pathol Lab Med 2011; 135:671-674.
14. Andre Avarese Figueiredo, Antonio Marmo Lucon, Renato Falcijunio, Miguel Srougi. Epidemiology of urogenital tuberculosis worldwide. International Journal of Urology 2008; 15:827-832.