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Histopathological Evaluation of Non–Neoplastic Lesions of Kidneys

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Abstract

*Introduction***:** Infections of the kidney are the common indication for the nephrectomy. Nephrectomy is a common urological procedure done for a variety of conditions like chronic infection, obstruction, injury and neoplasms. *Aim and objectives:* To study the various non–neoplastic lesions of Nephrectomy specimens. *Material and Methods:* The prospective study from the period of January 2013 to December 2015 was conducted in the Department of Pathology, Santhiram medical college, Nandyal. All the Nepherectomy specimens were analysed. *Results:* A total of 72 cases were studied. 62 cases were non neoplastic and 10 cases were neoplastic lesions. Chronic pyelonephritis was the predominant lesion in female. *Conclusion:* Infections in the kidney were common cause of chronic pyelonephritis in females. The chronic pyelonephrtis is the common indication for the nephrectomy.

Keywords: Chronic Pyelonephritis; Nephrectomy; Non – Neoplastic Lesions.

Introduction

Renal diseases are responsible for morbidity. Millions of people are affected annually by non fatal renal diseases mainly infections and calculi [2]. Kidneys are affected by conditions like pyelonephritis, Nephrosclerosis, vesiculo ureteric reflux, pyonephrosis tuberculosis and severe traumatic injury [2]. Nephrectomy is the common surgical procedure indicated in non neoplastic and neoplastic lesions. Chronic pyelonephritis, obstructive nephropathy and hydronephrosis is the most common type of nephrectomy specimen for non neoplastic conditions, renal diseases in both adult and children [1,3,4] non neoplastic kidney disease can be present in tumor Nephrectomy specimens but diabetic nephropathy and arterionephrosclerosis comprisemost of these renal lesions [3]. The surgical pathologist, should aware of the importance of both, to classify the underlying renal or urothelial neoplasm and the associated non neoplastic lesion [3,5].

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Aim and Objectives

1. To study the various Non – neoplastic lesions of kidney.
2. To study age and sex incidence on various non neoplastic lesions of nephrectomy specimens

Materials and Method

The prospective study was done in the Department of Pathology, Santhiram medical college , Nandyal, from January 2013 to December 2015. Required clinical details were obtained from the hospital records All the nephrectomy specimens were studied with clinical features, radiological findings, gross and microscopic features. All the specimens were fixed in 10% formalin and processed. The paraffin embedded sections stained with haematoxylin and eosin were studied.

Results

Out of 72 cases, 62 cases (86.12%) were non neoplastic lesions and 10 cases (13.88%) were neoplastic. Loin pain was the main common

presenting complaint noted, followed by burning micuturition and frequency of micturitionThe common clinical presention of the patients was flank pain in 60 patients . The least common clinical presentions was epigastic pain (Table1)

Out of 62 cases of non neoplastic lesions 24 cases (38.71%) noted in males and 38 cases (61.30%) in females.

The peak age incidence was between 20 – 30 (40.32 %) followed by 40 - 50 years(27.45 %). The total number of lesions were in the age range of 21-30 years, youngest patient was 10 months old and the oldest patient was 80 years old. Majority of cases of chronic pyelonephritis were seen in the age range of 21-40 years. Majority of the cases of xanthogranulomatous pyelonephritis belonged to the age group of 40–60years (Table 2, 3).

Out of 62 cases, 58 cases (93.55%) were inflammatory, 4 cases (6.45%) were non inflammatory, 9 cases (14.52%) were hydronephrosis. Chronic pyelonephritis was the commonest lesions encountered in all age groups.

Chronic pyelonephritis (non specific) was seen in 36 cases (58.06%). One case (1.62%) was xanthogranulomatous pyelonephritis. Out of 7 cases of granulomatous lesion, 5 showed positivity for acid fast bacilli with ziehl– Neelsonstain and diagnosed as tubercular pyelonephritis.Out of 36 cases of chronic pyelonephritis 7 cases were associated with nephrolithiasis 5 cases with ureteriolithiais and 14 cases associated with pyonephrosis and hydronephrosis. (Table 4).

There were four cases of non inflammatory lesions of which 3 were cystic and one was lacerated kindey due to trauma. Among 3 cases of cystic lesion, 2 cases were simplecysts and one was a case of polycystic kidney disease. Out of 9 cases of hydronephrosis, most of the cases were due to vesicouretric reflex (7 cases) followed by pelvicureteric junction and ureteric strictures.

Among 62 cases 38cases (62.29%) were noted in the right kidney, 24 (38.71 %) cases were encountered in the left kidney. Out of 62 cases, the gross morphology of necrosis noted in 10 cases, 61 cases showed hydronephrotic changes with loss of normal cortico medullary junction and dilatation of pelvi-calyceal system. The other changes noticed were scarred, shrunken kidneys in 20 cases and calculi were noticed in 17 cases (Table 5).

Histological Features

Microscopically periglomerular fibrosis, glomerular sclerosis were seen in 55 cases, Tubular changes like tubular atrophy and thyroidisation were seen in 50 cases, 7 cases showed Granulomas. 60 cases had chronic interstial inflammation, 6 cases showed neutrophils, 6 cases had sheets of foamy macrophages and arteriosclerosis were seen in 40 cases (Table 2).

Table 1

S. No	Clinical finding	cases
1	Flank pain	60
2	Hematuria	55
3	Fever	32
4	Burning micturation	48
5	Vomitings	12
6	Retro peritoneal mass	04

Table 2: Age wise distribution of Non neoplastic lesions

S. No	Lesion	0-10 years	10-20 years	20-30 years	30-40 years	40-50 years	50-60 years	60-70 years	>70 years	total
1	Chronic Pyelonephritis		02	14	02	10	05	01	01	36
2	Granulomatous pyelo – nephritis (tuberculous)				02	02	02	01		07
3	Xanthogranulomatous pyelo nephrits					01				01
4	Cysts	02					01			03
5	Trauma			01						01
6	Hydronephrosis	02		05		02				09
7	Renal pyonephrosis			03	02					05

Table 3: Sex wisedistribution of Non neoplastic lesions

S. No	Lesions	M	F	Total
1	CPN	15	21	36
2	CPN with calculus	02	07	09
3	Xantho granulomatous		01	01
4	cysts	02	01	03
5	Pyonephrosis	02	03	05
6	Granulomas	02	05	07
7	traumatic	01	-	01

Table 4: Site wise distribution of Non Neoplastic lesions

S. No	Non Neoplastic lesion	R	L	Total	Percentage (%)
1	Chronic Pyelonephritis	22	14	36	**58.06**
2	Granulomatous pyelo – nephritis (tuberculous)	05	02	7	**11.3**
3	Xanthogranulomatous pyelo nephrits	01	-	1	**1.62**
4	Cysts	02	01	03	**4.84**
5	Trauma	-	01	01	**1.62**
6	Hydronephrosis	05	04	09	**14.52**
7	Renal pyonephrosis	03	02	05	**8.06**

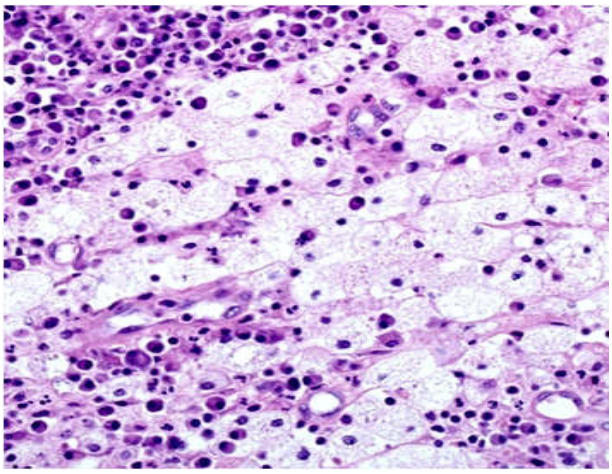
Table 5: Gross finding of Non neoplastic lesion

S. No	Gross morphology	No. of cases	Percentage (%)
1	Shruken kidney	20	32.26
2	Enlarged kidney	12	19.35
3	Loss of corticomedullary junction	60	96.77
4	Dilatation of pelvi - calcyceal system	60	96.77
5	Calculi	17	27.42
6	Abscess &caseous necrosis	13	20.97

Table 6:

S. No	HPE finding	No of cases	Percentage (%)
1	Peri glomerular fibrosis	44	70.96
2	Glomerular sclerosis	55	88.71
3	Tubular atrophy (atropic tubules)	50	80.65
4	Thyroidization of tubules	52	83.87
5	Interstitial inflammation		
	Acute	06	9.68
	Chronic	60	96.77
	Granulomas	07	11.29
	(cyst) foamy macrophages	06	9.68
6	Interstitial fibrosis	42	67.74
7	Hyaline atherosclerosis	40	64.52

Xanthogranuloma of kidney Hp40x



Tuberculosis of kidney

Discussion

In the present study 72 nephrectomy cases were analysed. There were 62 (86.12%) non – neoplastic diseases and 10 were (13.88%) neoplastic diseases. Among nephrecetomy specimens of non – neoplastic lesions 38 cases (61.30%) were in females and 24 cases (38.71%) were in males, with M:F = 1:1.05. Similar observation noticed by Sujatha et al 2014 [6], Mohammed Rafique et al 2007 [7], Shika et al 2006 [1] and Divyashree et al 2014 [2].

El Malik et al 1997 [8] in his study reported the M:F as 1.9:1. Our study differs from El Malik et al [8]. In the present study highest incidence of lesions was noted in 3rd decade, followed by 4th decade and the age of 20 – 60 years. Similar observation was documented by Divyashree et al 2014 [2], Sujatha et al [6].

Aiffa Aiman et al 2013 [3], Ranadiv et al [9], Popet et al 2010 [10], Mohammed Rafiquezaki et al 2007[7]. Hence our study correlated with above authors study.

In the present study the most common clinical feature was flank pain (60 patients) followed by fever (32 cases), urinary symptoms and recurrent urinary tract infections.These observations were comparable with Aiffa Aiman et al 2013 [3], Popat et al 2011 [11], El Malik et al 1997 [8], Mohammad Rafiquezaki et al [7] and KB koh et al [12]

In the present study there was slight predominance of right sided lesions (62.29%) similar observation noted by Diniz et al 2000 [13], Shikaet al 2016 [1]. The present study was differed from Dutta et al 2012 [14] and Fadil et al 1997 [15]

Chronic pyelonephritis was the most common clinical indication for nephrectomies in the study. EL Maliket al [8], Popat et al [11], Adamson et al1992 [16], Kubba et al 1990 [17], Ibrahim Ghalayiniet al 2002 [18] and Shika etal 2016 [1], Our study correlated with the above authors study.

In the present study, 7 cases (11.3%) were granulomatous pyelonephritis. Among the 7 cases, 5 cases (71.43%) were tuberculous etiology. Most of these cases occurred in 3rd decade with slight female preponderance. Similar findings observed by Divyashree et al 2014 [1]. Low incidence of the lesions noted in the study of Biswajit Datta et al 2012[14]. Ibrahim fathi Ghalayini et al 2002 [18]. Our findings differed from the above authors study. Single case of xanthogranulomatouspyelonephritis were observed in the age range of 20–70 yrs ,with a female predominance. Similar findings were documented by otherauthorsAnhalt et al 1971 [19], Geetanjali et al 1983 [20], Malik RS et al 1979 [21]. Out of 36 cases of chronic pyelonephritis, one case associates with pyonephrosis and another with hydronephrosis were seen. Similar findings noted by shika et al 2016 [1], Divyashree et al 2014 [2]. Twocases of hydronephrosis noted in the age range of 1 -10yrs. Seven cases were due to vesiculouretric reflux followed by pelvic – ureteric junction obstruction and ureteric stricture. In the present study 05 cases of hydronephrosis noted in the 3 rd decade and ureteric calculi was the commonest cause. The study correlated with Sujatha et al 2016 [6] and Prasanna LC et al 2013 [22].

Divyashree et al 2014 [2] reported 2 cases of xanthogranulomatous pyelonephritis in males which is very unusal . Ibrahim fathi Ghalayani et al 2002[18] reported 11 cases of xantho granulomatous pyelonephritis in association of calculi. Our study correlated with the above authors study. Shika et al 2016[1] documented 5 cases of xantho granulomatous pyelonephritis in the age range of 21-70yrs with a female predominance. Similar observation made by Anhalt MA et al 1971[19], Geetanjali et al 1983 [20], and Malik RS et al 1978 [21]. The present study correlated with above authors study. Among two cases of chronic pyelonephritis, one associated with pyonephrosis and other with hydronephrosis.Similar findings observed by Shika et al 2016 [2].

In the present study we observed 2 cases of simple cysts, one in 2 month old child and another in a 50 years old male. Simple cysts are rare in younger individuals and incidence is low in females that was observed by Ken Marumo et al 2003 [23]. The present study correlated with Divyashree et al 2014 [2].

The present study included one case of lacerated kidney due to abdominal trauma. Similar observation made by Divyashree et al 2014 [2]. Aiffa aiman et al [3] documented four cases.

Conclusion

The diagnosis of kidney lesions at an early stage are done by sophisticated laboratory investigations and imaging techniques. Hence marked increase in the number of nepherectomies. Nephrectomies done for non neoplastic lesions were more common than neoplastic lesions.

Chronic pyelonephritis was the commonest lesions in the series with female predominance. The commonest cause of nephrectomy in children was vesico – ureteric reflex.

The present study includes the histopatholgical patterns of the lesions in Neptrectomy specimens.

It is mandatory that every nephrectomy specimen should be subjected to a detailed histopathological examination for a clinico–morphological and radiological correlation to ensure proper post operative management.

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