A study of the clinical profile and incidence of pathologies in Kidney- A retrospective study

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ABSTRACT

Background: The indications for nephrectomy are varied. In our country, chronic pyelonephritis occurs as a consequence of urinary tract infection, and is a common indication for nephrectomy. The other indications for nephrectomy include hydronephrosis due to obstruction by calculi, and neoplastic conditions. We analyzed the indications for nephrectomy in our institute.

Material and methods- 48 nephrectomies were done in our tertiary care hospital over a four year period. The records and reports of the patients were studied. The clinical features, gross appearance of the kidney and histopathological diagnosis were analysed and expressed as percentage.

Results- 39 nephrectomies [81%] were performed for benign renal diseases. These included chronic pyelonephritis, hydronephrosis, hydatid cyst, angiomyolipoma and dysplastic kidney. 9 nephrectomies [19%] were performed for malignancies of the kidney including renal cell carcinoma, Wilms tumour and squamous cell carcinoma. The left kidney [58%] was more involved than the right. Males undergoing nephrectomy [52%] were slightly more than females.

Conclusion: The indications for Nephrectomy were predominantly for benign conditions, mainly chronic pyelonephritis and its complications, with nephrolithiasis being present in a majority of cases. These conditions can probably be reduced by educating the masses on personal hygiene and the importance of drinking plenty of water.

Key words: Clinical profile, Kidney, Pathologies

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INTRODUCTION

The kidney which is an important organ for excretion can be involved by various diseases which may necessitate its removal. Simple nephrectomy is indicated in patients with an irreversibly damaged kidney owing to symptomatic chronic infection, obstruction, calculus disease, or severe

traumatic injury. Nephrectomy may also be indicated to treat renovascular hypertension owing to incorrectable renal artery disease, congenital dysplasia,[1] and tumours. There is geographical variation in the indications for nephrectomy as certain urological diseases are most prevalent in some countries.

The clinical profile of the patients and pathology of the removed kidney in our institute were studied. We present below the indications for nephrectomy in our teaching institute,

AIMS AND OBJECTIVES

To study the clinical presentation and the incidence of the various pathologies seen in nephrectomy specimens in our hospital.

MATERIALS & METHODS

The medical record of patients who underwent nephrectomy in the past 3 years in our Institute, which is a teaching hospital and a tertiary care centre, was reviewed after obtaining Institute Ethics Committee clearance. The clinical presentation, indication for nephrectomy, and their histopathological reports were studied. Data recorded included sex, age, affected side, clinical presentation, indication for nephrectomy and histopathological report. The indications were divided into benign and malignant conditions. The results were expressed as percentage.

OBSERVATION & RESULTS

During the past three years, 48 Nephrectomies were performed in our institute. The statistics are given in the tables below.

Table 1: Indications for Nephrectomies

Indications	Number	Cases in which stones present	Percentage of total cases
A] BENIGN I. Pyelonephritis			62.5%
a. Chronic pyelonephritis	19	8	
b. Xanthogranulomatous pyelonephritis	7		
c. Pyonephrosis	3	3	
d. Tuberculous pyelonephritis	1	3	
II. Hydronephrosis	6	2	12.5%
III. Dysplastic kidney	1		2%

IV. Hydatid cyst	1		2%
VI. Angiomyolipoma	1		2%
B] MALIGNANT a) Renal cell carcinoma a) Wilms tumour b) Adult Wilms tumour c) Squamous cell carcinoma	 6 1 1 1	 1 1	19%
TOTAL	48	18	100

Table 2: Patient complains

Chief Complaint	Number of Cases	Percentage (%)
Flank Pain/ Abdominal pain	31	64.5%
Fever	13	27%
Burning on micturition	11	23%
Flank swelling / Lump	8	16.6%
Hematuria	5	10.4%
Vomiting	1	2%
Urine dribbling	1	2%
Foul smelling urine	1	2%

Table 3: Side of pathology of organ

Side of Kidney	Number	Percentage
Left	28	58%
Right	20	42%

Table 4: Distribution of affected Gender

Sex	Number	Percentage
Male	25	52%
Female	23	48%

Table 5: Age group affected

Age	Number	Percentage
<20 years	10	21%
21 - 40 years	11	23%
41 - 60 years	20	41%
61 - 80 years	7	15%

DISCUSSION

From the review of literature it appears that there is geographical variation in indications for nephrectomy. The reported rate of nephrectomy for malignant conditions from Norway and Nigeria was 68% and 67% respectively.[2,3] Beisland et al and Kubba et al from Norway and UK respectively have reported that there has been a change in the indications for nephrectomy in their countries during the last few decades with more nephrectomies now being performed for malignant conditions.[3,4] In a report of 423 consecutive nephrectomies from Jordan, 70% were performed for benign conditions.[5] Asian studies report that about 77% nephrectomies are performed for benign conditions. [1,6] Thirty nine of our total forty eight cases (81%) were for benign conditions and only nine (19 %) were for malignant causes. The most prominent cause was pyelonephritis and the other benign causes were hydronephrosis, hydatid cyst, renal dysplasia and angiomyolipoma.

In our series there were more males than females who underwent nephrectomies, with most affected being in the 41-60 years age group. All the patients with malignancies were above 40 years. Among the seven paediatric cases in our series, the youngest was an 8 month old child who had a non functional left kidney, in association with congenital pelvi- ureteric junction obstruction and hydronephrosis . The other paediatric cases included duplex kidney (3 cases), hydronephrosis with chronic pyelonephritis (1case), Hydatid cyst of the kidney (1 case), and Wilms tumour (1 case). A study on paediatric indications for nephrectomy from Jordan [7] showed that complicated vesicoureteric reflux, urinary tract stones or infection were predominant in the 70 cases who underwent nephrectomy for benign conditions. A study from London also found that the majority of total paediatric nephrectomies were performed

for multicystic dysplastic kidneys, reflux nephropathy, pelvi-ureteric junction obstruction and dysplasia.[8]

Dysplastic changes are defined as altered metanephric differentiation during embryogenesis, leading to abnormal kidney. Urinary obstruction during renal embryogenesis is probably the most frequent cause. In adults it is restricted to the obstructed areas of the kidney. [9]

The most common presenting symptom was flank pain. All the cases of renal cell carcinoma presented with haematuria.

Chronic pyelonephritis was the most common pathology found in our nephrectomy specimens, with nephrolithiasis being present in 14 cases. Studies have found that renal stones are a major factor for nephrectomy.[1,3] A study at Sindh, Pakistan [10] found that of the total number of 2600 patients admitted with urolithiasis, 88 (3.38%) patients underwent simple nephrectomy for non-functioning kidney. In 70% of their cases the stones were located in the renal pelvis.

Angiomyolipoma is a benign renal tumor, that has an incidence of 0.3% to 3 % and is more prevalent in women than in men, suggesting the role of female hormone in the growth of the tumor. Isolated angiomyolipoma accounts for 80% of cases that occurs sporadically in the 4th to 5th decade of life; however when it is associated with tuberous sclerosis, it can be multiple and bilateral and mostly occurs in younger patients.[11]

Renal cell carcinoma, Adult Wilms tumour and squamous cell carcinoma constituted the malignancies in our series, for which nephrectomy was performed. The case of squamous cell carcinoma presented as pyonephrosis and only on nephrectomy was the malignancy in presence of a stone detected. We had one case of adult Wilms tumour, which is very rare in our country, [12] and with an incidence rate of less than 0.2 per million per year in Europe. [13]

If certain measures are taken to spread awareness about the leading indications of nephrectomies, at least a few surgeries for benign conditions can be avoided. If patients are told the benefits of drinking water, the complications of renal stones might be avoided. A study done by the Harvard School of Public Health has shown that drinking eight glasses of water per day reduces the risk of renal stones by 35%. [14] Other studies for recurrent calcium stones have also proved the role of increased

fluid intake in preventing nephrolithiasis. [15] Frequent urination, and genital hygiene should also be stressed upon to spread awareness on the prevention of urinary tract infections. Measures like awareness talks in villages, posters in hospitals and educational institutes might help promote our cause.

CONCLUSION

There is a much higher rate of nephrectomies performed for benign conditions in our study. The predominant benign condition seen was pyelonephritis (62.5%), which can be controlled if diagnosed at an early stage. Screening and educational programmes are needed to decrease the rate of nephrectomy for preventable conditions like renal stones and pyelonephritis.

FUTURE PERSPECTIVES

Awareness of the indications and clinical profile of patients undergoing nephrectomy may be useful to educate people about prophylactic measures to avoid chronic renal infections, which may save unnecessary loss of a vital organ like kidney.

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