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Nephrectomy at the University of Port Harcourt Teaching Hospital: a tenyear experience

N Eke and RC Echem

Urology Unit, Department of Surgery, University of Port Harcourt Teaching Hospital, Port Harcourt, Nigeria

Summary

The case records of patients who had nephrectomy from 1989 to 1998 were retrieved. Data extracted for analysis included age, sex, clinical features, indications for nephrectomy, post-operative complications and histological findings. Thirty-four unilateral nephrectomies in 21 males and 13 females were done. The patients were aged between 1.5 to 75 years. The predominant presenting features were abdominal pain (76.5%), abdominal mass (70.6%), haematuria (61.8%) and weight loss (47.1%). Diagnostic investigations were intravenous urography and renal ultrasound scan. The major indications for renal exploration included non-functioning kidney and renal mass suspected to be carcinoma. The histopathological findings included renal malignancy 23 (67.6%), hydronephrosis 6 (17.6%) and renal infections 3 (8.8%). The male/female ratio in nephrectomy for malignancy was 1:1.09. Renal trauma was the indication in only one patient. Non-functioning kidneys on intravenous urography (IVU) occurred in both malignant and infective lesions. Hypertension was found in 9 patients preoperatively. It resolved in 7 patients after operation. The histological finding in one kidney differed from what was assumed at operation. Follow-up USS showed compensatory hypertrophy in the remaining kidneys. Post-operative sepsis occurred in 4 patients. One of these was a retroperitoneal abscess. Two patients with huge tumours died on the operating table. Two died from sepsis. Four patients died from metastatic disease within two years after operation. Malignancies constituted the commonest indication for and commonest cause of mortality in nephrectomy. Antibiotics prophylaxis is advocated. All nephrectomy specimens should be subjected to histopathological examination.

Keywords: Nephrectomy, post-operative, renal, urography, carcinoma

Correspondence: Dr. N Eke, 27 Old Aba Road, PO Box 5575, Port Harcourt, Nigeria. Phone/Fax 234 84 231337 E-mail: ndubuisi_eke@hotmail.com

Résumé

Le cas enregistre de malades qui avaient le néphrectomie de 1989 à 1998 a été rapporté. Les données extraits pour analyse ont inclus l'âge, le sexe, les traits cliniques, les indications des néphrectomie, les complications postopératoires et les conclusions de l'histologie. Trentequatre néphrectomies unilatérales dans 21 mâles et 13 femmes ont été faits. Les malades ont été vieillis entre 1.5 à 75 années. Les traits prédominants étaient une douleur abdominale (76.5%), une masse abdominale (70.6%),l' haematuria (61.8%) et une perte du poids (47.1%). les enquêtes diagnostiques étaient urographie intraveineux et scanner de l'ultrason rénal. Les indications majeures pour l'exploration rénale ont inclus la rein non fonctionner et une masse rénale suspecté d'être carcinome. Les conclusions de l'histologique ont inclus la malignité rénale 23 (67.6%), L' hydronephrosie 6 (17.6%) et des infections rénales 3 (8.8%). La proportion du mâles / femmes dans la néphrectomie pour malignité était 1:1.09. Le trauma rénal était l'indication dans seulement un patient. Des reins non fonctionnant sur l'urographie intraveineux (IVU) se sont produit dans les deux méchant et lésions non effective. L'hypertension a été trouvée avant une chirurgie dans 9 malades. Il a résolu dans 7 malades après une chirurgie. Les histologiques qui trouvent dans un rein ont été différent de ce qui a été supposé à l'opération. Une suite de l'urographie a montré à l'hypertrophie compensatrice dans les autres reins. La septicité postopératoire s'est produite dans 4 malades. Un de ceux-ci était un abcès du rétro péritonéal. Deux malades avec des tumeurs énormes mortes sur la table chirurgienne Deux sont morts de septicité. Quatre malades sont morts de maladie du métastatique dans deux années après l'opération. Les malignités ont constitué des 'indication et des causes les plus communs de mortalité dans la néphrectomie. La prophylaxie des antibiotiques est préconisée. Tous les spécimens de néphrectomie devraient être soumis à l'examen de l'histopathologie.

Introduction

The kidney is a site of various pathologies, some of which require its removal. Since the first elective nephrectomy for abdominal tumour by Gustav Simon of Heidleberg in 1869, several nephrectomies have been done for various kidney pathologies [1,2,3,4]. Port Harcourt is a cosmopolitan city in the oil-producing Niger-Delta area of Nigeria. The aim of this paper is to review the nephrectomies performed at the University of Port Harcourt Teaching Hospital over a decade from 1989 to 1998 and compare the findings with reports elsewhere.

Materials and methods

The list of patients who underwent urological operations from January 1989 to December 1998 at the University of Port Harcourt Teaching Hospital was obtained from the operations register kept in the operating theatre, admission and discharge register, nursing records and the histopathological records. The case notes of patients who had nephrectomies in this list were obtained from the Records department. The data extracted included the sex, age, affected side, symptoms and signs and their duration prior to presentation, investigations done, duration of hospital stay, number of units of blood transfused, indications for nephrectomy, post-operative complications, follow-up period, histopathological reports and mortality.

Results

In the period of study, there were 1,875 urological operations on children and adults at the University of Port Harcourt Teaching Hospital. Thirty-four (34) nephrectomies were done. One was an emergency nephrectomy for trauma while 33 were done electively. The pre-operative indications for nephrectomy included renal mass suspected to be neoplastic, suspected renal hypertension, hydronephrosis each with or without nonfunctioning kidney on IVU. Each patient was assessed by an anaesthetist for fitness for surgery using the parameters of satisfactory haemoglobin concentration, controlled blood pressure and absence of respiratory

 Table 1: The age distributions of nephrectomies and those with malignancies

Age Range	Number (Percentages)	Malignancies	Male	Female
0-9	6(17.6)	5	3	2
10-19	5(14.7)	3	1	2
20-29	3.(8.8)	1	0	1
30-39	7.(20.6)	4	1	3
40-49	4.(11.8)	3	i	2
50-59	2.(5.9)	2	1	ĩ
60-69	5.(14.7)	4	3	1
70-79	2.(5.9)	1	1	0
Total	34(100)	23	11	12

distress. A 5-year-old boy with a huge left renal mass had a blood pressure of 130/100 mm Hg and was dyspnoic from the abdominal distension. He was intubated and ventilated at operation and it was hoped that the abdomen would be decompressed following nephrectomy. Twentyone nephrectomies were done in males and 13 in females, giving a male:female ratio of 1.6: 1. The ages of the patients ranged from 1° years to 75 years with a mean age of 33.4 years. Twenty one (61.8%) were below 40 years and 13 (38.2%) were over 40 years (Table 1). Among the patients

Table 2: The symptoms and signs at presentation

Symptom/sign	Number (Percentage)
Abdominal pain	26.(76.5)
Abdominal mass	24(70.6)
Haematuria	21 (61.8)
Weight loss	16(47.1)
Pallor	15(44.1)
Fever	13 (38.2)
Loss of appetite	12(35.3)
Vomiting	10(29.4)
Hypertension	9(26.5)
Constipation	8(23.5)
Dizziness	6(17.6)
Hepatomegaly	2 (5.9)
Splenomegaly	2 (5.9)
Cough	2 (5.9)
Chest pain	2 (5.9)
Hypotension	1 (2.9)
Leg swelling	1 (2.9)
Facial swelling	1 (2.9)

with malignant diseases, 13 were below and 10 were above 40 years of age.

The common signs and symptoms included abdominal pain (76.5%), abdominal mass (70.6%), haematuria (61.8%) and weight loss (47.1%) (Table 2). A patient with a scalp swelling had metastasis to the scalp.

Table 3. Duration of symptoms prior to presentation

Duration	Number (Percentage)
< 1 month	4(11.8)
1 2 months	7 (20.6)
1-3 months	11 (32.4)
4-6 months	4(11.8)
7-12 months	4(11.8)
1-2 years	1 (2.9)
3-5 years	3 (8.8)
> 5 years	34(100)
Total	

One of the patients with cough later developed haemoptysis. Ascites was seen in the lymphoma patients and at a late stage in one patient with renal cell carcinoma. Obstructive jaundice was seen in one patient with renal cell carcinoma.

The duration of symptoms prior to presentation is shown in Table 3. The shortest was the boy who fell from a scaffold and sustained a shattered left kidney. The duration of hospital stay after nephrectomy ranged from 8 to 60 days with an average of 22.6 days.

Investigations requested for patients who subsequently had nephrectomy included full blood count, serum electrolytes, urea and creatinine, liver function tests, malaria parasites, bone marrow biopsy, urinalysis and urine culture, chest radiography, intravenous urography (IVU) and abdominal ultrasound scan. The haemoglobin concentration ranged from 6 gm/dL to 14.3 gm/dL. Over 50% had levels below 10 gm/dL. Three patients showed biochemical evidence of renal impairment. Liver function tests were normal except in one patient who had metastases to the liver. Bone marrow biopsy was done in two patients with non-Hodgkin's lymphoma. It confirmed lymphoid infiltration. A left-sided pleural effusion was seen in one patient. The IVU showed poorly or non-functioning kidney in 24, hydronephrosis in 8, displacement/distortion of the calyx in 6 and renal calculus in one patient. The ultrasound scan findings included renal masses in 13 patients, hydronephrosis in 8 and renal cysts in 4. It was not done in 9 patients who could not afford it. A skull radiograph was done in one patient with a scalp swelling and haematuria. It showed punched out osteolytic lesions.

The number of units of blood transfused ranged from none to 12 units with an average of 3 units. The patients had haematinics and antimalarials for those who had fever and malarial parasites in the blood. Cytotoxic drugs were administered to the patients with Wilms' tumour and non-Hodgkin's lymphoma postoperatively.

Hypertension was found in 9 patients (26.5%). Among these, it resolved post-operatively in 7 patients. One patient remained hypertensive. One patient could not be assessed because he died on the operating table. Thirteen patients (38.2%) defaulted after discharge from the hospital. Twenty patients (58.8%) were followed-up for a variable period from one month to 24 months before they either died or defaulted from follow-up. Of the 5 patients who were followed-up and who had repeat abdominal ultrasound scans, 3 showed evidence of compensatory contralateral renal hypertrophy and 2 showed normal contralateral kidneys.

The major post-operative complications were retroperitoneal abscess secondary to an infected

retroperitoneal haematoma in one patient and septicaemia in 3 patients. There were 4 (11.8%) hospital deaths. Two patients died on the operating table before the surgery was completed. One of these was a 48-year-old lady with a huge right renal cell carcinoma. The tumor had extended into the renal vein and inferior vena cava, but this was not reported in the USS. She had a cardiac arrest during mobilisation of the kidney. The other death occurred in the five-year-old hypertensive boy with a huge right Wilms' tumor which ruptured during mobilisation. Two patients died from septic shock in the post-operative period. Four patients died as out-patients from metastasis within two years after nephrectomy.

Table 4:	The p	atholog	gy found	l in sp	pecimens
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Lesion		Number
A. Renal Malignancies	-	23
Wilms' Tumour	-	7
Renal cell carcinoma	-	13
Transitional cell carcinoma	-	1
Lymphoma (Non Hodgkins)	-	2
B. Hydronephrosis (without maligna	ncy)	6.
Hydronephrosis alone	-	4
" + Renal cyst	-	1
" + Ectopic Kidney	-	1
C. Trauma	-	1
D. Renal cyst	-	1
E. Infective processes	-	3
-Acute Pyelonephritis.	-	2
-Chronic Pyonephrosis	-	1

The kidneys removed were equally distributed to the right and left. The histopathological findings in the nephrectomy specimens are shown in Table 4 and included renal malignancy 23 (67.6%), hydronephrosis 6 (17.6%) and renal infections 3 (8.8%). In one patient with a non-functioning left kidney, neovascularisation and 'invasion' of the colonic mesentery were noted at operation. The presumed operative diagnosis of renal malignancy was refuted by the histopathological diagnosis of chronic pyonephrosis.

Discussion

The average number of cases over the 10-year period was 3.4 per year. This is similar to other reports from Africa [5,6]. Although the population covered in each report was not stated, these figures are small compared to those in

Europe [1]. Nephrectomy was done more often in males than in females although this was not statistically significant. The equal male:female ratio of nephrectomy for malignancy in this series contrasts with a recent finding in Denmark [7], where the ratio was 1.53:1. The kidneys removed in this series were equally distributed between the right and the left. This contrasts with the findings of Shokeir et al. [8], who reported left-sided nephrectomy prevalence as well as female predominance in emphysematous pyelonephritis. The common signs and symptoms in this series were abdominal pain, abdominal mass and haematuria. Of these, only haematuria is specific for renal tract disease. It is a common symptom leading to nephrectomy when the lesion is located in the upper urinary tract [9,10]. The predominant indication for nephrectomy was renal malignancy. Renal cell carcinoma constituted 38.2% of these, followed by Wilms' tumour 20.6%. Hydronephrosis and renal infections were less common indications for nephrectomy as has been previously reported [1]. The low incidence of nephrectomy for trauma in this series may partly be a reflection of the current preference for conservative management of renal trauma [11].

The operative findings confirmed the pre-operative diagnosis in 82.3% of our cases. We relied mainly on the presenting clinical features, USS and IVU. We believe that this level of conformity between the pre-operative and operative findings is acceptable. Other investigative procedures such as CT scan, renal angiography and laparoscopy were not used because we lack the facilities. The final diagnosis of chronic pyonephrosis was made in one patient only at histopathological examination. This underscores the need for histological examination of even the seemingly obvious specimen [12,13,14]. The synchronous occurrence of renal tumours and benign renal lesions has previously been reported [15].

Hypertension was noticed in 9 (26.5%) patients. Of these, one 5-year old hypertensive child died during the operation, 7 patients (77.8%) were cured by nephrectomy and one patient remained hypertensive post-operatively. This probably indicates that the hypertension was due to renal pathology. The effects of nephrectomy on hypertension have been assessed previously. Cure rates as high as 76% in children and 11 to 50% in adults have been reported [16].

The compensatory hypertrophy of the remaining kidney noticed in some patients during follow-up with ultrasound scanning has been reported by others [17,18]. The long-term effects of compensatory postnephrectomy renal hypertrophy especially in children are yet to be determined [17].

Two patients died at operation. The lady with a huge right renal tumor extending into the renal vein probably had a tumor embolism from the extension. A request for post-mortem examination was refused by the relatives. Perhaps clamping of the inferior vena cava if the extension was diagnosed preoperatively [19] could have prevented this complication. The second operative death occurred in a 5-year old child with a huge Wilms' tumour, which ruptured during mobilisation. Unfortunately, no drugs have been found effective to reduce tumor bulk in renal cell carcinoma. However, preoperative cytotoxic drugs have been reported to reduce the tumour bulk in Wilms' tumor [20,21] and would have been beneficial in this child, but the drugs were not available at the time. Two postoperative deaths resulted from sepsis. This makes a case for antibiotics prophylaxis in nephrectomy as has been advocated [8,22]. The efficacy of antibiotics that are used to treat renal tract infections is expected to reduce the incidence of nephrectomy for infective renal lesions.

Conclusion

Malignancies constitute the commonest indication for nephrectomy. Prophylactic antibiotics are recommended. Specimens should always be subjected to histopathological examination in spite of gross appearances.

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