

Childhood Renal Disorders In Kano, Nigeria

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Abstract

Background: Renal disorders causing significant morbidity in the third world need to be identified because of the necessity for early diagnosis and treatment in order to prevent chronic renal failure. **Objectives:** The study is to demonstrate the spectrum of renal disorders and find out how it differs from those of other centres.

Methods: A prospective study of children with renal disorders was undertaken over six years (2003-2008). Case notes of all children in the renal register were analyzed. Information extracted were age, sex, duration of illness before presentation, occupation of parents, mode of presentation and clinical findings at examination, laboratory results, diagnosis, management and follow-up.

Results: There were 436 patients aged between birth and 14 years. The commonest disorders in this series were nephrotic syndrome (27.5%), acute glomerulonephritis (21.8%). Acute renal failure (16.5%), urinary tract infection (14.9%) and chronic renal failure (5%). Less common disorders were obstructive uropathy, enuresis, neurogenic bladder, benign isolated haematuria, nephrogenic diabetes insipidus and urolithiasis. There was a remission rate of 60% among the nephrotic syndrome patients using various combinations of therapeutic regimes including salt poor albumin, diuretics and prednisolone. Acute glomerulonephritis which was preceded mostly by pyoderma rather than by pharyngitis, was associated with a good prognosis. Urinary tract infection was probably under diagnosed with no cases of vesico ureteric reflux. There were no cases of inherited metabolic or genetic disorders, even though there is prevalent cultural practice of consanguineous marriage.

Conclusion: From the frequencies of the renal disorders, it is recommended that preventive

nephrology at the primary health facility should be vigorously pursued.

Introduction

The pattern of childhood renal disorders is similar in most parts of the world; although the frequency of occurrence of the various types of disorders appears to be different.¹ Renal disorders causing significant morbidity in the third world need to be identified because of the necessity for early diagnosis and treatment in order to prevent chronic renal failure².

Hendrickse and Gilles³ documented the profile of renal diseases in children in South West Nigeria over a five year period (1959-1963). A similar study over a four year period (1978-1982) was carried out by Abdurrahman, Babaoye and Aikhionbare⁴ in Zaria, Northern Nigeria. Also Eke and Eke⁵ over a five year period (1986-1991) studied renal disorders in children in Port-Harcourt (South-South Nigeria). About a decade ago Okoro and Okafor⁶ also studied renal disorders in Eastern Nigeria over a 13 year period. These studies demonstrated a similar spectrum of renal disorders, but with differences in the frequencies of occurrence of various disorders. It is against this background that the present study was undertaken at Kano, a commercial city in North Western Nigeria.

Subjects and Methods

The Renal Unit of Aminu Kano Teaching Hospital was established in 2003. A register of renal cases was opened. Children from birth to 14 years, presenting with features suggestive of renal problems were admitted or managed as out-patients. In the present study, the case notes of all the children in the Renal Register were analyzed. Information extracted included name, age, sex, duration of illness before presentation, occupation of parents, mode of presentation and clinical findings at examination, laboratory results, diagnosis, in-patient management, and follow-up.

Investigations routinely carried out included full

blood count (FBC), Erythrocyte sedimentation rate (ESR), Haemoglobin genotype, malaria parasite, urine analysis, urine culture and sensitivity, serum electrolytes, urea and creatinine. Other tests carried out depending on the initial provisional diagnosis, included renal ultrasonography, intravenous urogram, micturating cystourethrogram, serum proteins, cholesterol, screening for hepatitis B surface antigen and Human Immunodeficiency Virus 1 and 2, ASO titre and throat swab.

In addition to drug therapy, peritoneal dialysis was performed on those who required the procedure and haemodialysis for older children with good vascular access.

Results

Four hundred and thirty six patients with renal disorders seen over a six year period (2003-2008) were studied. There were 259(59.4%) males and 177(40.6%) females. The pattern of disorders is shown in Table 1.

The commonest disorder was nephrotic syndrome

which accounted for 120(27.5%) of all the renal disorders. Eight of the 120(6.7%) had homozygous sickle cell disease. The age range was three to fourteen years with a peak at five to seven years. There were no renal biopsies done due to lack of facilities. However, treatment consisted of various combinations of high protein diet, diuretics, salt poor albumin, and prednisolone. The overall remission rate was 60%, with prednisolone alone accounting for 28%. Remission was sustained without relapses in 48%, whilst relapses occurred frequently in 12.8% and infrequently in 39.2%. Mortality rate was 11(9.2%) and these were mainly due to chronic renal failure, hypertensive encephalopathy and cerebrovascular accidents (Table II).

Acute glomerulonephritis was the second most frequent disorder, occurring in 95 (21.8%) of the patients. There were 52 (54.1%) males and 43(45.3%) females, whose ages ranged from seven months to 14 years with peak incidence at 3 years. Antecedent history of pyoderma was obtained in

Table I: Pattern of Renal disorders in 436 children in Kano

Disorder	No. of patients	% of Total 436
Nephrotic syndrome	120	27.5
Acute glomerulonephritis	95	21.8
Acute renal failure	72	16.5
Urinary tract infection	65	14.9
Chronic renal failure	22	5.0
Obstructive uropathy	15	3.4
Hypertension	13	3.0
Enuresis	12	2.8
Neurogenic bladder	10	2.3
Benign isolated haematuria	8	1.8
Nephrogenic diabetes insipidus	2	0.5
Urolithiasis	2	0.5
TOTAL	436	100

Table II: Causes of deaths in 11 children with Nephrotic syndrome

Causes	No. of death	Percent of total
Chronic renal failure	7	63.6
Hypertensive encephalopathy	2	18.2
Cerebrovascular accidents	2	18.2
Total	11	100

Table III: Clinical features in 95 cases of Acute Glomerulonephritis

Clinical features	No. of cases	Percent of 95 Patients in whom found
Oedema	93	97.9
Hypertension	57	60
Oliguria	49	51.6
Gross haematuria	46	48.4
Antecedent pyoderma	22	23.2
Antecedent pharyngitis	15	15.8

Table IV: Pattern of Renal Diseases in Kano, compared with those in other centres.

Disorders	Ibadan n=196	Zaria n=517	P/Harcourt n=699	Enugu n=854	Kano n=436
Nephrotic syndrome	79.6	19.3	14.6	40.5	27.5
Acute glomerulonephritis	11.2	39.1	11.4	31.9	21.8
Acute renal failure	-	6.6	4.7	7.1	16.5
Urinary Tract Infection	3.6	7.0	68.9	5.6	14.9
Chronic renal failure	-	4.4	2.1	2.9	3.4
Obstructive uropathy	-	7.7	2.7	1.4	3.0
Hypertension	-	9.5	-	1.3	2.8

** The figures in the columns are the percentages of the total No. of patients "n" on the top of each column

22(23.2%) and that of pharyngitis in 15(15.8%). The clinical features in the 95 children with acute glomerulonephritis are shown in Table III. Pattern of systemic complications include heart failure 15(15.8%), hypertensive encephalopathy 12 (12.6%) and acute renal failure 10 (10.5%). Two (2.1%) of the children died within 72 hours of admission from acute renal failure.

There were 72 cases - 44(61.1%) males and 28(38.9%) females of acute renal failure with an age range of eight months to 12 years. The main cause of

acute renal failure was acute diarrhoeal disease with severe dehydration which occurred in 39 (54.2%) patients. Twelve patients were managed with peritoneal dialysis, twenty-one with haemodialysis and the remaining thirty-nine patients conservatively. There were 6(8.3%) deaths. Chronic renal failure was present in twenty-two patients, twelve of whom received intermittent peritoneal dialysis. The remaining 10 who were managed conservatively died compared with 6(50%) of the 12 who had peritoneal dialysis. Thus

the mortality in chronic renal failure was 16 (72.7%).

Symptomatic urinary tract infections were found in 65(14.9%) patients in the series and the age range was three weeks to 11 years. The male to female ratio was 1:1. The commonest clinical manifestation was dysuria in 32(49.2%). *Escherichia coli*, the most frequently cultured organism was found in 56.5% of the patients. Only 48 patients with symptomatic UTI underwent radiological investigations. These revealed abnormalities in 9(13.8%) of the 65 with UTI. Posterior urethral valve and hydronephrosis contributed seven and five percent respectively to the 13.8%. There was no evidence of vesicoureteric reflux.

Less common disorders were obstructive uropathy 15(3.4%), enuresis 12(2.8%), neurogenic bladder 10(2.3%), benign isolated haematuria 8(1.8%), nephrogenic diabetes and urolithiasis were 2(0.5%) cases each respectively. No cases of inherited metabolic renal disorders were recorded.

Comparative patterns of renal disorders reported from Ibadan, Zaria, Port-Harcourt, Enugu and Kano in the present series are presented in Table IV.

Discussion

Socio-economic, geographical and genetic factors play important roles in determining the prevalence and pattern of renal disease in various parts of the world.⁷ In our environment, prevailing local conditions such as malnutrition, poor environment, personal hygiene and poverty play a major role in the development of renal diseases in childhood.^{3,4} The pattern of childhood renal disease recorded in the present study is similar to that reported from other parts of Nigeria^{3,6} and elsewhere^{1,7} although the frequencies of occurrence of different diseases are different.

The high prevalence of nephrotic syndrome recorded in our series is consistent with the pattern reported from Nigeria,^{3,6} Jordan⁸ and elsewhere.⁹ The fact that we obtained 28% remission rate, with prednisolone alone contrasts with reports that nephrotic syndrome in African children is characterized by a poor response to corticosteroids.^{3,4,5,11} However, good response to steroid therapy is reported in Europe,¹¹ Middle East⁸ and USA.¹ The occurrence of acute glomerulonephritis was sequel to antecedent pharyngitis and pyoderma probably due to Beta-

haemolytic streptococcus infection in 37(39%) of the patients in our series and this is similar to other reports from other centres in Nigeria^{4,5,6,12} as well as East Africa¹³. The prevalence of AGN in the present study was lower than those reported from Zaria¹⁴, Port-Harcourt¹⁵ and Ilorin¹² but higher than from Ibadan,³ and Uganda¹³. AGN was more commonly preceded by pyoderma than by pharyngitis recorded in the present study. This agrees with reports from Zaria¹⁴ and Enugu⁶ but differs from other reports from Nigeria^{3,15}, Europe¹⁶ and the Middle East¹ where pharyngeal infections were reported to be more common than skin infections. The finding of a high incidence of hypertension in our AGN patients is similar to that of Enugu⁶ series and other workers in Africa^{3,13,14} but this is in contrast to those found in children in temperate countries. Significant reduction in the incidence of AGN in the communities can be achieved by improvement in personal hygiene, environmental sanitation and an early and adequate treatment of pyoderma and pharyngitis. This is so because the association between low socio-economic standards and AGN has been well documented.

Urinary tract infection (UTI) accounted for 14.9% of the cases in our series, in contrast to 68.9% reported from Port-Harcourt⁵ and the lower figure of 5.6% from Enugu.⁶ As previously noted from Ibadan³ and Zaria⁴, the lower figures than port-Harcourt's recorded in the present and some earlier reports^{3,5,6}

could be explained on the basis of underdiagnosis since only symptomatic children were screened. Also in the present study, not all children with fever were screened for UTI by urine examination while some of the children had received antibiotics before attending the hospital. Prospective screening studies carried out on out-patient basis by Morton and Lawande¹⁹ in Zaria, revealed UTI in 10% of children with fever, and in 22% of children with dysuria while at Ibadan, Akinkugbe et al²⁰ reported asymptomatic bacteriuria in 6% of urban children and 24% of rural children. A significant radiological feature of children with UTI in Nigeria was the conspicuous absence of vesico-ureteric reflux (VUR) as reported in another study.²¹

As seen in the present, and other studies from developing countries⁶, high mortality rates

accompany acute and chronic renal failure. The reasons for the high mortality rates, include late presentation, delay in institution of treatment, inadequate facilities for treatment such as lack of

dialysis fluids and catheters and, problem of vascular access in young children. It is recommended that preventive nephrology should be practiced by all. Preventive paediatrics consists of efforts to avert rather than to cure disease and disability. The goal of preventive nephrology is not in any way different from this except that the effort is directed at averting renal disorders.²² It includes primary prevention which is the attempt to avoid renal disease altogether and prevent its onset mainly by public enlightenment. Secondary prevention is the recognition and elimination of the precursors of renal disease such as screening for asymptomatic bacteriuria and also prompt diagnosis and treatment of renal disease in its early stages. Tertiary prevention on the other hand consists of measures aimed at reducing or arresting the damage or disability arising from established renal disease. Such measures include dialysis and renal transplantation which are not yet readily available in the developing countries.

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The Influence Of Previous Abortions On Risk Of Hypertension In Pregnancy In Nulliparous Parturients.

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Abstract

Objective: Hypertensive disorders in pregnancy and abortions are common events in Nigeria. This study was designed to determine the influence of previous abortion on the risk of hypertensive disorders in pregnancy in nulliparous patients in our environment.

Method: A group of consecutive 508 nulliparous women were followed up from booking till delivery, history of previous abortion was obtained at baseline and the relationship between this and the risk of developing hypertension was examined by univariate analysis and logistic regression.

Results: The incidence of hypertension in pregnancy in this study was 20.6% overall. It was 16.1% and 23.7% among patients with a history of a previous abortion and those without a history of abortion respectively. In the age group categories, the highest incidence was among mothers less than 20 years of age (31.4%) and lowest (15%) in the age group of mothers between 26 and 30 years of age.

The adjusted odds ratio for hypertension among those with history of previous abortion compared with those without, adjusting for all the other variables in this model was 0.62, showing a 38% reduction in odds with a positive history of previous

abortion. Only the 26-30 years age group showed a significantly lower reduction in odds of hypertension compared to the less than 20 years group ($P = 0.009$). Family history of hypertension was not a significant predictor in the logistic regression model ($P = 0.144$, $CI = 0.88 - 2.44$).

Conclusion: History of previous abortion in nulliparous women reduces the risk of developing hypertensive disorders of pregnancy by 38%.

Keywords: Abortions, Pregnancy, Hypertension.

Introduction

Hypertension in pregnancy is commonly a disease of first pregnancy. It has been suggested that rather than being a disease of primiparity, it is actually a disease of primigravidity^{1,2}. Several risk factors have been associated with the disease³ and there has been some suggestion of possible immunological etiology for it^{1,4} especially with increasing evidence that immunological reactions may arise from exposure to paternal antigens through prolonged pre-conception cohabitation⁴, previous abortions, preterm and term pregnancies^{2,5,6}.

Hypertension in pregnancy is more common in low-resource countries, like Nigeria, than developed