

Outcome of Paediatric Renal Diseases in University of Uyo Teaching Hospital, Uyo, Nigeria

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ABSTRACT

Paediatric renal diseases constitute a very important non-communicable disease entity with high mortality or long term sequelae in survivors. End Stage Renal Disease is usually the end of the spectrum and its management is out of the financial reach of many Nigerians. Care of the chronically ill child has far-reaching effects on the family. It is essential to describe the outcome of this disease entity in our community so as to know what interventions could improve it. The objective was to determine the response to treatment of various childhood renal diseases in terms of number of discharges, follow-up or mortalities. A prospective study of consecutive children aged 17 years and younger admitted with renal diseases at the paediatric nephrology unit of the University of Uyo Teaching Hospital, Nigeria, from January 2003 to December 2012. Information entered into the renal register included the patients biodata, clinical findings, results of investigations, diagnoses, treatment modalities and outcome of management. The data was analysed using SPSS version 17. Renal diseases constituted 3.1% of the 5,275 paediatric admissions over the study period. Overall mortality rate was 11.7%. Nephrotic syndrome was the most prevalent diagnosis and contributed the largest mortality (52.6%) mainly from complications of CKD, followed by Acute Kidney Injury (26.3%). A total of 38.5% of the patients were discharged against medical advice due predominantly to financial constraints. The mortality rate was high, and financial constraints necessitated many discharges against medical advice. We recommend Government's support for renal replacement therapy for children.

Keywords: Children, Chronic Kidney Disease, Nephrotic Syndrome, Nigeria, Outcome, Renal Diseases.

INTRODUCTION

Paediatric renal diseases constitute important causes of morbidity and mortality¹. Our national reports of the contributions of these diseases to paediatric admissions in teaching hospitals have ranged from 2.9% in Jos,² to 4.5% in Benin-City.³ Elzouki in Libya, Africa reported a prevalence of 3.0%.⁴ Simple entities like urinary tract infections can be managed with good short term outcome even in resource poor countries. The more resource-demanding disorders like severe acute kidney injury (AKI) usually pose management challenges.⁵ In settings where human and technological advances are inadequate for effective management, paediatric renal mortalities have been high.⁶ Case fatality rates from AKI were as high as 42.6% and 42.9% from south-western⁵ and mid-western³ Nigeria respectively in comparison with a good immediate outcome of 95% reported by Hiu-Sickle *et al*⁷, in American paediatric patients who

required intensive-unit's care for AKI. Survivors of AKI may progress to chronic kidney disease thereby placing heavy physical and psychological burdens, not only on the affected children but also on their care-givers, with attendant long-lasting consequences.⁸⁻¹⁰ Askenazi *et al*¹¹ documented that 40-50% of children who survived AKI showed signs of renal insufficiency after 3-5 years follow up.

The association between low socio-economic status, chronic illnesses, and their interplay on family dynamics has been documented.⁸⁻¹⁰ The financial demands of management of paediatric chronic kidney diseases is usually beyond the reach of families with low incomes especially in the settings where effective health insurance programmes are lacking. In resource-poor countries with a constellation of negligible public health care funding, rudimentary technological advancements and poor health seeking behaviours, the outcome of management of these diseases is worth documenting.

We set out to document the outcome of management of the paediatric renal diseases in a newly established tertiary health facility in a developing country over a ten year period. It is hoped that our findings will contribute to the information and knowledge needed to improve the care of our children.

the sudden flinging of the arm. The right arm was involved in the four females while the left was involved in the two men. All of them had some involvement of the ipsilateral lower limb but to a much lesser extent. There was no associated weakness of the limbs or face seizures, difficulty in speech or loss of consciousness. There was no preceding headache, vomiting or vertigo. There was no history suggestive of a transient ischaemic attack or a previous stroke in any of the patients. No other neurological deficits were found on examination rather they were all agitated and fatigued from the uncontrollable movements.

Five of the patients were persons with previous diagnosis of hypertension but all had markedly elevated blood pressure on presentation ranging from 160/110 to 230/140. Two of the patients were persons with a previous diagnosis of diabetes mellitus and both presented with markedly elevated blood sugar. One was managed for hyperosmolar hyperglycaemic state. Two of the patients had morbid obesity with BMI of 37.5 and 53 Kg/mm.² Three of the patients had dyslipidaemias. The ancillary investigations like full blood count, electrolytes urea and creatinine done were normal for four of the patients. There were however deranged electrolytes in the two who had hyperglycaemia. Chest X-ray showed features of hypertensive heart disease in all the patients. Brain CT scan was not carried out since the hospital did not have a CT scan as at the period of this observation. The hospital however has a CT scan now.

All the patients were admitted in the medical wards of the hospital. Management was mostly supportive care to avoid injuries. The patients were rehydrated. Medications and infusions given were Mannitol, Normal saline and Haloperidol. The two who had hyperglycaemic emergencies had rehydration with normal saline and soluble Insulin for blood sugar control. Some of the more restive patients also had diazepam. Aspirin, Vitamins C and E were also given to all the patients.

The uncontrollable movements were controlled with Haloperidol 5mg. The frequency and speed of the movements decreased within 3 days in all the patients. They were all discharged with residual but markedly improved condition with antihypertensives, hypoglycaemic drugs and statins as indicated. Aspirin was commenced for secondary prevention. They were counseled on lifestyle modification. Only two patients came

back for follow-up. Both are stable with no residual limb movements.

DISCUSSION AND REVIEW OF LITERATURE

History

Hemiballismus was first reported in 1927 by James Purdon Martin³ when he described a patient who suddenly developed prominent flinging movements of his right arm and leg. He noted that these types of movement characterized by high amplitude arrhythmic motions especially at the shoulder and hip were not often seen in chorea.³ The original report used terms like flinging, swinging, throwing and tossing about to describe the violent movements which are still seen in these patients. He initially termed the disorder 'hemichorea' but most neurologists have accepted the correct terminology for this condition as hemiballismus. Further observation of these movements revealed that some patients developed violent ballistic movements while others developed movements which were of lower amplitude, less frequent, distal and more fluidy.⁴ These reduced movements were suitably termed hemichorea. In due time, it was noticed that hemiballismus and hemichorea were related and represented different degrees of severity.⁴ It is noteworthy that the hemiballistic movements actually become hemichorea as the patient recovers. For this reason, most authors use hemiballismus and hemichorea interchangeably.

Epidemiology

Hemiballismus is a rare movement disorder⁵. It is 500 times rarer than Parkinson's disease¹. Klawans et al reported 11 cases seen over a nine year period.⁶ We describe six patients who presented with these classical characteristic movements on one side of the body within an observation period of just three years. In this case series, there were two males and four females. None of the patients had ballism (bilateral variety). Hemiballismus is usually seen in persons older than 60 years. The age range was 55-68 years in our series with only one person who was younger than 60 years. There was no young patient. There is no known preference for sex usually but we saw more females than men with a ratio of 2:1 and all the four women were postmenopausal. Most of the patients were of lower socio-economic class being farmers and artisans. One was a full time house wife. All the

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Case Report

Hemiballismus: A Case Series in Uyo, Southern Nigeria and a Review of Available Literature

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ABSTRACT

Hemiballismus is a dramatic movement disorder that is typically acute in onset. It usually involves one side of the body affecting the proximal limb more than the distal. The commonest recognized etiology remains cerebrovascular diseases. Very few cases have been reported in Africa. We describe six cases seen in our hospital with their presentation, management and eventual outcome. The participants were six patients admitted and treated in our practice from January 2010-December 2012. The folders of those who had been discharged were reviewed and reported as follows. Six patients presented with sudden uncontrollable flinging movements. There were two males and four females. The age range was 55-68 years. All the patients were from the Ibibio ethnic group in the Southern Nigeria. The patients presented within the first week of the abnormal movements. They all had modifiable and non-modifiable risk factors for stroke. All the patients had supportive management and had remarkable improvement. Hemiballismus may not be as rare as previously thought. This sudden surge may be part of the transition from communicable to non-communicable diseases noted in sub Saharan Africa. There may also be an associated environmental factor and/or genetic predilection given that all the patients come from the same ethnic group and reside in the same environment. Patients do well on supportive care.

Keywords: Hemiballismus, risk factors, Nigeria, hypertension, hyperglycaemia

INTRODUCTION

Hemiballismus, also called hemiballism is a rare dramatic movement disorder that is typically acute in onset. It is defined as repetitive but constantly varying, large amplitude involuntary movements mostly involving the proximal part of the limbs.¹ The activity is almost ceaseless and movements are often complex and combined.² It is classically characterized by involuntary movement of the extremities which are often violent. The term hemiballismus refers to violent flailing movements observed on one side of the body while ballismus or ballism refers to the rarer bilateral variant. Some cases may include the facial muscles.² The movements like other abnormal movements usually increase in activity and reduce during relaxation and disappear during sleep. The commonest cause is a lesion of the contralateral subthalamic nucleus.³ This is usually from hypertensive lacunar stroke. Occasionally, it may develop sub acutely or

chronically from other lesions. Few cases have been reported in Africa. We report six cases seen in our hospital between January 2010 and December 2012 with their presentation and management.

METHODS

This is a consecutive case series on patients with hemiballismus seen and managed in the medical wards of University of Uyo Teaching Hospital Uyo, Southern Nigeria. The observation period was from January 2010 to December 2012. Diagnosis was made clinically in all the cases.

Case Reports

We report six cases of patients who presented with sudden flinging of the arm. There were two males and four females. The age range was 55-68 years. Actually the 55 year old man was the only person that was younger than 60 years. All the patients were of Ibibio ethnicity and reside in Uyo Southern, Nigeria. One of the patients had an occasional contract job in Enugu still in Southern Nigeria. They were all Christians but of different denominations. All the patients were of low educational status. They all had blue collar jobs (farming, artisans, and petty trade).

The patients all presented within the first week of

METHODOLOGY

This was a longitudinal prospective study of paediatric patients admitted into the paediatric renal unit of the University of Uyo Teaching Hospital (UUTH), over a ten-year period (January 2003 to December 2012). The renal unit serves as the only tertiary paediatric renal centre in Akwa Ibom State, and caters for children with significant renal diseases within the state and neighbouring states like Cross River, Abia and Imo states. The state has a population of 3.9million people majority of who are civil servants¹². A few others are involved in business with small-scale business being more common. The hospital has a haemodialysis unit which started four years after the paediatric renal unit. There are 5 haemodialysis machines which serve both adult and paediatric patients.

Children aged 17 years and below, who presented with clinical features suggestive of renal diseases were admitted into the unit for investigations and treatment and their data entered into the renal register. Children with uncomplicated urinary tract infections (UTI) were usually managed on out-patient basis and only admitted if they had associated complications like toxemia, or persistent vomiting with dehydration. Discharged patients were followed up in the Children's Outpatient Clinic and readmitted as indicated. Admission into the paediatrics renal unit is mainly via the Children's Outpatient Clinic and Children's Emergency Unit (CHEU).

Data entered into our renal register included age, sex, presenting complaints, duration of symptoms prior to presentation, occupation and educational level of parents or care-givers (from which their social class was determined using Oyedeji's criteria¹³), important clinical examination findings, results of investigations, and the initial diagnosis were also recorded. Data was put on SSPS data page.

Nephrotic syndrome was diagnosed with massive proteinuria of = 3+ on dipstick urinalysis, spot urine protein: creatinine ratio of >2.0, and serum albumin of <2.5g/dl. Acute glomerulonephritis was diagnosed with clinical features of peripheral oedema, with or without coke-coloured urine, oliguria, hypertension and likely past history of a throat or skin infection in the preceding month. Laboratory evidence of significant haematuria of =2+ on dipstick urinalysis was also included. Positive urine cultures confirmed urinary tract

infections. Imaging studies such as micturiting cystourethrogram were used to diagnose posterior urethral valves and abdominal ultrasonogram for nephroblastoma.

Renal biopsy for histology is yet to be done in our developing renal centre.

The outcome of each patient's management was also documented. Discharged patients were given regular appointments for follow-up in the specialist paediatrics renal clinic. Patients who had HIV/AIDS were co-managed with infectious diseases specialist team.

Treatment modalities comprised antimicrobials for urinary tract infections and sepsis, oral steroids with or without cyclophosphamide for steroid resistant and steroid-dependent nephrotic syndrome cases, and immunomodulators like levamisole. Diuretics, anti-hypertensive agents and dietherapy were also included as required. Haemo- and peritoneal- dialyses were done when indicated and when feasible.

Prior to the commencement of haemodialysis in our centre in 2007, eligible patients were usually referred to Obafemi Awolowo University Teaching Hospital, Ile-Ife to access haemodialysis. With the initiation of our dialysis unit, some eligible older children had haemodialysis depending on the extent of financial capability.

Statistical Analysis

Data was analysed using SPSS package version 17. Statistical mean \pm SD were compared using Student *t* test, chi-square was carried out to compare proportions for statistical analysis. Values of *P* < 0.05 were regarded as statistically significant.

RESULTS

Five thousand two hundred and fifty-seven (5,257) children were admitted during the study period of which 162 (3.1%) had renal diseases. One hundred and fifty-six of them had single episode of admission while 6 were admitted twice.

Table 1 shows that there were 93 (57.4%) males and 69 (42.6%) females (male: female ratio of 1.3:1). Children below 5 years of age contributed the largest percentage of 38.3% while those less than 15years were least represented with a frequency of 11.1%. Only 2.5% of our patients belonged to the high social class 1. Majority (67.9%) of the patients belonged to the lower social classes 1V and V.

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Nephroblastoma and posterior urethral valves (PUV) had higher prevalence rates among those aged less than five years 61.1% (11/18) and 55.6% (5/9) respectively. The only case of polycystic kidney disease was in an infant but the type was not known.

Table 1: Socio-demographic Parameters of Children

Parameter	Frequency	Percentage	
Sex	Male	93	57.4
	Female	69	42.6
Age(years)	0-5	62	38.3
	6-10	40	24.7
	11-15	42	25.9
	>15	18	11.1
Social class	I	4	2.5
	II	20	12.3
	III	28	17.3
	IV	69	42.6
	V	41	25.3
Total	162	100	

The pattern of diagnosis is as shown in Table 2. The most frequent diagnosis was nephrotic syndrome (38.3%), 15 (21.7%) being steroid resistant while the remaining 78.3% were steroid sensitive. This was followed by acute glomerulonephritis with 14.2%. Polycystic kidney disease occurred in only one male patient (0.6%). Urinary tract infection was twice as frequent in males. HIV associated nephropathy was diagnosed in 2 children (1.2%).

Table 2: Pattern of Childhood Renal Diseases in Uyo, Nigeria

Diagnosis	Number of Patients			Percentage
	Male	Female	Total	
Nephrotic Syndrome	37	25	62	38.3
Acute glomerulonephritis	10	13	23	14.2
Nephroblastoma	9	9	18	11.1
Chronic Renal Failure	7	11	18	11.1
Urinary Tract Infection	10	5	15	9.3
Acute Kidney Injury	9	5	14	8.6
Posterior Urethral Valves	9	0	9	5.6
Polycystic Kidney Disease	1	0	1	0.6
HIVAN	1	1	2	1.2
Total	93	69	162	100.00

Key: HIVAN (HIV Associated Nephropathy)

The outcome of the paediatric renal diseases as depicted in Table 3 shows that 100

(61.7%) were discharged. There was also a high rate of discharge against medical advice (DAMA), 38 (23.5%). One child absconded, 4 (2.5%) were referred to Obafemi Awolowo University Teaching Hospital for dialysis prior to establishment of dialysis unit in our centre. There was a high overall mortality of 19 (11.7%).

Table 3: Outcome of Paediatric Renal Diseases

Outcome	Frequency	Percentage	Cumulative %
Discharged	100	61.7	61.7
DAMA	38	23.5	85.2
Mortality	19	11.7	96.9
Referred	4	2.5	99.4
Absconded	1	0.6	100
Total	162	100	

Key: DAMA (Discharged Against Medical Advice)

Table 4 further shows that out of the 38 cases of DAMA, 13 (34.2%) had chronic renal failure, 26.3% were nephroblastoma cases and 21.1% (8/38) were patients with nephrotic syndrome. Both patients with HIVAN were DAMA.

Majority of the mortalities were from chronic renal failure secondary to nephrotic syndrome 10 (52.6%), out of which 4 (40%) were steroid resistant cases. There were 5 (26.3%) mortalities from AKI, of which 2 (40.0%) each were due to haemolytic uraemic syndrome (HUS) and herbal intoxication, while the remaining 1 (20.0%) was from severe sepsis. Other causes of mortality were from nephroblastoma and PUV which contributed 3 (15.8%) and 1 (5.3%) respectively. They presented when moribund and died before any definitive therapeutic intervention could be made.

Mortality was slightly higher in females, 10 (14.5%) compared with 9 (8.1%) in males ($P=0.23$). Mortality in relation to age, was lower in the under-fives, 8.1% (5/62) compared to 14.0% (14/100) in those >5years ($p=0.28$). From same table, there were no hospital mortalities from acute glomerulonephritis, urinary tract infection, polycystic kidney disease and HIVAN.

REFERENCES

1. Technical Report. National HIV Sero-Prevalence Sentinel Survey Among Pregnant Women Attending Antenatal Clinics In Nigeria. Federal Ministry of Health, Nigeria 2010.
2. Esan OA, Akanmu AS, Akinsete I. HIV seroprevalence in emergency department patients: Lagos university teaching hospital, Lagos, 1999. Niger Postgraduate Medical Journal. 2003;10:71-75.
3. Houston S, Rowe BH, Mashinter L, Preiksaitis J, Joffe M, Mackey D et al. Sentinel surveillance of HIV and hepatitis C virus in two urban emergency departments. Canadian Journal of Emergency Medicine. 2004; 6:89-96.
4. Rothman RE, Merchant RC. Update on emerging infections from the Centers for Disease Control and Prevention. Revised recommendations for HIV testing of adults, adolescents and pregnant women in health-care settings. Annals of Emergency Medicine. 2007;49:577-579.
5. Baraff LJ, Talan DA, Torres M. Prevalence of HIV antibody in a noninner-city university hospital emergency department. Annals of Emergency Medicine. 1991;20:782-786.
6. Arbelaez C, Wright EA, Losina E, Millen JC, Kimmel S, Dooley M et al. Emergency provider attitudes and barriers to universal HIV testing in the emergency department. Journal of Emergency Medicine. 2012;42:7-14.
7. Guidelines for measuring national HIV prevalence in population-based surveys. UNAIDS/WHO Working Group on Global HIV/AIDS and STI surveillance. World Health Organization. pg 7.
8. Branson BM, Handsfield HH, Lampe MA, Janssen RS, Lyss SB, Clark JE. Revised recommendations for HIV testing of adults, adolescents, and pregnant women in health-care settings. MMWR Recommendations and Reports. 2006;22;55(RR-14):1,17; quiz CE1-4.
9. Haukoos JS, Hopkins E, Conroy AA, Silverman M, Byyny RL, Eisert S et al. Routine opt-out rapid HIV screening and detection of HIV infection in emergency department patients. Journal of the American Medical Association. 2010;304:284-292.
10. Brown J, Shesser R, Simon G, Bahn M, Czarnogorski M, Kuo I et al. Routine HIV screening in the emergency department using the new US centers for disease control and prevention guidelines: Results from a high-prevalence area. Journal of Acquired Immune Deficiency Syndrome. 2007;46:395-401.
11. White DA, Scribner AN, Schulden JD, Branson BM, Heffelfinger JD. Results of a rapid HIV screening and diagnostic testing program in an urban emergency department. Annals of Emergency Medicine. 2009;54:56-64.
12. Federal Government of Nigeria, National Policy on HIV/AIDS 2009, National Agency for the Control of AIDS (NACA) pg 18-19.

Some limitations of the ANC sentinel survey system used in Nigeria are (a) no figures for men, children and the elderly (b) most of the surveyed women were married (96.4%), leaving out the unmarried (c) 87.9% had one form of education or the other, placing the presumed much larger uneducated subset of the population outside the zone of testing.¹ In addition, the WHO guidelines acknowledge that antenatal clinic surveillance does not provide information about HIV prevalence in men.⁷ These limitations do not occur to the same extent in the trauma patient population, rendering this group of patients suitable for more accurate HIV survey estimates.

The idea of increasing the accuracy of HIV survey estimates was addressed in China, by the inclusion of HIV surveys in national population surveys.⁷ This may be difficult in resource constrained settings like Nigeria, hence the need to consider subsets that are more representative of the population, like the trauma patient subset.

As a means of increasing the HIV screening of patients and fostering earlier detection of HIV infection, the Centers for Disease Control and Prevention (CDC) in 2006, published revised recommendations for HIV testing of adults, adolescents and pregnant women in health care settings.⁸ These recommendations highlight Opt-out testing, defined as "Performing HIV screening after notifying the patient that 1) the test will be performed and 2) the patient may elect to decline or defer testing. Assent is inferred unless the patient declines testing", as the basic recommendation for HIV screening in healthcare settings in the United States. Haukoos *et al.*⁹ in 2010 found that non-targeted HIV screening is associated with a modest increase in the case detection of HIV patients, when incorporated into routine emergency department (ED) processes and these processes remain largely unchanged in the normal care of patients.⁹ However, his study found that 21% of patients either opted out or were opted out by ED personnel. Studies by Brown *et al.*¹⁰ and White *et al.*¹¹ yielded similar Opt-out figures. Thus the Opt-out method may not be satisfactory for the purpose of prevalence studies.

The National Policy on HIV/AIDS of Nigeria, 2009, requires pre-HIV test counseling.¹²

LIMITATIONS

A possible limitation to using trauma patients for a sentinel study is access of patients to trauma centers. Some limitations of this study are the convenience sample and the small sample size. These do not detract from the main message of this work because it was a process study. The aim was to identify the hurdles in the way of carrying out HIV testing in an accident and emergency and by comparing these to the Nigerian HIV sentinel survey, explore the option of using trauma patients as a representative supplementary subset for estimating national HIV seroprevalence.

CONCLUSION

In conclusion, despite the limitations of this study, it underpins the option and advantages of using trauma patients for the Nigeria National seroprevalence survey. During the survey process, anonymous unlinked samples can be tested using the ethical cover of the national sentinel survey. A formal pilot study on the use of patients in the Accident and Emergency for HIV sentinel survey purposes will be useful, to look into critical issues like the resources required, the convenience of the process and the authenticity of the data obtained. Intuitively however, it appears that this subset of patients are not likely to pose a greater difficulty than those in the ANC and will be more representative of the Nigerian population.

Conflict of Interest

The authors declare no conflict of interest.

Dissemination of Results

The results of this study were presented at a Nigerian Association of Surgeons conference in Uyo, Akwa Ibom State in 2012.

Author Contribution

TE Nottidge conceived the original idea, analysed the data, prepared the manuscript. UA Utam collected the data, analysed the data, made significant contributions to the content of the manuscript. Both authors approved the version to be published and agreed to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

Table 4: Outcome of Renal Diseases in Relation to Diagnosis

Diagnosis	Outcome					Total
	Discharged	DAMA	Absconded	Dead	Referred	
Nephrotic Syndrome	43	8	0	10	1	62
Acute Glomerulonephritis	21	1	1	0	0	23
Nephroblastoma	5	10	0	3	0	18
Chronic Renal Failure	4	13	0	-	1	18
Urinary Tract Infection	14	1	0	0	0	15
Acute Kidney Injury	6	2	0	5	1	14
Posterior Urethral Valves	6	1	0	1	1	9
Polycystic Kidney Disease	1	0	0	0	0	1
HIVAN	0	2	0	0	0	2
Total	100	38	1	19	4	162

Key: HIVAN : HIV Associated Nephropathy

Table 5 shows the outcome in terms of requirement for dialysis. Seven (26.9%) of the 26 patients who required dialysis could not initiate any sessions. Mortality occurred in 8 (50%) of those who had haemodialysis while the 2 (66.7%) who had peritoneal dialysis recovered normal renal function and were discharged.

Nephrotic syndrome patients formed the majority of those on follow-up. About 15 (34.9%), of them were still in care after 2 years of discharge. Four of them had relapses and one, a frequent-relapser, is still in care.

Table 5: Outcome of Renal Patients in Relation to Dialysis

Outcome	Not feasible	Haemodialysis	Peritoneal dialysis	Dialysis not needed	Total
Discharged	0	1	2	97	100
DAMA	5	5	1	27	38
Absconded	0	0	0	1	1
Referred	1	2	0	1	4
Died	1	8	0	10	19
Total	7	16	3	136	162

Key: DAMA (Discharged Against Medical Advice)

DISCUSSION

Renal diseases in children represent a small but very important proportion of hospitalised children. Our overall prevalence rate of 3.1% is slightly higher than 2.9% reported from Jos, north-central Nigeria² and 3.0% from another African country, Libya⁴. In contrast, higher values were reported from other Nigerian studies in Lagos 3.9%,⁶ Enugu 4.0%,¹⁴ Benin-City 4.5%.³ The Benin-City prevalence which is the highest in the series may probably be due to the large contribution from urinary tract infections, a very common paediatric illness that contributed 32.8% of the cases compared to 9.3% in our study. Again the other centres are generally larger than ours and may have a greater catchment area being referral centres. Our low contribution from UTI could

also be due to missed diagnosis, largely from indiscriminate use of antibiotics prior to presentation and use of antibiotics in treatment of febrile children who could not pay for urine cultures.

The higher prevalence in males was also reported by other authors^{1,6} who documented an overall significant male preponderance, as well as a male predominance from nephrotic syndrome, Acute glomerulonephritis (AGN), and expectedly posterior urethral valves (PUV). The larger percentage of the under-five age range could be explained by the contributions of congenital renal diseases like nephroblastoma, PUV and polycystic kidney disease.

Nephrotic syndrome, as our most prevalent diagnosis (38.3%), followed by AGN (14.2%)

were reported from previous studies.^{3,6,14-16} A reverse spectrum of higher AGN prevalence has been reported in northern Nigerian centres^{2,17}. Factors such as low standard of personal hygiene and environmental sanitation as contributors to these trends have been documented.¹⁸

We noted a high DAMA rate of 23.5% but reports of DAMA exclusively among paediatric renal patients were not available for comparison. However, much lower reports of 1.5% and 1.8% were seen among children hospitalised for various diagnoses.^{19,20} Socio-economic challenges were the most important reasons proffered for not staying on for proper discharge. Almost all our DAMA cases were due to inability to pay for dialysis which agrees with another documentation that 26.6% of DAMA were due to lack of funds.²¹

The overall mortality of 11.7% was a high frequency outcome but we noted a dearth of information for comparison because previous studies reported more of mortality from specific childhood renal diseases.^{2,3,14,15,17} A higher overall mortality rate of 17.7% was reported from Lagos University Teaching Hospital (LUTH),⁶ a retrospective study that had only 66.7% documentation of outcome. A lower rate of 6.7% was however reported from Sudan¹. Adeyokunnu *et al.*,²² in a study of 22,255 paediatric admissions at University College Hospital, Ibadan, reported a zero mortality outcome in the under-five children with renal diseases but renal related mortality ranked third in 5-15 years age group. Similarly, Lesi *et al.*²³ In a 20-year review of mortality pattern in children's emergency room of LUTH, Lagos, had no specific renal mortality. There may probably have been missed cases of renal deaths being counted among unidentified causes of death, labelled as "others" since those were retrospective studies.

We recorded our greatest mortality from nephrotic syndrome 10 (52.6%). Eight (12.9%) others, already moribund, were DAMA which probably would have increased the mortality if they stayed on. This contrasts the lower contribution of 17.4% from nephrotic syndrome in the LUTH study.⁶

AKI contributed 26.3% of our renal mortalities which is lower than 42.9% and 46.2% from mid-western³ and south-western⁵ Nigeria respectively and 41.5% reported from India. Our lower AKI mortality rate may be due to some of the children being old enough to utilise haemodialysis, centre

policy of waivers being granted for emergency dialysis to only AKI patients, and the availability and affordability of dialysate for 2 of those who had peritoneal dialysis. Again, 14.3% (2/14) were DAMA in a clinically critical state. Another factor could be that some of our survivors were those who presented early. A high rate of late presentation was said to have contributed to the high mortality of 41.5% in Indian children despite 100% dialysis uptake²⁴. The dual challenge of late presentation and inability to access dialysis were the major risk factors for AKI mortality from the other Nigerian studies.^{3,5} In contrast, Libya documented an overall mortality of <1% among post neonatal children with AKI.⁴ The good outcome could have been due to considerable number of specialist personnel and access to technological advancement for management of paediatric renal diseases. Also, a good immediate outcome of 95% from American paediatric patients who required intensive unit care for AKI was reported by Hui-Sickle *et al.*⁷

Haemolytic uraemic syndrome as the commonest cause of AKI (35.7%) in the present study compares favourably with reports by Bhimma *et al.*²⁵ of HUS in epidemic proportions but contrasts with reports from Nigeria⁵ and other African countries.²⁶⁻²⁸ The Olowu study,⁵ conducted about two decades ago showed *Plasmodium falciparum* malaria infection as the commonest cause of AKI. Also, Anochie and Eke²⁹ reported gastroenteritis and malaria as the causes of AKI in their series a decade ago. It seems that there may be a change in the trend of AKI aetiology in the developing world from pre renal causes to reflect the pattern in the developed world. This may show the gains of the WHO strategies for management of common childhood illnesses like malaria and diarrhoeal diseases.

Dialysis was the only renal replacement therapy we could offer to our patients with End Stage Renal Disease but even this was out of the financial reach of many. Seven (26.9%) of patients who needed dialysis could not access it because of financial constraints. We also recorded 50% mortality in those who accessed haemodialysis mainly because therapy was only initiated when patients were moribund and others who initiated the therapy could not sustain it because of the high cost.

Almost all our patients (88.9%) had haemodialysis due to lack of dialysate for younger children who would have benefitted

RESULTS

The demographic data and HIV positivity: Data are summarised in table 1.

Table 1: Showing Summary Data for the Trauma Patients

	HIV positive	HIV Negative	Total
Number of participants	5	95	100
Age range	23-42 years	5-75 years	5 – 75 years
Mean age	-	-	32.74 (±14.08) years
Median age	-	-	30 years
Sex			
Male	5	82	87
Female	-	13	13

The major injury in 30 of these patients was fracture(s); 27 of them had head injury; 12 had integument injury; 4 had dislocations; 4 had abdominal injuries and 9 had other injuries. In 14 cases, the injury was not noted.

Some of the reasons for inability to have pre-test counseling, were the patients condition-unconscious, language barrier etc. In most cases however, it was due to unavailability of trained counselors. There was no patient in whom obtaining the blood sample interfered with resuscitating the patient.

DISCUSSION

While the Nigeria National HIV prevalence in 2008 of 4.6%¹ is comparable to the 5% prevalence obtained in this study, the information derived from this study is more from the procedures used than from the raw data obtained, due to the small convenience sample size. In a similar study carried out in 1999 on 312 emergency department patients at Lagos University Teaching Hospital, Nigeria, Esan noted an HIV prevalence of 5.77%.²

Our study was restricted to trauma patients because this factor cuts across all ages and occurs in both genders. However, there is a higher prevalence of injuries in males and this accounts for the zero prevalence in females in this study - the small sample size has skewed the data in favour of males. In addition, some non-trauma emergency department patients are admitted for complications due to AIDS and this subset could bias the result. However, the HIV sentinel study conducted by Houston *et al* in the United States was carried out on all Emergency Department (ED) patients, using blood left over from a complete blood count.³ They found an HIV seroprevalence of 1%.

The major difficulties noted in obtaining blood for HIV-antibody tests, absence of trained counsellors to carry out pre-HIV test counselling and a refusal to give informed consent for the sample to be taken, can be overcome in the approved procedure for a sentinel study, because counseling and individual consent are not required. In addition, standard blood samples obtained as part of routine A & E care can be used for HIV tests, which would facilitate obtaining anonymous samples, as is done in ANC based HIV sentinel surveys.

The Nigeria National study of HIV prevalence in 2010 utilized data from all women attending ANC for the first time for a confirmed pregnancy¹. Previous surveys sampled those aged from 15-49 years. After a mandatory syphilis test, an anonymous unlinked serum sample was collected from the left over blood and sent for HIV testing.

Our study required pre-test counseling, because the hospital HIV testing laboratory protocol had no allowance for anonymous unlinked blood samples. This made the testing process cumbersome, because of the inadequacy of trained pre-HIV test counselors, their non-availability outside 8am to 4pm etc. Thus many patients were excluded from this study, due to not having received pre-test counseling. This is an experience shared by others.³ Baraff *et al.* succeeded in using anonymous samples in an Emergency department-based HIV prevalence study⁵, finding a 2% prevalence of HIV among 100 trauma patients. Arbelaez *et al.* noted significant barriers to routine HIV testing in the ED, from the perspective of the care providers, to be inadequate time, inadequate resources and concerns regarding provision of follow-up care.⁶

Short Communication

Recommended - the use of Trauma Patients Presenting to an Accident and Emergency, for the Nigeria National Seroprevalence Survey

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ABSTRACT

This study was carried out to structure the processes involved in obtaining HIV prevalence data from trauma patients and thus explore the option of using this subset of patients as an additional cohort to the routine use of antenatal patients, for Nigerian National HIV prevalence estimates. Trauma patients presenting to the Accident and Emergency (A&E) unit of the University of Uyo Teaching Hospital who met the inclusion criteria, were enrolled into this cross-sectional study. The type of major injury was noted in most of the patients and the difficulties in obtaining blood samples for HIV antibody tests were enumerated. The process of obtaining the data was contrasted with the National HIV Antenatal care survey. There were 100 patients from whom blood samples were obtained for HIV antibody tests, from October to December 2008 and the HIV prevalence was 5%. The major injury in 30% of the patients was fracture(s), while 27% of them had head injury. The major difficulty with obtaining blood samples for HIV antibody tests were a refusal of the patient to give consent, and the inability to conduct pre-HIV test counseling due to the lack of trained counselors. The major difficulties noted with obtaining blood for HIV tests can be overcome in a sentinel study, in which individual consent and pre-HIV test counseling are not required. Trauma patients are a reasonable subset to be further explored as an additional cohort for the comprehensive determination of the Nigeria National HIV prevalence.

Keywords: Accident, Emergency, HIV, Nigeria, Prevalence, Survey, Trauma.

INTRODUCTION

The current method for determining the Nigerian National HIV prevalence uses data obtained from women attending Antenatal Care (ANC).¹ This method has several drawbacks, due to the use of a restricted gender based sample as a determinant of a population index. This study was carried out to determine the burden of HIV in trauma patients presenting to the accident and emergency (A&E) of the University of Uyo Teaching Hospital (UUTH) and consider the option of extrapolating prevalence data obtained by this means at national level, to the entire population, by comparing the specifics of this process with that of the National ANC survey. This study therefore devolves more on the process aspect than the trauma patient data obtained.

METHODS

After obtaining ethical approval from the Institutional Review Board of the Hospital, a convenience sample of consecutive patients presenting to the UUTH A & E from October to December 2008 were given pre-HIV test counseling and those who consented, had blood samples taken for HIV screening with Determine™ kits (Inverness Medical, 2008). A dual test was done on all samples and discordant samples had a third (tie breaker) test, as per the protocol in use by IHVN (Institute of Human Virology Nigeria), representing PEPFAR (The United States President's Emergency Plan for AIDS Relief).

Patients with a positive test were enrolled in the UUTH HIV program, which was run by the IHVN - a subsidiary of PEPFAR - USA.

Patients who did not give consent and those who were unable to have pre-test counseling, were excluded from the study.

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from peritoneal dialysis. This contrasts with the experience of Kandoth *et al.*,²⁴ where the overwhelming majority of children were treated with peritoneal dialysis. Only 3 of our patients could have peritoneal dialysis and 2 of them had immediate complete recovery.

We had immediate good outcome, without any mortalities, for specific cases like UTI and AGN. The zero mortality from AGN agrees with previous studies^{4,23,24}, but contrasts with those who documented mortalities from AGN: 1.0% from Calabar,³⁰ 1.8% from Enugu,¹⁴ and 6.0% from Benin-City.³ The good outcome with our AGN patients could probably be due to vigilance for and meticulous management of complications of AGN which are contributors of good outcome. The case that was complicated with AKI was promptly diagnosed and had good response to haemodialysis with full recovery of renal function. Another case with congestive cardiac failure (CCF) responded to conservative management with oxygen, diuretics and digoxin. Only few of our discharged patients, mainly those with nephrotic syndrome, continued with follow-up. It is therefore difficult to report on long-term outcome as immediate recovery from acute kidney diseases in children may not guarantee normal kidney function in adult life.

CONCLUSION

The outcome of paediatric renal diseases shows a high mortality rate. A large proportion of the patients were discharged against medical advice mainly because of the cost implication of their treatment. We recommend that the cost of renal replacement therapy, especially dialysis, should be augmented by government to reduce the high rate of discharges against medical advice and mortality from paediatric renal diseases.

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REFERENCES

1. Ali EM, A/Rahman AH, Karrar ZA. Pattern and outcome of renal diseases in hospitalized children in Khartoum State, Sudan. Sudan J Paediatr 2012; 12:52-9.
2. Ocheke IE, Okolo SN, Bode-Thomas F, Agaba EI. Pattern of Childhood Renal

3. Diseases in Jos, Nigeria: A Preliminary Report. J Med Trop 2010; 12:52-5.
4. Ibadin OM, Ofovwé GE. Pattern of renal diseases in children in Midwestern zone of Nigeria. Saudi J Kidney Dis Transplant 2003; 14:539-44.
5. Elzouki AY, Amin F, Jaiswal OP. Prevalence and pattern of renal disease in Eastern Libya. Arch Dis Child 1983; 58:313-23.
6. Olowu WA, Adelusola KA. Paediatric acute renal failure in southwestern Nigeria. Kidney Int 2004; 66:1541-8.
7. Onifade EU. A 10-year Review of Childhood Renal Admissions into the Lagos University Teaching Hospital, Nigeria. Nig J Hosp Med 2003; 13(3-4):1-5.
8. Hui-Stickle S, Brewer ED, Goldstein SL. Pediatric ARF Epidemiology at a Tertiary Care Center From 1999-2001. Am J Kid Diseases. 2005; 45:96-101.
9. Fielding D, Brownbridge G. Factors related to psychological adjustment in children with end stage renal disease. Pediatr Nephrol 1999; 13: 766-70.
10. Tsai TC, Liu SI, Tsai JD, Chou LH. Psychosocial effects on caregivers for children on chronic peritoneal dialysis. Kidney Int 2006; 70: 1983-7.
11. Boling W. The health of chronically ill children: lessons learned from assessing family caregiver quality of life. Fam Community Health 2005; 28: 176-83.
12. Askenazi DJ, Feig DI, Graham NM, Hui-Stickle S, Goldstein SL. 3-5 year follow-up of paediatric patients after acute renal failure. Kidney Int. 2006;69:184-9.
13. Ukpogon EA. Akwa Ibom State socio-economic study report. Ministry of Economic Development. Uyo, Akwa Ibom State, Nigeria. 2005. pp 257-99.
14. Oyedeji GA. Socio-economic and cultural background of hospitalised children in Ilesha. Nig J Paediatr 1985; 12:111-7.
15. Okoro BA, Okafor HU. Pattern of childhood renal disorders in Enugu. Nig J Paediatr 1999; 26:14-8.
16. Eke FU, Eke NN. Renal Disorders in children: a Nigerian Study. Paediatr Nephrol 1994; 8:383-6.
17. Hendrickse RG, Gilles HM. The

- nephrotic syndrome and other renal diseases in children in western Nigeria. *East Afr Med J* 1963; 40:186-201.
17. Abdurrahman MB, Babaoye FA, Aikhionbare HA. Childhood renal disorders in Nigeria. *Pediatr Nephrol* 1990; 4:88-93.
 18. Pelsner HH. Acute poststreptococcal glomerulonephritis in hospitalised children. *Pediatr Nephrol* 1992;6:C152.
 19. Oyedeji GA. Hospital discharges of children against medical advice. *Nig J Paediatr* 1986;13:1-5.
 20. Ikefuna AN, Emodi IJ. An Assessment of Factors influencing Hospital Discharging Against Medical Advice of Paediatric Patients in Enugu: A Review of 67 Cases. *Nig J Paediatr* 2002;29:1-4.
 21. Eke GK, Opara PI. Discharges against medical advice amongst patients admitted into the Paediatric wards of the University of Port Harcourt Teaching Hospital. *Nig J Paediatr* 2013; 40:40-4.
 22. Adeyokunnu AA, Taiwo O, Antia AU. Childhood mortality among 22,255 Consecutive Admissions in the University College Hospital, Ibadan. *Nig J Paed* 1980; 7:7-15.
 23. Lesi FEA Jnr, Temiye EO, Epelle TGS. The Changing Pattern of Childhood Mortality in Children's Emergency Room of Lagos University Teaching Hospital after 20 years. *Nig Med J*. 2000; 38:38-41.
 24. Kandoth PW, Agarwal GJ, Dharnidharka VR. Acute renal failure in children requiring dialysis therapy. *Indian Paediatr* 1994; 31:305-9.
 25. Bhimma R, Coovadia HM, Adhikara M, Connolly CA. Re-evaluating criteria for peritoneal dialysis in "classical" (D⁺) haemolytic Uraemic Syndrome. *Clin Nephrol* 2001; 55:133-42.
 26. Seriki O. Acute uraemia in Nigerian children. *West Afr Med J*. 1975; 23:120-5
 27. Adu D, Anim-Addo Y, Foli AK, Yeboah ED, Quartey JK. Acute renal failure and typhoid fever. *Ghana Med J* 1975; 4:172-4.
 28. Adu D, Anim-Addo Y, Yeboah ED, Blankson JM, Annobil SH. Acute renal failure in Ghanaian children. *J Trop Paediatr* 1984; 30(1):36-39.
 29. Anochie IC, Eke FU. Acute renal failure in Nigerian children: Port Harcourt experience. *Pediatr Nephrol* 2005;20(11):1610-14.
 30. Etuk IS, Anah MU, Eyong M. Epidemiology and clinical features of Acute Glomerulonephritis in Calabar, Nigeria. *Nig J Physiol Sci*. 2009; 24:91-4.

come in for surgery.

CONCLUSION

While this study has shown LA to be a safer and more cost-effective anaesthetic technique for inguinal hernia repair, when compared to SA and GA, it is still not used as frequently as it should. We recommend a greater use of local anaesthetic technique for the repair of inguinal hernia. A prospective randomized study with a large sample size comparing these three techniques should establish a protocol for inguinal hernia repair.

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REFERENCES

1. Pallas G, Simon F, Sockeel P, Chapuis O, Jancovici R Inguinalhernia in Africa and laparoscopy: utopia or realism? *Med. Trop.(Mars)* 2000; 60(4):389-394.
2. Yakubu A, Usain H. Single-layered tissue inguinal hernia repair. *Arch Int Surg* 2012;2:18-23.
3. Ashindoitiang JA, Ibrahim NA, Akinlolu OO. Risk factors for inguinal hernia in adult male Nigerians: A case control study. *International Journal of surgery* 2012; 10:364-367.
4. Ilori IU. Anaesthesia for Surgical outreach in a rural Nigerian Hospital. *Afr J Anaes Int Care* 2012; 12: 16-20.
5. Ajayi OO, Adebamowo CA, Surgery in Nigeria. *Arch Surg* 1999; 134: 206-211.
6. Awe JAA, Ugwi V, Omon E.H, Inguinal hernias: analysis of incidence, diagnosis and management of 172 consecutive adult cases at Igbinedion university teaching hospital Okada. *Glo Adv Res J Med Med Sci* 2014; 3(7): 168-172.
7. Callen T. Inguinal Hernia Repair: Anaesthesia, Pain and Convalescence. *Dan Med Bull* 2003; 50:203-18.
8. Kehlet H, Aasvang E. Groin Hernia Repair: Anaesthesia. *World Journal of Surgery* 2005; 29:1058-1061.
9. Gonullu NN, Cubukcu A. Comparison of local and general anesthesia in tension-free (Lichtenstein) hernioplasty: a prospective randomised trial. *Hernia* 2002;6: 29-32. [PubMed].
10. Ozgun H, Nil Kurt M, Kurt I, Cevikel MH.

Comparison of local, spinal and general anaesthesia for inguinal herniorrhaphy. *Eur J Surg* 2002;168:455-9. [PubMed]

11. Merhav H, Rothstein H. A comparison of pulmonary functions and oxygenation following local, spinal and general anaesthesia in patients undergoing inguinal hernia repair. *Int Surg* 1993;78:25761. [PubMed]
12. Nordin P, Zetterstrom H, Gunnarsson U, Nilsson E. Local, regional or general anaesthesia in groin hernia repair: multicentre randomised trial. *Lancet* 2003; 362: 853-7. [PubMed]
13. Callesen T, Bech K, Kehlet H. The feasibility, safety and cost of infiltration anaesthesia for hernia repair. *Anaesthesia* 1998;53: 31-5. [PubMed]
14. Kingsnorth A. Management of abdominal hernias. 3rd edn. London: Arnold; 2003. pp. 1-105.
15. Mbah N. Morbidity and Mortality associated with Inguinal Hernia in Northwestern Nigeria. *West Afr J Med* 2007; 26: 289-292.
16. Dienye P, Diète-Spiff K, Chukwuma N. Practice of anaesthesia and surgery in a rural clinic: meeting the challenge. *TJFMPC* (2014), [cited October 04, 2014]; 8(2): 48-54.
17. Ojo E, Okoi E, Umoiyoho AJ, Nnamonu M. Surgical outreach program in poor rural Nigerian communities. *Rural Remote Health* 2013; 13(1): 2200.
18. Sanjay P, Woodward A. Inguinal Hernia Repair: Local or General Anaesthesia? *Ann R Coll Surg Engl* 2007; 89: 497-503.
19. Wang H. Is Ilioinguinal-Iliohypogastric nerve block an underused anaesthetic technique for Inguinal Hernia? *South Med J* 2006; 99:15.
20. Yilmazlar A, Bilgal H, Donmez C, Guney A, Yilmazlar H, Tokat O. Comparison of Ilioinguinal-Iliohypogastric nerve block versus Spinal anaesthetic technique for Inguinal Herniorrhaphy. *South Med J* 2006; 99: 48-51.
21. Usang UE, Sowande OA, Adejuyigbe O, Bakare IB, Ademuyiwa OA. Daycase Inguinal hernia surgery in Nigerian children: Prospective study. *Afr J Paediatr surg* 2008; 5: 76-78.