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Update on Paediatric Urolithiasis in North-Eastern Nigeria

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ABSTRACT

Background: Among the Childhood urolithiasis, bladder stones appear to predominate. We reviewed our experience in the management of urolithiasis in children, highlighting recent changes observed in our practice. **Patients and Methods:** In the period between January, 2004 and December, 2009, 56 children with urinary stones were retrospectively reviewed. **Results:** Over the last 6 years, 56 children were managed for childhood urinary stones in our center. Their ages ranged from 9 months to 15 years (mean age: 6.7 years). There were 46 boys and 10 girls (M:F= 4.6:1). Eighteen (32.1%) children were below 5 years of age, 28(50.0%) were between 5-10 years and 10(17.9%) were 10-15 years of age. Majority 39(69.4%) of the stones were located in the upper urinary tract (UUT), 16 (28.6%) were in the lower urinary tract (LUT) and 1(1.8%) were in both UUT and LUT. In 2 cases, (3.6%) of bilateral ureteric stones were due to concomitant schistosomal fibrosis of the distal ureters, otherwise no other aetiological factors were identified. One patient passed the stone spontaneously, while the remaining had open surgical removal with no mortality. Postoperative morbidity occurred in 5 patients, (8.9%) wound infection in 4patients and vesicocutaneous fistula in one patient. **Conclusion :** Paedatric urolithiasis is a common occurrence in our setting, affecting predominantly the upper urinary tract.

KEYWORDS Paediatric,Urolithiasis,North-Eastern Nigeria

INTRODUCTION

Urolithiasis refers to the presence of accretion of solid, non-metallic- minerals in the urinary tract[1]. This is reported to be rare in paediatric age group with an incidence of 9.6 per 100,000 in Nigeria. [2,3] Most report also unveiled predominance of endemic bladder stones [1,4], although we have experienced a paradigm shift from these earlier assertions in paediatric urolithiasis in our centre.

PATIENTS AND METHODS

This was a retrospective review of all cases of urolithiasis in children at the University of Maiduguri Teaching Hospital, Maiduguri in north eastern Nigeria, between January 2004 and December 2009. Demographic and clinical variables, location of stone, investigations done, operation performed, complications and outcome were analysed.

RESULTS

Over the last 5 years, 56 children were managed for childhood stones. There There were 46 boys and 10 girls (M:F=M:F= 4:6:1). Their ages ranged from 9 months to 15 years (mean age: 6.7 years). There were 46 boys and 10 girls (M:F= 4.6:1). Eighteen (32.1%) children were below 5 years of age, 28 (50.0%) were between 5-10 years and 10(17.9%) were 10-15 years of age. Eighteen children (32.1%) were below 5 years of age, 28(50.0%) were 5-10 years, while 10(17.9%) were 10-15 years of age (Figure1).

Majority of the stones, 39(69.4%), were located in the UUT, 16 patients (28.6%) had the stones in the LUT, while in one patient (1.8%), stones were present in both the left kidney and bladder, (Table I).

The UUT stones were diagnosed by renal ultrasonography and intravenous urography, while the LUT stones were diagnosed either by plain pelvic radiography or ultrasonography. In 2 patients, (3.6%), bilateral ureteric stones were due to concomitant schistosomal fibrosis of the distal ureters, otherwise no other aetiological factor was identified in the remaining patients.

One patient passed the stone spontaneously while the remaining had open surgical retrieval of the stones. Postoperative morbidity occurred in 5 (8.9%) patients, and this included wound infection in 4 patients and vesicocutaneous fistula in one patient. The infection was treated

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accordingly, while the fistula closed spontaneously. There was no mortality.

TABLE I: Distribution by site and side of stones

Site and side		Frequency	(%)
Upper urinary tract		39	69.4
○ Kidney	– R	11	19.6
	– L	15	26.8
	Bilateral	4	7.1
○ Ureteric	– R	5	8.9
	– L	1	1.8
	– Bilateral	3	5.4
Lower urinary tract		16	28.6
	– Bladder	13	23.2
	– Urethra	3	5.4
Upper and lower urinary tracts			
– (L) renal and bladder		1	1.8
TOTAL		56	100

TABLE II: Distribution of Cases by location of stones (Abubakar et al., 2004)

Location	No. of cases	(%)
Upper tract	9	13.4
Kidney	7	10.4
Ureter	2	3.0
Lower tract	57	85.1
Bladder	34	50.7
Urethra	18	26.9
Bladder and Urethra	5	9.5
Upper and lower tracts	1	1.5

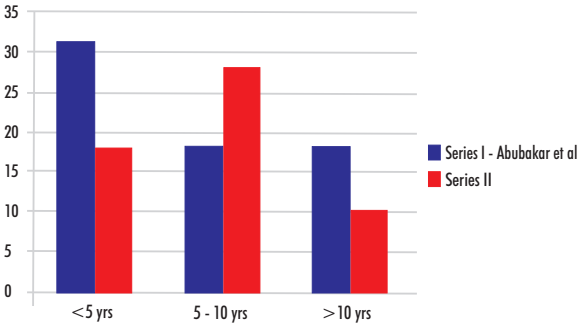

Figure : Relative age distribution of childhood stone formers

DISCUSSION

Paediatric urolithiasis is widely reported to be a disease of the LUT in developing countries. This is in contrast to the UUT types found in children in the developing world developed countries[2,3,6]. This has been attributed to differences in nutritional levels [6-8]. There have been reports of changes in the pattern of urolithiasis in children in the developing countries towards the western pattern [6-9]. This had not been our experience until in the last five years, when we observed major changes in the occurrence of urinary stones in childhood. This may be due to improved nutritional standard of the people operating with some environmental factors.

Previous Studies reported that urolithiasis was rare in the paediatric age population in Nigeria. [2, 9-13] While this may be true in the southern part of the country, it is not so in the northern part because of the different climatic conditions. For instance, in a report by Mshelia et al[14] (2005), urinary stones was a common occurrence in the North-Eastern Nigeria accounting for 8.2% of all our surgical operations and 13.1% of all the major operations in children. Comparing the findings in the present study with a former one by Abubakar et al[3], there has been a three-fold increase in the prevalence of stone disease burden among children in our centre. This differential may signal a change in nutritional status and the climatic conditions.

Childhood urolithiasis affects more boys than girls, as was the case in this study. The reason for this is not readily clear, although the boys are more exposed outdoors and so are more predisposed to dehydration.

Treatment of urinary stones is largely surgical in developing countries, due to a dearth of minimally invasive surgery techniques. This explains why almost all the patients in this study had open surgical removal of their stones. Surgical removal of urinary stones in children is generally safe, with post operative complications that are not usually very serious as was our experience in this study.

In conclusion, paediatric urolithiasis is a common condition affecting predominantly the upper urinary tract in our environment. There appears to be an increase in the prevalence of paediatric urolithiasis in northeastern Nigeria in contrast to our earlier findings.

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