

ISOLATED PROTEINURIA IN ASYMPTOMATIC NIGERIA CHILDREN

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SUMMARY

Akinkugbe FM, Akinwolere OAO and Oyewole AIM Isolated Proteinuria in Asymptomatic Nigerian Children, *Nigerian Journal of Paediatrics* 1991 18 (1) 32-36 The prevalence of asymptomatic proteinuria was estimated in children from two geographical localities of the city of Ibadan. These include an inner core area occupied mainly by non-Indigenes. There was no significant difference in the prevalence of asymptomatic proteinuria in the children from these two areas nor was there any significant sex difference in the prevalence of proteinuria. There was however a rise in prevalence of proteinuria with age in both groups.

INTRODUCTION

PERIODIC screening of asymptomatic populations is necessary not only to define the prevalence of diseases in the community but also to facilitate early and effective intervention. Although the presence of renal casts in the urine is often regarded as presumptive evidence of renal disease in children, it is also generally believed by some that proteinuria is a strong pointer to underlying parenchymal disease of the kidneys^{1,2}. Others feel that the presence of albuminuria combined with haematuria is even more significant.³ In Nigeria however the high prevalence of schistosomiasis in children would greatly affect the latter.

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Hypertension and end stage chronic renal diseases are frequently seen in this environment, especially in the adult population. Some of these might have started in an insidious manner in childhood. It therefore seems pertinent to define the prevalence of asymptomatic proteinuria in the paediatric population of the city of Ibadan.

SUBJECTS AND METHODS

Children aged 0-12 years from two major geographic localities within the city of Ibadan were selected from their households by random cluster sampling method. The areas were Oje, an area within the inner core of the city occupied by indigenous people of Ibadan and Mokola, an area in the periphery of the inner core where people from other parts of Nigeria reside.⁴

The children were brought directly from their homes to the Institute of Child Health for general examination and collection of required urine samples. Midstream urine was collected from each child into sterile bottles. No prior cleansing of external genitalia was done except in babies where

there was obvious soiling of perineum with faeces. A nursing sister was in attendance throughout the procedure to ensure that the collection was made satisfactorily.

The urine samples were examined immediately for the presence of albumin using Ames Albustic test strips^{5 6}. All specimens were collected in the morning. Urine samples from girls who were menstruating were excluded. No attempt was made to screen specifically for orthostatic proteinuria.⁷

Statistical analysis was by means of the Chi-square test.

RESULTS

A total of 1,289 children were seen, 787 in Mokola and 502 in Oje. of the 787 children screened in Mokola, 442 (56.2%) were males and 345 (43.8%) were females. Of the 502 children seen in Oje, 289 (57.6%) were males and 213 (42.4%) were females.

Table I gives the percent prevalence of proteinuria by age and sex in the various groups.

In the Mokola group, proteinuria was detected in 46 (5.8%) of the children, 28 (6.3%) of males and 18 (5.2%) of females. Proteinuria of at least 0.3g/1 occurred in 38 (4.8%) of them, 20 (4.5%) of all males and 18 (5.2%) of all females. Eight of the male children (1.8%) had proteinuria of at least 1.0g/1 but none of the female children had a similar high level of proteinuria.

Schistosoma haematobium was present in a total of eleven (11) of the children with proteinuria and positive bacterial growth in three (3). Of the (8) children with proteinuria of 1.0g/1 six (6) had *Schistosoma haematobium* and the remaining two (2) had marked red blood cells. Thus on the whole fourteen (14) children had proteinuria associated with either schistosomiasis or significant urinary tract bacterial infection leaving a total of thirty-two (32) of the children with unexplained proteinuria.

The prevalence of proteinuria was significantly higher in the children aged 6-12 years, being 2.6% in children aged 0-5 years and 9.6% in children aged 6-10 years ($p < 0.001$).

Proteinuria occurred in 23 (4.6%) of the Oje group of children, 10 (3.5%) of males and 13 (6.1%) of females. Seventeen (73.9%) of the children with proteinuria (8 males and 9 females) had proteinuria of at least 0.3g/1 and 6 (26.1%) consisting of 2 males and 4 females, had proteinuria of at least 1.0g/1. Four (2 males and 2 females) of the 6 children with proteinuria of at least 1.0g/1 also had schistosomiasis haematobium, while the remaining 2 females had bacterial growth. None of the children with proteinuria of at least 0.3g/1 had *Schistosoma haematobium* and only 2 of them had positive bacterial culture.

Again in this group, the prevalence of proteinuria was higher in children aged 6 years and above, being 3.1% in children aged 1-5 years and 6.2% in children aged 6-12 years. The difference however was not statistically significant.

Thus in this group as a whole proteinuria was associated with schistosomiasis in 4 of the 23 children and with positive bacterial culture in another 4, leaving a total of 15 of the children with unexplained proteinuria.

In the 2 groups studied combined, proteinuria occurred in a total of 69 (5.3%) of the children, 19 (2.8%) of the children aged 1-5 years and 50 (8.2%) of the children aged 6-10 years. This difference was statistically significant ($p < 0.001$). A total of 47 (68.1%) of them had unexplained proteinuria.

The prevalence of proteinuria was similar in both males and females being 5.2% and 5.6% respectively. The prevalence of proteinuria between 0.3g/1 and 1.0g/1 and above were 4.3% and 1.1% respectively. The prevalence of unexplained proteinuria was 3.6%. Tables I and II give the percent prevalence of proteinuria in the 2 groups.

There was no statistical difference in the prevalence of proteinuria in the 2 groups even though they were from different localities of the city of Ibadan.

DISCUSSION AND CONCLUSION

The Dipstix method for detecting proteinuria is easy to perform and has stood the test of time. It has been found to be as sensitive as the quali-

TABLE I
PERCENT PREVALENCE OF PROTEINURIA BY AGE AND SEX

Age (in yrs)	MOKOLA			OJE			BOTH GROUPS															
	MALE No Exam +ve	%+ve	FEMALE No Exam +ve	%+ve	BOTH No Exam +ve	%+ve	MALE No Exam +ve	%+ve	FEMALE No Exam +ve	%+ve	BOTH No Exam +ve	%+ve										
Below 1	38	0.0	21	0.0	49	0.0	14	0.0	9	1.1	23	4.3	52	0	30	1	3.3	82	1	1.9		
1	29	0.0	26	0.0	55	0.0	21	0.0	15	0	36	0	50	0	41	0	0.0	91	0	0.0		
2	46	2	37	1	83	3	28	0	18	2	46	2	74	2	55	3	5.5	129	5	3.6		
3	47	3	6.1	2.7	84	4	29	1	3.5	26	1	55	2	76	4	5.3	63	2	3.2	139	6	4.3
4	45	2	4.4	2.7	75	2	28	1	3.6	21	1	49	1	73	3	4.1	51	3	5.7	124	4	3.2
5	32	0	0.0	3.4	2	2.7	30	0	0.0	19	1	49	1	62	0	0.0	53	3	5.7	115	3	2.6
6	48	1	2.1	3.1	2	2.5	24	1	4.2	18	1	48	2	81	2	2.5	48	2	4.2	129	4	3.1
7	36	3	8.3	3.2	67	4	17	0	3.0	15	0	42	2	81	4	6.7	49	1	2.0	109	5	4.6
8	22	1	4.5	2.2	44	4	24	1	4.2	13	0	30	0	60	4	6.7	35	4	2.0	81	6	7.4
9	21	1	4.8	2.2	43	5	21	1	4.8	17	2	38	3	42	2	4.8	39	4	10.3	81	6	7.4
10	25	5	20.0	2.3	48	8	21	2	9.5	21	1	42	3	46	7	15.2	44	5	11.4	90	12	13.3
11	32	5	15.6	3	48	6	17	2	1.2	12	1	29	3	49	7	14.3	28	2	7.1	77	9	11.7
12	21	5	23.8	1	34	6	6	1	16.7	9	2	15	3	27	6	22.2	22	3	13.6	49	9	18.4
0-5	237	7	2.95	185	4	2.16	150	2	1.33	108	6	258	8	387	9	2.3	293	10	3.4	680	19	2.8
6-12	205	21	10.24	160	14	8.75	139	8	5.76	105	7	244	15	344	29	8.4	265	21	7.9	609	50	8.2
0-12	442	28	6.3	345	18	5.2	289	10	3.5	213	13	502	23	731	38	5.2	558	31	5.6	1289	69	5.4

ges are often found at this stage^{7 11}.

Studies have also emphasised the importance of orthostatic proteinuria in children. The presence of this condition in some of these children must be considered, for although the samples were collected in the mornings, they were not early specimens and the children had been quite mobile before collection was made, having been brought from their homes. It is often found that orthostatic proteinuria occurs more frequently in individuals with proteinuria of 1.0 g/l or below. It has been found by some that about 60% of children with asymptomatic proteinuria had orthostatic proteinuria^{8 11}. If a similar proportion is assumed in this group of children then the overall prevalence of orthostatic proteinuria will be at least 2.2%, and that of proteinuria due to other causes would be 1.5%.

Asymptomatic intermittent proteinuria is generally recognised as a benign condition and long term studies of some children have not revealed any renal impairment after a period of about 10 years^{1 2}.

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Accepted 21st June 1989

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