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Factors Associated With Haematuria in Children

Shabir Ahmed, Waqar Hussain And Muhammad Saeed Anwar*
Department of Peadiatric, Shaikh Zayed Postgraduate Medical Institute, Lahore and Services Institute Medical Sciences, Lahore.

ABSTACRT

Background: Haematuria is a common problem in pediatric clinical practice. It may be due to multiple causes. Timely diagnosis of this problem may be helpful in prevention of serious and progressive conditions. **Objective:** To identify the factors in children with haematuria in age group 1-14 years. **Study design:** Cross sectional study. **Place and duration:** Department of pediatrics, Shaikh Zayed Hospital, Lahore September 2006 to March 2007. **Subject and methods:** All the patients with haematuria were included in the study. Haematuria was defined as presence of more than 5 red blood cells/HPF. Detailed clinical data was collected. Urine microscopy was performed after centrifugation of the urine. Other relevant investigations were performed depending upon the clinical data. The results were then tabulated and analyzed statistically. **Results:** Majority of the patients were male (54.66%) and in the age group 1-5 years (40%) and 6-10 years (30.66%). The main presenting complaint was fever (54.66%), followed by red/cola color urine (41.33%) and peri orbital swelling (37.33%). Oedema was observed in 37.33% and hypertension in 41.33% patients. Complications were seen in 20(26.66%) patients. These included hypertension, acute renal failure, nephrotic syndrome and end stage renal disease .Haematuria with protein uria was found in 30.66 % and elevation of BUN/Creatinine in 42.66% patients. It was observed that out of 75 patients, 4 had SLE, 8 had renal stone, 3 had Henoch Schonlein purpura, 17 had urinary tract infection, and 27 had post streptococcal glomerulonephritis. **Conclusion:** The present study shows that a large number of patients with haematuria had treatable underlying cause. Therefore urine should be tested routinely in pediatrics patients for haematuria and investigated further as required.

INTRODUCTION

Haematuria is commonly seen in pediatric patient population. Prevalence of microscopic haematuria is about 5%[1]. Haematuria in children is either of glomerular or non glomerular origin[2]. Haematuria of glomerular origin implies the development of defects in glomerular basement membrane. (GBM)[3]. While causes of non-glomerular haematuria may be systemic problem or problems in other parts of urinary tract like stone, obstruction and malformations of urinary bladder.

The present study was planned to determine factors associated with pediatric patients with haematuria.

SUBJECTS AND METHODS

Present study was carried out at Shaikh Zayed Hospital, Lahore from September 2006 to March 2007. The study comprised 75 children with haematuria based on convenient non probability sampling technique. Children having more than 5 red blood cells/HPF in centrifuged deposit of urine following a positive dipstick test for blood, age between 1-14 years and of either sex were included in the study. The patients on drugs, on dialysis and on anticoagulants were excluded from the study.

All the patients were interviewed, examined and investigated after taking proper consent. Detailed clinical data like age, sex, presenting complaints, systemic examination, past history, family history, and treatment history etc. was taken. Based on this information, the patients were further investigated like examination of urine sediment under phase contrast microscope, culture, ultrasound, chemistry tests, renal biopsy etc. The data was analyzed for frequency.

RESULTS

Males were in higher percentage (54.66%) as compared to females (45.33%). Break up of patients according to age group shows that 40% patients belong to 1-5 years age group followed by 30.66% in age group 6-10 years (Table 1).

The most common sign/symptom was fever (n=41) followed by passage of red/cola colored urine (n=31), hypertension (n=31), oedema (n=28), periorbital puffiness (n=28) and history of recent throat infection (n=19). Other problems like dysuria, pallor, headache, joint pain, rashes etc were seen in relatively small number of patients with haematuria (Table 2).

Table 1: Age and sex distribution of patients with haematuria (n=75)

Parameters	Number	Percent
Sex distribution		
Male	41	54.66
Female	34	45.33
Age distribution		
1-5 Years	30	40.00
6-10 Years	23	30.66
11-14 Years	22	29.33

Table 2: Pattern of clinical presentation in patients with haematuria (n=75)

Signs/symptoms	Number	Percent
Fever	41	54.66
Passage of red/coca color urine	31	41.33
Hypertension	31	41.33
Oedema	28	37.33
Peri orbital puffiness	28	37.33
Recent throat infection	19	25.33
Dysuria	10	13.33
Pallor	07	09.33
Headache	07	09.33
Joint pain/swelling	05	06.66
Rashes	03	04.00
Petechiae	03	04.00

Laboratory investigations showed that serum BUN/creatinine was elevated in 32 patients, complement level was decreased in 24 patients. ASO titre was raised in 21 patients, 17 patients had positive urine culture while hematuria with proteinuria was seen in 23 patients (Table 3).

Table 3: Results of different tests in patients with haematuria (n=75)

Laboratory findings	Number	Percent
Dipstick positive for blood	75	100.00
Haematuria with proteinuria	23	30.66
Elevated BUN/Creatinine	32	42.66
Low serum complement	24	32.00
High ASO titer	21	22.00
Positive urine culture	17	22.66
Red cell casts	16	21.28
Anti ds DNA positive	04	05.33

Table 4: Factors (Diseases) found to be associated with haematuria (n=75)

Factors	Number	Percent
AcuteGlomerulonephritis(AGN)	27	36.00
Urinary tract infection	17	22.66
Renal stone	08	20.66
Vesico-Ureteric reflex	06	08.00
Systemic Lupus Erythematosis	04	05.33
Chronic renal failure	04	05.33
Atypical nephrotic syndrome	03	04.00
Henoch Schonlein purpura	03	04.00
Hemolytic uremic syndrome	02	02.66
Alport syndrome	01	01.33

Based on the clinical picture, laboratory data and other investigations it was observed that most common factor associated with haematuria was post streptococcal glomerulonephritis, followed by urinary tract infection, renal stone and vesicoureteric reflux (Table 4).

DISCUSSION

Haematuria is a frequently encountered abnormality in clinical practice. In general children with associated findings like hypertension, proteinuria, and elevated serum createnine are likely to have serious problems and need proper management to avoid serious sequellae.

In the present study, ratio of male: female in patients with haematuria was 1.2: 1 Similar findings have been observed in other studies where males

were in relatively higher percentage i.e. 56 percentage to 44 percentage[4,5]. In the present study, haematuria was seen more commonly (40%) in age group (1-5 years) while in another study 58% of children with haematuria were 3-12 years of age.[6]

Fever was the most common presenting complaint (54.66%) among children with haematuria. Combination of gross haematuria, Oedema and hypertension (the classical manifestations of Acute Glomerulonephritis) was seen in a large number of patients as shown in Table 2 and 4.

Recent throat infection was present in 19 (69.7%) children out of 27 patients of AGN. This figure is higher than that observed in another study.[7]

Out of 75 patients with haematuria on dip stick test, 41.33% had gross haematuria and 58.66% had microscopic haematuria. Haematuria with proteinuria was present 30.66%.

In a Korean study, 17.5% out of 452 Children has both proteinuria and hematuria[8]. Usually haematuria, proteinuria and hypertension are not typical features of nephrotic syndrome. In the present study only 3(4%) children with haematuria had atypical nephrotic syndrome.

From the present study, it is recommended that appropriate renal or urologic evaluation should be performed in all patients with haematuria. Patient history and physical examination can help the physician to decide the need for appropriate tests. It is appropriate to mention that only passage of red/coca color urine does not mean haematuria as several substances may discolor the Urine. Therefore, it is mandatory to confirm by Dipstick test for blood. This is the most useful and sensitive test for haematuria. It has a sensitivity of 100% and specificity of 99 % in detecting even 1-5 RBC per high power fluid.[9]

In the present study, renal biopsy was performed in 5 patients. Out of these 2 had minimal change disease, one had Alport Syndrome and 2 had membranous glomerulonephritis. In a study carried out in Peshawar, Pakistan, it was shown that the most common histological lesson in children of < 12 years age was minimal change disease followed by focal segmental glomerulosclerosis and membranous glomerulonephritis.[10]

ANA test is used for screening of patients with suspected SLE. Although it is a sensitive test but it is not specific. Therefore anti-dsDNA test was performed in order to diagnosis SLE in our present study. It was seen that 2(2.66%) children out of 75 haematuria were associated with SLE.

From the present study, it is concluded that doctors should have a systematic approach for children with haematuria in order to reach a proper diagnosis. This might provide early hints of chronic renal disease. Timely management of many of these conditions can prevent from serious long term complications.

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The Authors:

Shabir Ahmed
Department of Paediatrics
Shaikh Zayed Hospital,
Lahore

Waqar Hussain
Professor & Head Department of Paediatrics
Shaikh Zayed Hospital,
Lahore

Mohammad Saeed Anwar
Department of Pathology
Services Institute of Medical Sciences (SIMS)
Lahore

Address for Correspondence:

Waqar Hussain
Professor & Head Department of Paediatrics
Shaikh Zayed Hospital,
Lahore