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Original Article

Profile of renal diseases in Nepalese children

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Abstract

Aim and Objectives: To find out the profile of renal diseases in children hospitalized in the pediatric department of the tertiary care university teaching hospital in Eastern Nepal.

Materials and Methods: A retrospective chart review of all the patients admitted at the department of paediatric from April 2002 to March 2007 was carried out for the presence of any renal diseases on the basis of their clinical presentation, laboratory findings and final diagnosis.

Results: A total number of 10396 children were admitted during the study period out of which 651 (6.3%) children had renal disease. Among them, nephrotic syndrome seen in 222 patients (34.1%) was the commonest renal disease, followed by post streptococcal nephritis in 187(28.7%) and haemolytic uremic syndrome 66(10.1%), other renal diseases seen were acute renal failure in 25 (3.9%), lupus nephritis 24 (3.7%), urinary tract infection in 23 (3.5%) Henoch-Schönlein Purpura (HSP) nephritis 26 (4%), chronic renal failure in 27 (4.2%) and other miscellaneous causes 51 (7.8%).

Conclusion: A substantial number of children are hospitilsed with renal diseases, and current trends indicate that majority of them are preventable. In near future, there is a need to develop a comprehensive service for the children with kidney diseases in Nepal.

Key words: Renal Disease, Children, Nephrotic Syndrome, Poststreptococcal Glomerulonepritis, Renal Biopsy

The pattern of renal disease in children are different from developing countries as compared to developed countries and paediatric renal disease form about 4.5 - 8.7% of total paediatric admission[1,2]. Renal disease in hospitalized children and young adult can be difficult to diagnose early as it may present only with few symptoms, tends to have different course than adult and respond variously to different treatment. During infancy and early childhood unexplained fever or failure to thrive may be the only manifestation of underling renal disease Data describing the spectrum of renal diseases in hospitalised children in Nepal is scanty[3], because of lack of paediatric renal disease registry .This paper provides some insights to profile of renal diseases in hospitalized children in B. P. Koirala Institute of Health Science, Dharan, Nepal.

Materials and methods

A retrospective chart review of all the patients admitted at the department of paediatric from April 2002 to March 2007 was carried out for the presence of any renal diseases on the basis of their clinical presentation, laboratory findings and final diagnosis.The evaluation of children included history, physical examination and relevant investigation. Initial investigation carried out included complete blood count, erythrocyte sedimentation rate, urine analysis, urine culture and sensitivity, serum electrolytes, blood urea and serum creatinine. Further investigation carried out as needed included renal ultrasonography, intravenous urogram, micturating cystourethrography, serum cholesterol and protein, Anti Streptolysin O titer, 24 hour urinary protein estimation, dsDNA, renal biopsy and Hepatitis surface antigen.The diagnosis of Nephrotic syndrome, Poststreptococcal nephrotic syndrome, haemolytic uremic syndrome, acute renal failure, lupus nephritis, chronic renal failurecongenital renal disease and urinary tract infections were made on clinical and laboratory criteria[4]. The paediatric renal service in our institute included peritoneal and hemodialysis which were done when required. They were followed up for variable periods of time in outpatient service. Re-admissions were excluded and renal events ending in chronic and/ or end- stage renal failure were included in the chronic renal failure (CRF) group.

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Results

A total number of 10396 children were admitted during the study period out of which 651 (6.3%) children had renal disease. Among them nephrotic syndrome, seen in 222 patients (34.1%) was the commonest renal disease, followed by post streptococcal nephritis in 187(28.7%) and haemolytic uremic syndrome 66(10.1%).Other renal diseases seen were acute renal failure in 25 (3.9%), lupus nephritis 24 (3.7%), urinary tract infection in 23(3.5%) HSP nephritis 26(4%), chronic renal failure in 27 (4.2%) and other miscellaneous causes 51(7.8%).(Fig I). Among the nephrotic syndrome children 125(56.3%) had infrequent relapse, 71(32%) had frequent relapse but were steroid sensitive and 26(11.7%) were either steroid dependent or steroid resistant. There were 339 (52%) boys and 312 (48%) girls with a mean age of 5.2 years. The spectrum of renal disease in our population is summarized in Table 1.Percutaneous kidney biopsy was performed in 38(5.8%) children. Most of them 26(4%) were of Nephrotic syndrome followed by lupus nephritis 10(1.5%) and HSP 2(0.3%). Minimal change disease was seen in 12/222(5.4%) followed by mesangioproliferative glomerulonephritis (MESPGN) in 8(3.2%), focal segmental glomerulosclerosis (FSGS) in 4(1.2%), and membranoproliferative glomerulonephritis (MPGN) in 2(0.6%). of the 24 lupus nephritis renal biopsy was done in only in 10 as others did not give consent to biopsy. Out of which 5 children had class IV –V and 3 were of class II-III in histopathology and in 2 tissues was inadequate to comment. There were 25 (3.9%) children with acute renal failure of whom 23 (92%) had clinical and paraclinical features of prerenal azotemia. There were 14/25 (56%) cases of haemolytic uremic syndrome, 4/25(16%) acute tubular necrosis (ATN) of which 2 (50%) were due to acute gastroenteritis and 2(50%) wasp sting. Others were due to poststreptococcal glomerulonepritis 2/25 (8%) and sepsis 1(4%). There were 27(4.2%) children with CRF. The etiology of CRF included obstructive malformation like posterior urethral valve(PUV) or urethropelvic junction (UPJ) obstruction in 16(59%), Reflux nephropathy in 4(14.8%), glomerular disease 6 (22%) and Polycystic disease in 1(3.7%). Congenital malformation was seen in 51 (7.9%). Posterior uretharal valve 22 (43%), vesicouretric reflux in 15(29.4%), Puren-belly syndrome in 6 (11.8%), Wlims tumor in 4 (7.8%) and polycystic kidney disease in 4 (7.8%). Urinary tract infection (UTI) accounted for 23 (3.6%) The majority of children in this group had one or more imaging studies; sonography in 98% of cases and voiding cystourethrography (VCUG) in 70%. About 7(26.9%) of children had abnormalities on sonography ranging from minimal unilateral or bilateral caliectasis and thickening of bladder mucosa.

Table 1: Profile of renal disease in hospitalized children of Nepal

Serial Number	Renal disease	Number	Percentage
1	Glomerulonephritis(GN)	303	46.5
	Acute post infectious GN	187	28.7
	Haemolytic Uremic Syndrome(HUS)	66	10.1
	Henoch-Schonlein nephritis	26	4
	Lupus Nepritis	24	3.7
2	Nephrotic syndrome	222	34.1
	Minimal change	208	32
	Mesangioproliferative	8	1.2
	Membrano proliferative	2	0.3
	Focal segmental glomerulosclerosis	4	0.6
3	Congenital Problems	51	7.8
	Posterior urethral valves	22	3.4
	Vesicouretric reflux	15	2.3
	Wilms tumor	4	0.6
	Purne belly syndrome	6	0.9
	Polycystic kidney disease	4	0.6
4	Chronic renal failure(CRF)	27	4.2
5	Acute renal failure(ARF)	25	3.9
6	Urinary Tract Infection (UTI)	23	3.5
	Total	**651**	**100**

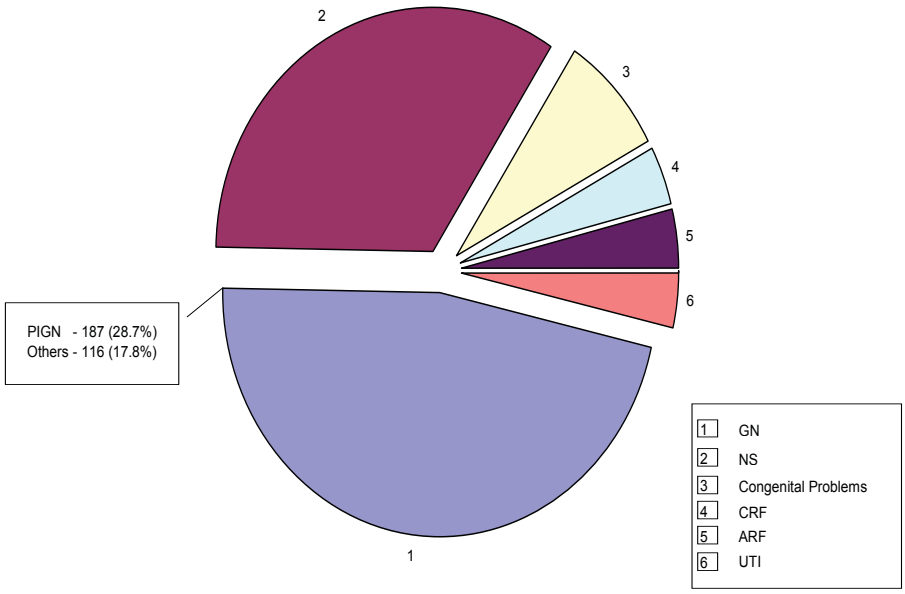

Fig 1: Profile of various renal disease

Discussion

Renal disease in hospitalized children and young people can be difficult to diagnose as it may present as few symptoms, tends to have different causes than adults and respond variously to different treatment**.** A major question for renal medicine in developing countries is how to define strategies that can identify early enough those subjects who are at risk of developing a renal disease later in life. The most common diseases requiring admission were nephrotic syndrome counting 222(34.1%) and poststreptococcal glomerulonepritis counting 187(28.7%) which is similar to other studies[4-8]. Most of the children with nephrotic syndrome were steroid sensitive having infrequent relapse116 (51%). Those with steroid dependent and steroid resistant who underwent renal biopsy still show minimal change disease to be the most common as reported earlier[9-10]. In developing countries the poststreptococcal glomerulonepritis (PIGN) remains the common cause of acute glomerulonepritis in children[3, 4, 8-13]. In our setup PIGN presented with one or more complication and required prompt emergency treatment and dialysis. We had children with PIGN of which 63% presented with pulmonary edema, with azotemia requiring dialysis. This is similar to studies reported from other developing countries[11-14]. Dialysis access is complex and challenging in children particularly those less than 8 years of age and less than 20 kg.The haemolytic uremic syndrome (HUS) is one of the most common causes of acute renal failure requiring admission in our set up and undergoing dialysis[15]. This is similar to various studies from different parts of the world. The mortality of which ranges from 6.2% and 32.4% children who recover noticed to have impaired renal function which is similar to other studies[15-19]. About 4.2% of children with renal disease seen our study had chronic renal failure. The profile of CRF was very similar to the previous studies, with congenital urological malformation being the most common cause of CRF, followed by glomerulonephritis[20-23]. Late presentation and inability to afford interventional measures including renal replacement therapy were the main constrain among these patients. Prevention is more and more important in this setting given the shortage of financial resources and the fact that dialysis centers, equipment and trained personnel are simply not available to the general population. In conclusion, our study presents insight into the paediatric renal disease in eastern part on Nepal. Chronic kidney disease present very late in acute decompensated stage when they are already into the stage of end stage renal disease. Hence, a major challenge is to develop and implement the strategy in hospitalized children that can identify early enough those patients who are at risk of developing renal diseases. Another challenge is to perform prognostic assessment based on available data and to provide culturally acceptable advices and assessment.

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