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RESEARCH ARTICLE

SPECTRUM OF KIDNEY AND URINARY TRACT DISEASES IN KASHMIRI CHILDREN

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Abstract

Introduction: Spectrum of renal disease varies in different ethnic population, geographical location, and by environmental factors. This variation is influenced by factors such as genetic predisposition, environmental background, and to a large extent the level of awareness. The causes are different in developing countries as compared to developed ones. **Aim:** The present study a retrospective analysis, forms oneof the basic data of paediatric nephrology and urology related disorders in our state. **Materials and Methods:** Retrospective analysis of the caserecords of all the hospitalized patients with renal and urinary tract diseases between 2016 and 2017 were performed. Case records were analysed and categorized into various groups like; Urinary Tract Infections (UTI), Acute Kidney Injury (AKI), Acute Glomerulonephritis (AGN), Nephrotic Syndrome (NS), haematuria, Polycystic Kidney Disease (PCKD), Posterior Urethral Valve (PUV), Vesicoureteric Reflux (VUR), Chronic Kidney Disease (CKD), Congenital Anomalies of Kidney and Urinary Iract (CAKUT) and others. These groups were divided into subgroups to get more insight about the pattern of these diseases. **Results:** Out of 11245 patients hospitalized between 2016 and 2017 years, 180 (94 males and 86 females) patients were diagnosed of renal and urinary tract diseases which forms 1.6% the total admitted patients. Among these patients 36.1% (65/180) were diagnosed Acute Kidney Injury (AKI); 25.5% (46/180): Urinary Tract Infection (UTI); 10.0% (18/180): Acute Glomerulonephritis (AGN); 6.6% (12/180): bilateral hydronephrosis with UTI; 6.6% (12/180): nephrotic syndrome (NS); 4.4% (8/180): haematuria; and 3.2% (6/180) were having CAKUT (Congenital Anomalies Of Kidney And Urinary Tract). In addition to this there were 11 cases of Renal Tubular Acidosis (RTA), 1 case of Barter syndrome and 1 case of Liddle syndrome. **Conclusion:** The early detection of renal diseases in childhood leads to better therapy and reduction in the morbidity and mortality. Emphasis should therefore be placed on preventive nephrology. Effective referral systems, training of pediatric nephrologists and improved health care financing are advocated.

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Introduction:-

The pattern of childhood renal disease varies from one geographic region to another even within the same country[1,2,3].This variation is influenced by factors such as genetic predisposition, environmental background, and to a large extent the level of awareness. The causes are different in developing countries as compared to developed ones. In general, pediatric renal disease accounts about 4.5-8.7% of total pediatric admissions[4,5].The diagnosis of renal disease among hospitalized children can often be missed. During infancy and early childhood, unexplained fever or failure to thrive may be the only manifestations. Data describing the spectrum of renal diseases in hospitalized children in our neighbouring country Nepal is scanty[6]. Previously, the prevalence of renal diseases in asymptomatic school children was found to be 0.71% in our country[7].

Despite the challenges of pediatric nephrology practice[8,9], significant success in disease outcome is being reported from developed countries. This is largely attributable to available expertise, management facilities, health insurance schemes and screening programmes. In developed countries, proper documentation, with established renal registries often provide data to guide stakeholders in resource allocation[10,11]. This is in contrast to what is obtainable in developing countries like ours, where low priority is accorded, partly due to the focus on communicable diseases and also because of a lack of data on pediatric kidney diseases, with resultant overall poor outcome in these group of patients[12,13,14,15,19,17,18,19,20,21,22].

Aims And Objectives:-

The present retrospective study was conducted to assess the children with kidney diseases and their treatment outcome.

Materials And Methods:-

The study was carried in the Department of Pediatrics, GB Pant Hospital, an associated hospital of Govt. Medical College Srinagar. It is one of the tertiary hospitals in the state providing Paediatric nephrology care to children of Jammu and Kashmir, India. During the study period only peritoneal dialysis services were utilized and those patients needing haemodialysis and renal transplant were referred to advanced centers of the country. Retrospective data of all children, aged between 0-18 years, admitted over a period of one year (2016-2017), were analysed statistically using the Statistical Package for Social Science software version 18.0. This included the demographic data, clinical history, investigations, diagnosis, disease outcome and procedures such as dialysis and renal biopsies. Detailed history, thorough clinical examination and relevant laboratory investigations including imaging, immunologic and histopathologic studies helped us in making the diagnoses. Imaging techniques such as ultrasonography, micturatingcystourethrogram, intravenous urogram, computerized tomography and magnetic resonance imaging were also employed. AKI was diagnosed using the RIFLE (Risk, Injury, Failure, Loss, End-stage) criteria[23]. Chronic Kidney Disease (CKD) and nephrotic syndrome were defined based on the Kidney Disease Outcomes Qualitative Initiative (KDOQI)[24].

Results:-

Total number of patients admitted during the study period was 11245. Among these patients 180 were having kidney and urinary tract derangements. Out of these 180 patients, male were 94 and females were 86. Six to twelve years age was the most common age group having kidney problems. Acute kidney injury was the commonest entity 65 (36.11%), seconded by the UTI in 46 (23.3%). There was a significant correlation between the pattern of kidney disease and the age of presentation ($p < 0.05$); 76% of patients with glomerular diseases were between 4-12 years of age, whereas 90% of those with congenital renal anomalies were below 4 years of age. Pertaining to gender, UTI was more common in females ($p < 0.05$).

Clinical Entity	No. of Patients	Percentage
Acute kidney injury	65	36.1
UTI	46	25.5
AGN	18	10.0
B/L HDN	12	6.6
Nephrotic syndrome	12	6.6
Hematuria	08	4.4
CAKUT	06	3.2
RTA	11	6.3

Barter syndrome	1	0.5
Liddle syndrome	1	0.5
	180	100.0

B/L HDN: Bilateral Hydronephrosis, AGN: Acute Glomerulonephritis, UTI: Urinary Tract Infection, CAKUT: Congenital Anomalies of Kidney and Urinary Tract; RTA = Renal Tubular Acidosis.

Table 2: Age wise classification of the kidney and urological disorders (N=178).

Clinical Entity	Age in Years					Total
	0 months to 1 year	>1 to 3 years	>3 – 6 years	>6-12 years	>12-18 years	
AKI	35	7	9	11	3	65
UTI	19	12	7	7	1	46
AGN	0	3	3	9	3	18
B/L HDN	3	2	3	4	0	12
Nephrotic Syndrome	0	1	5	3	3	12
HAEMATURIA	2	0	3	1	2	8
CAKUT	3	1	1	1	0	6
RTA	5	1	2	2	1	11
Total Patients	67	27	33	38	13	178
There was 1 patient each of Barter and Liddle syndrome						

NS: Nephrotic Syndrome, B/L HDN: Bilateral Hydronephrosis, PCKD: Polycystic Kidney Disease, PUV: Posterior Urethral Valve, VUR: Vesicoureteric Reflux, Agn: Acute Glomerulonephritis, AKI: Acute Kidney Injury, CKD: Chronic Kidney Disease, UTI: Urinary Tract Infection, CAKUT: Congenital Anomalies of Kidney and Urinary Tract

Discussion:-

The occurrence of kidney diseases reporting to a tertiary care center of a teaching hospital in the present study was found to be 1.6% of annual pediatric admissions. In previous reports, it varied ranging from 1.1-4.5%[25,26]. This may be indicative of poor disease characterization, consequent upon relative under-development of the sub-specialty in the state of Jammu and Kashmir. We found about 65 (36.1%) children with AKI which negative the studies from other parts of the world[27,28]. It could be because of the RIFLE criteria, which enables the inclusion of earlier stages of AKI[29].

Urinary tract infection (UTI) was the next common disorders in our studied children which is in conformity with the earlier studies[30,31], We observed Acute Nephritic Syndrome (ANS) in 12 children (6.6%) which is very low in contrast with reports from different countries with China (30%), Nigeria (37.7%)[32,33]. This difference could be because of environmental, racial, and genetic factors and a low referral rate to our centre.

Among the renal and urological disorders 6 (3.3%) were the CAKUT, among which renal hypoplasia, dysplasia, multicystic dysplastic kidney, hydronephrosis, ureteropelvic junction obstruction, and vesicoureteral reflux were the common ones.

Conclusion:-

We observed that a substantial number of children are hospitalized with renal and urinary tract diseases with delayed ages of presentation, which could be prevented or treated if timely diagnosed. The early detection of renal diseases in childhood leads to better therapy and reduction in the morbidity and mortality. The implication of this study is that there is a need for routine screening for renal diseases in children so that children with evidence of kidney disease can be identified early and treated appropriately.

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