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Original Research Article

Pediatric acute kidney injury – Prevalence, clinical spectrum and outcome in a tertiary care institute of Eastern India

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ABSTRACT

Introduction: In this study, we wanted to determine the incidence and prevalence of AKI in admitted patients of our institution in relation to their age, sex and clinical conditions. We also wanted to study the various aetiologies causing acute kidney injury in children, its severity in admitted patients, the time interval of onset of disease and onset of AKI, it's mode of management and outcomes in children.

Materials and Methods: This study was conducted in the paediatric ward of a tertiary care hospital in Eastern India. Total 147 cases of hospitalized AKI patients were studied.

Results: The incidence of AKI was found to be 1.27% in all hospitalized children. Maximum no. of cases were found in the age group >10 years (44.2%). Male children outnumbered female children by a ratio of 2:1. Fever (72.8%) and Oliguria/anuria (72.1%) were the most common presenting features. Pallor was the most common presenting sign in 66% followed by oedema (42.2%), encephalopathy (31.9%) and respiratory distress (16.3%). 32% of cases presented within 24hrs with an H/O oliguria/anuria and 64% in within 72hrs. Most patients were managed with conservative management (53%) but 36.7% were managed with HD and 10.3% were managed with PD.

Conclusions: Acute Kidney Injury cases were more common in children of age group >10 years, males being affected more. Fever and oliguria/anuria were the commonest mode of presentations with malaria as the most frequent clinical condition associated with AKI followed by sepsis. The renal type was the commonest type of AKI. There was a moderate derangement of kidney function in the majority of cases with hyperkalaemia in a significant group of patients. 47% of patients required dialytic support and case fatality was 13%. The presence of dysnatremia, hyperkalaemia, encephalopathy and shock were poor predictors of the outcome of AKI.

1. Introduction

The creation of the period of beginning of AKI and its etiological example is quick making the measurements on various parts of the illness on the planet writing increasingly insignificant. Nonetheless, in emerging nations like India, encouraging variables like gastroenteritis with dehydration, shock, diseases, nephritic disorder, snake nibble and substance addictions are more frequent in a background predisposing factors like malnutrition, poor socioeconomic status, poor financial status, unfavorable climatic and geographic circumstances, high pace of ignorance, unfortunate clinical offices and ecological disinfection. Logical information of the previously mentioned data of AKI are terribly deficient in the Indian setting.

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The early and laid out clinical elements of AKI are different and copy numerous different sicknesses. The biochemical parameters for early detection are not advanced and lab offices for finding are horribly lacking in many institutions. The treatment modalities created by foreign authors are not completely material in our classification which leaves us with moderate and frequently peritoneal dialysis as a technique for treatment. It stays the significant life-saving system for more youthful kids with AKI.

In this study, we wanted to determine the incidence and prevalence of AKI in admitted patients of our institution in relation to their age, sex and clinical conditions. We also wanted to study the various aetiologies causing acute kidney injury in children, the severity of it in admitted patients, the time interval of onset of disease and onset of AKI, its mode of management and the outcomes in children.

2. Materials and Methods

This study was conducted in the paediatric ward of a tertiary care hospital in Eastern India after institutional ethical clearance.

2.1. *Inclusion criteria*

1. All children admitted to the Dept. of Paediatrics in ward of a tertiary care hospital in Eastern India 1 year to 14 years of age for period of 2 years.
2. All inpatients with an abnormally elevated serum creatinine (≥ 1.5mg/dl) and/or urine output (oliguria i.e., <0.5ml/kg/hr for >6hr or anuria).

2.2. *Exclusion criteria*

1. Children below 1 year of age.
2. Patients with known chronic kidney disease (CKD).
3. Patients with renal malformations.

A detailed history of disease, clinical assessment, examinations, treatment and reactions to treatment of each case was noted in the proforma arranged. Their nourishing status was surveyed by the Indian Academy of Pediatrics arrangement.

The analysis of AKI depended on AKIN definition and order. In the ward, serum creatinine alone was utilized to analyze and organize AKI. At admission, all subjects went through serum creatinine measurement.2 ml of intravenous blood was removed and centrifuged at 3000 rpm for 10 min. Serum creatinine assessment was done by modified Jaffe Method using autoanalyzer.[1] In subjects conceded to wards, repeat serum creatinine estimation was done at timespans 48+/- 6 hours (in kids with congestive heart failure, dehydration, shock treatment with diuretics or nephrotoxic meds) till resolution of illness. If there was an ascent in serum creatinine, re-grouping and movement to highest AKI stage during medical clinic stay was recorded.

Those cases that had an inclination for the development of a pre-renal kind of AKI were given normal saline 20ml/kg over of 30 mins followed by a diuretic challenge (frusemide 2mg/kg) after correction of dehydration, hypotension or shock whenever related. The people who had pee were gathered under pre-renal sort and the people who didn't were treated as a intrinsic kind of AKI.[2] Their clinical profile and renal status were recorded and an endeavor was put forth in every defense to decide the etiology.

2.3. *Statistical methods*

The information were noted in organize structure, fundamental factual systems were applied utilizing "SPSS form 21" and Microsoft Excel programming. Noticing the level of the result variable in various segment and clinical subgroups was utilized. Other parametric and non-parametric investigation, theory check was finished according to need to close.

3. Results

Out of 147 cases, 34 (23.1%) were from 1-5 years, 48 (32.7%) from 5-10 years and 65 (44.2%) from >10 years. The highest incidence was observed in the >10 years age group. Out of 147 cases, 98 were males and 49 were females. Male: Female ratio was 2:1. Our study shows no variable seasonal variation in the distribution of cases.

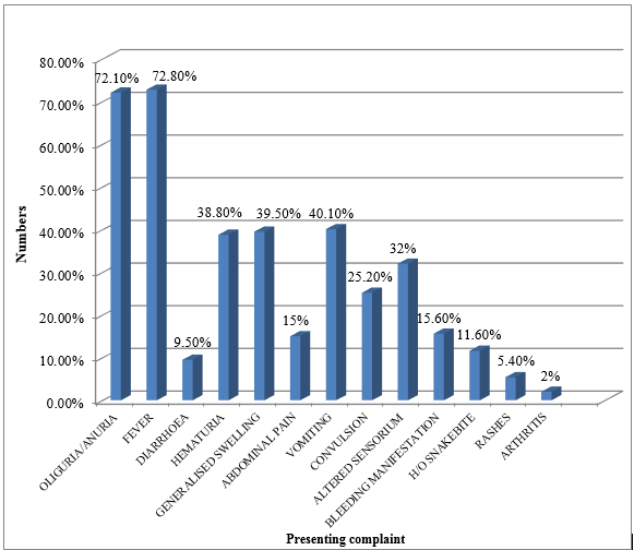

Figure 1: Presenting complaints of patients in the study group (n=147)

Figure 1 depicts Fever (72.8%) and oliguria/anuria (72.1%) were the most common presenting symptoms of AKI. But however, Vomiting (40.1%), Generalised Swelling (39.5%), Hematuria (38.8%), Altered Sensorium (32%) and Convulsion (25.2%) were the common presenting symptoms of AKI. 34 (32.1%) out of 106 cases presenting

with oliguria/anuria, were presented with 1 day of oliguria/anuria.

Of all clinical signs observed in patients of AKI, anaemia was the most common sign observed in 66% of cases followed by oedema (42.2%), encephalopathy (31.9%), respiratory distress (16.3%), jaundice (16.3%), acidotic breathing (16.3%), bleeding manifestation (15.6%), hypertension (14.2%), shock (8.1%) and dehydration (2%). Bleeding manifestation includes GI bleeding, petechiae and purpura.

Table 1: Clinical conditions associated with AKI

S.No.	Clinical Conditions	No. of Patients (n =147)	Percent	Cumulative Percent
1.	Malaria	65	44.2	44.2
2.	Sepsis	19	12.9	57.1
3.	Snake Bite	17	11.5	68.6
4.	Nephrotic Syndrome (NS)	10	6.8	75.4
5.	Poststreptococcal Glomerulonephritis(PSGN)	8	5.4	80.8
6.	Diarrhoea	7	4.7	85.5
7.	Meningoencephalitis	5	3.4	88.9
8.	Urinary Tract Infection(UTI)	3	2	90.9
9.	Posterior Urethral Valve(PUV)	2	1.4	92.3
10.	Heart Diseases	2	1.4	93.7
11.	Hemolytic Uremic Syndrome(HUS)	2	1.4	95.1
12.	Henoch-Schonlein Syndrome(HSP)	1	0.7	95.8
13.	Tuberculosis	1	0.7	96.5
14.	Hepatic Encephalopathy	1	0.7	97.2
15.	IGA Nephropathy	1	0.7	97.9
16.	SLE	1	0.7	98.6
17.	Scrub Typhus	1	0.7	99.3
18.	Diabetes Mellitus Type 1	1	0.7	100

Table 1 depicts, Malaria was the most common clinical condition associated with AKI (44.2%), followed by Sepsis (12.9%), Snakebite(11.5%), Nephrotic syndrome (6.8%), PSGN (5.4%), Diarrhoea (4.7%), Meningoencephalitis (3.4%), UTI(2%), PUV, Heart disease and HSP each of 2% and Tuberculosis, Hepatic encephalopathy, IgA Nephropathy, SLE, Scrub Typhus and DM type 1 each of 1%.

Initial serum creatinine level was found to be 1.5-3 mg/dl among 34.7% of cases, 3-6 mg/dl among 30.6% of cases and >6 mg/dl among 34.7% of cases. Initial serum urea level was found to be 40-100 mg/dl among 39.5% of cases, 100-200 mg/dl among 32.7% of cases and >200 mg/dl among 27.9% of cases. Serum Na+ level was found to be <135 mEq/L among 41.5% of cases, 135-145 mEq/L among 45.6% of cases and >145mEq/L among 12.9% of cases.

Serum K+ level was found to be <3.5mEq/L among 12.2% of cases, 3.5-5.5 mEq/L among 70.1% of cases and >5.5 mEq/L among 17.7% of cases.

Haemoglobin was found to be <7 gm% among 18.3% of cases, 7-11 gm% among 73.5% of cases and >11gm% among 8.2% of cases reflecting that the majority of patients with AKI had anaemia (91.8%). Total leucocyte count was found to be normal among 76.2% of cases and leucocytosis among 23.8% of cases. Total platelet count was found to be normal among 85% of cases and thrombocytosis among 15% of cases.

Malaria parasite was found to be positive among 38.1% of cases done by slide/ICT test.CRP was positive among 34% of cases and negative among 66% of cases. Blood culture was done among all cases out of which only 6.8% of cases had only organism isolated.

Albuminuria was found in 38.1% of cases. Pus cells were absent in 34% of cases, <5pus cells/hpf in 30.6% of cases and >5pus cells/hpf in 35.2% of cases.RBC was absent in 60.5% of cases, <5rbcs/hpf in 11.6% of cases and >5rbcs/hpf in 27.9% of cases. The urinary cast was absent in 85.75 % of cases, Granular in 7.5% of cases, Cellular in 2.7% of cases and RBC in4.1% of cases. In only 15.6% of cases, organisms were isolated.

Table 2: Clinical conditions in relation to type of AKI

S.No.	Clinical Conditions	Pre	Ren	Post	Total
1.	Malaria	15	50	0	65
2.	Sepsis	6	13	0	19
3.	Snake Bite	8	9	0	17
4.	NS	3	7	0	10
5.	PSGN	0	8	0	8
6.	Diarrhoea	4	3	0	7
7.	Meningoencephalitis	4	1	0	5
8.	UTI	2	1	0	3
9.	PUV	0	0	2	2
10.	Heart Disease	2	0	0	2
11.	HUS	1	1	0	2
12.	HSP	0	1	0	1
13.	TB	0	1	0	1
14.	Hepatic Encephalopathy	1	0	0	1
15.	IgA Nephropathy	0	1	0	1
16.	SLE	0	1	0	1
17.	Scrub Typhus	0	1	0	1
18.	DM Type 1	0	1	0	1
	Total	46	99	2	147

Table 2 depicts Maximum (67.4%) cases were found to have renal type of AKI.31.2% of cases hadprerenal type of

AKI and only 1.4% of cases had Postrenal type of AKI.

Renal type of AKI was observed to be common in all age groups but prerenal type was more frequent in 1-5 yrs of age group than other group. But the relation was not statistically significant (p-value =0.235).

Out of 147 cases of AKI, 35(23.8%) cases were in stage 1, 17(11.6%) cases were in stage 2 and 95(64.6%) cases were in stage 3.

Overall, stage 3 of AKI was more common (64.6%) followed by stage 1(23.8%) and stage 2(11.6%). Stage 3 was found to be more common in all age groups. Stage 1 was comparatively more common in 5-10 yrs age group compared to stage1 of other age groups. Age-wise distribution of AKI was not statistically significant as p-value=0.619.

PSGN, HSP, SLE, IgA Nephropathy, Scrub typhus, TB and DM type 1 were associated with renal AKI. Malaria, Sepsis and Nephrotic Syndrome were associated with both pre and renal AKI, but predominantly renal type of AKI.

Meningoencephalitis, Heart disease, Hepatic encephalopathy and UTI were associated with predominantly prerenal AKI. Diarrhoea, Snakebite and HUS were associated with both prerenal and renal AKI. PUV was associated with only postrenal AKI.

Out of 147 cases of AKI, 78(53.1%) cases were managed conservatively, 54(36.7%) cases by haemodialysis and 15(10.2%) cases with peritoneal dialysis. Out of 147 cases of AKI, 128(87.1%) cases recovered while 19(12.9%) cases were dead. Out of 78 cases that were managed conservatively, 74(94.9%) cases recovered, while 4(5.1%) cases were dead. Similarly, from 54 cases managed with haemodialysis, 44(81.5%) recovered while 10(18.5%) were dead and from 15 cases managed with peritoneal dialysis, 10(66.7%) had recovered while 5(33.3%) were dead. Conservative management had a better outcome i.e. 94.9% compared to haemodialysis (81.5%) and peritoneal dialysis (66.7%). More number of deaths occurred in cases managed with peritoneal dialysis (33.3%) than haemodialysis (18.5%) and conservative management (5.1%).

The results were statistically significant (Pvalue<0.05). Out of 78 cases of AKI that were managed conservatively, 18(23.1%) cases recovered within 1-5 days of hospitalisation, 32(41.0%) in 5-10 days of hospitalisation and 28(35.9%) cases in >10 days of hospitalisation. Out of 54 cases of AKI managed with haemodialysis, 7(13.0%) cases were recovered within 1-5 days of hospitalisation, 20(37.0%) cases in >5-10 days of hospitalisation and 27(50.0%) cases in >10 days of hospitalisation. Out of 15 cases of AKI managed with peritoneal dialysis, 4(26.7%) cases recovered within 1-5 days of hospitalisation, 2(13.3%) cases in >5-10 days of hospitalisation and 9(60.0%) cases in >10 days of hospitalisation. 23.1% of cases that were managed conservatively recovered within 1-5 days while 13% of haemodialysed cases and 26.7% of peritoneal dialysis cases recovered within 1-5 days.

Out of 106 cases presenting with oliguria, 68 were presented within 1-3 days of oliguria/anuria and 38 with >3 days of oliguria/anuria. 54 (79.4%) cases recovered, and 14(20.6%) cases were dead among cases presented within 1-3 days of oliguria/anuria. 37(97.4%) cases recovered and 1(2.6%) case was dead among cases presented with >3 days of oliguria/anuria. Mortality was higher in 1-3 days oliguria/anuria group compared to >3 days oliguria/anuria group (20.6% vs. 2.6%, p=0.0096). Out of 46 cases of a prerenal AKI, 41(89.1%) cases had recovered while 5(10.9%) cases were dead. Out of 99 cases of a renal AKI, 85(85.9%) cases had recovered while 14(14.1%) cases were dead. All 2 cases of a post renal type of AKI had recovered. Mortality was 14.1% in renal type while 10.9% in prerenal type. No significant association could be deduced (p=0.741)

Table 3 shows Mortality was nil in PSGN, UTI, PUV and HUS, but highest in malaria (31.5%) followed by sepsis (15.8%), snakebite (15.8%) and diarrhoea (10%). Out of 35 cases under stage 1, 34(97.2%) cases had recovered while 1(2.8%) case was dead. Out of 17 cases under stage 2, 14(82.4%) cases had recovered while 3 (17.6%) cases were dead. Out of 95 cases under stage 3, 80(84.2%) cases had recovered while 15(15.8%) cases were dead. No significant association could be deduced (p=0.123588.)

Out of 58 cases of AKI in the range of urea level 40-100 mg/dl, 53(91.4%) cases had recovered while 5(8.6%) cases were dead. Out of 48 cases of AKI in the range of urea level >100-200 mg/dl, 43(89.6%) cases had recovered while 5(10.4%) cases were dead. Out of 41 cases of AKI in the range of urea>200 mg/dl, 32(78.1%) cases had recovered while 9(21.9%) cases were dead. No significant association could be deduced (p=0.123).

Out of 51 cases of AKI in the range of creatinine level 1.5-3.0 mg/dl, 47(92.2%) cases had recovered while 4(7.8%) cases were dead. Out of 45 cases of AKI in the range of creatinine >3.0-6.0 mg/dl, 41(91.1%) cases had recovered while 4(8.9%) cases died. Out of 51 cases of AKI in the range of creatinine >6.0 mg/dl, 40(78.4%) cases had recovered while 11(21.6%) succumbed. No significant association could be found (p=0.074).

There was more deaths in sodium level >145 mEq/L group (36.8%) than sodium level 135-145 mEq/L group (14.9%) and <135 mEq/L group (3.3%). There was a significant association between the outcome of AKI and sodium level (p<0.001).

There was significant association of AKI stage 1(p=0.044), hyponatremia (p=0.003), hypernatremia (p=0.003), hyperkalaemia (p=0.001), encephalopathy (p<0.0001), shock (p<0.0001) and requirement of renal replacement therapy (p=0.002) to the outcome. There was a significant association of level of urea (p<0.02), level of creatinine (p<0.001), level of sodium (p<0.001) and level

Table 3: The outcome of AKI in relation to clinical conditions

S.No.	Clinical Conditions	Outcome			
		Recovery		Death	
		n	%	n	%
1.	Malaria	59	46.1	6	31.5
2.	Sepsis	16	12.5	3	15.8
3.	Snakebite	14	10.9	3	15.8
4.	Nephrotic Syndrome	9	7	1	5.3
5.	PSGN	8	6.3	0	0
6.	Diarrhoea	5	3.9	2	10.4
7.	Meningoencephalitis	4	3.2	1	5.3
8.	UTI	3	2.3	0	0
9.	PUV	2	1.5	0	0
10.	Heart Disease	1	0.8	1	5.3
11.	HUS	2	1.5	0	0
12.	HSP	1	0.8	0	0
13.	Tuberculosis	1	0.8	0	0
14.	IgA Nephropathy	1	0.8	0	0
15.	Hepatic Encephalopathy	0	0	1	5.3
16.	SLE	1	0.8	0	0
17.	Scrub Typhus	1	0.8	0	0
18.	DM Type-1	0	0	1	5.3
	Total	128	100	19	100

of potassium ($p< 0.02$) to the outcome. But no significance was attributed to the level of Haemoglobin ($p=0.230$).

4. Discussion

The age-wise distribution of AKI cases in the present study shows majority of cases, 44.2% were observed in the age group of >10 years followed by 32.7% in 5-10years and 23.1% in 1-5 years. But age distribution was more common in younger age groups as observed by P. Arora et al.[3] (51.9% below 4 years), Mohd. Ashraf et al[4] (46% in <1year), Alaleh Gheissari et al.[5](57.2% in <2years), R.N. Srivastava et al.[6] (49% in less than 4 years age group) and U.T.N Acharya et al.[7] (51.2%between 1-4 years).The mean age was 8.38±3.6(SD) years and the median was 9 years in our study. AlalehGheissari et al. found a mean age of 5.28±6.3 (SD) years and a median of 1.8years. The difference may be due to exclusion of <1year of cases in our study.

Figure 1 indicates the various clinical features observed in AKI cases in the present work. Fever (72.8%) and oliguria/anuria (72.1%) were the most common presenting symptoms followed by vomiting (40.1%), generalized swelling (39.5%), hematuria (38.8%), altered sensorium (32%) and convulsion (25.2%) as common presenting symptoms in present study. H/o snakebite was found in 11.6% and diarrhoea in 9.5% of cases. Oliguria / anuria was the presenting feature in 100% cases of the study undertaken by U.T.N Acharya et al (Anuria in 95.1% and Oliguria in 24.9 %), P.Arora et al. (anuria in 53.6% and oliguria in 46.4%) and Sriram Krishnamurthy et al.[8] oliguria/anuria in 31.3%.Diarrhoea was found in 9.5% of cases in our study population as against 58.5% in U.T.N Acharya et al, 17% in R.N Srivastava et al, a difference attributed to the regional and cultural practices increasing level of awareness among the people regarding oral rehydration.

We observed the presence of rashes as a marker of AGN(5.4%), abdominal pain (15%), bleeding manifestation(15.6%) and arthritis in (2%) of cases amongst the study population. Agarwal et al.[9] observed that the main presenting complaints were diarrhoea (86%), oliguria (72%), tachypnea (37%), oedema (37%), vomiting (19%) and seizures (13%) in their study population. The difference may be due to our region being endemic to malaria.

Table 4 depicts the distribution of cases according to days of oliguria/anuria. 32.1% of cases presented with 1 day of oligo/anuria. Oligo/anuria of more than 72 hrs was found in 35.8% of cases as against 78% in the study of U.T.N Acharya et al. This study being undertaken in a tertiary hospital received an early referral of cases which accounted for the gap in the result. Duration of oligo/anuria was significantly associated with the outcome in our study similar to P.Arora et al. study.

The presence of Pallor was found 66% of cases in present study, U.T.N Acharya et al in their study found a similar association of anaemia in 80.5% of cases.

Odisha is a state with a high incidence of venomous snakebites and is endemic for malaria and more sickle cell disease cases; this explains the different statistical picture of aetiology in the present study. The infectious aetiology included Malaria, Sepsis, Diarrhoea, Meningoencephalitis,

Table 4: Predictor of mortality of AKI on univariate analysis

S. No.	Variable	Group	Deaths(n)	OR(95%CI)	P Value
1	Age in Years	1-5 (n=34)	5	0.82(0.27-2.4)	0.772
		>5-10 (n=48)	7	0.81(0.29-2.2)	0.68
		>10 (65)	7	1.14(0.42-3.07)	0.79
2	Sex	M (98)	10	1.98(0.74-5.2)	0.16
		F (49)	9		
3	Clinical Conditions	Malaria (n=65)	6	1.85(0.67-5.17)	0.23
		Sepsis (n=19)	3	0.76(0.2-2.9)	0.714
		Snakebite (n=17)	3	0.65(0.17-2.53)	0.699
		Diarrhoea (n=7)	2	0.34(0.06-1.9)	0.223
		Nephrotic syndrome (n=10)	1	1.36(0.16-11.4)	1
		Meningoencephalitis (n=5)	1	0.58(0.06-5.48)	1
4	AKI Staging	1 (n=35)	1	6.5(0.83-50.6)	0.044*
		2 (n=17)	3	0.65(0.16-2.53)	0.699
		3 (n=95)	15	0.44(0.13-1.41)	0.16
5	Oliguria/Anuria	Absent (n=41)	4	1.52(0.47-4.89)	0.47
		Present (n=106)	15		
6	Metabolic Disturbances	Hyponatremia (n=61)	2	7.2(1.6-32.76)	0.003*
		Hypernatremia (n=19)	7	0.17(0.05-0.53)	0.003*
		Hyperkalaemia(n=26)	9	0.17(0.06-0.47)	0.001*
7	hypertension	Absent (n=126))	17	0.67(0.14-3.16)	0.74
		Present (n=21)	2		
8	Encephalopathy	Absent (n=100)	5	8.06(2.7-24.1)	<0.0001*
		Present (n=47)	14		
9	Thrombocytopenia	Absent (n=125)	14	2.3(0.74-7.3)	0.16
		Present (n=22)	5		
10	Shock	Absent (n=135)	11	22.5(5.84-86.9)	<0.0001*
		Present (n=12)	8		
11	Requirement of RRT	Absent (n=78)	4	5.13(1.6-16.3)	0.002*
		Present (n=69)	15		
12	Type of AKI	Prerenal (n=46)	5	1.3(0.44-3.9)	0.61
		Renal (n=99)	14	0.7(0.23-2.08)	0.52
		Postrenal (n=2)	0		

*p-value significant

UTI, TB and Acute Fulminant Hepatitis which accounted for 68.6% of cases in the present study similar to 55.4% in the study by Sriram Krishnamurthy et al. 2012 and 56.1% in the study by Bhowmik Souravi et al. 2015.[10]

Sriram Krishnamurthy et al, Bhowmik Souravi et al and Srivastav et al observed AGN in 16.9%, 20.7% and 13% cases respectively; our figure of 5.4 % is much lower. HUS was a leading cause of AKI in children as per the study of Jamal et al 2004 and R.N Srivastava et al accounting for 54.34% and 36% respectively. In the present study, HUS took 1% of the study group. This change in pattern was due to geographic variation in the causation of AKI with different referral institutions where the studies were undertaken. Al Rohani M et al.[11] observed that malaria was the leading associated condition with AKI(29%) similar to our study.

Renal type accounts for the majority of case distribution (67.4%), followed by prerenal type (31.2%). Postrenal contributed only 1.4%. Sriram Krishnamurthy et al in their study series found a similar figure of renal (74%), prerenal (24%) and postrenal (2%). In contrast, U.T.N Acharya et al. attributed 58.5% of cases to prerenal type, which was due to a large number of acute gastroenteritis cases in their study group. The type of renal failure is influenced by the aetiology which is again age-dependent; hence renal type of AKI was more common in all age groups but the prerenal type was more in frequency in the 1-5 years age group than others. In the age group 1-5yrs, due to increase in susceptibility to infection, there was an increase in cases of AGE leading to an increase in prerenal type. In the older age group, malaria and snakebite were common, intrinsic renal failure was common.

We found that 87.1% of cases had recovered and 12.9% of cases were dead. The mortality rate was 24.7% by Otukesh H et al.[12]22.2% by AlalehGheissari et al. and 42.5% by P. Arora et al. Outcome in relation to various treatment modalities in our study was - conservative management 95% recovered, mortality was 5%. In the Haemodialysis group, there was 81.5% recovery and 18.5% mortality and among the peritoneal dialysis group, there was 66.7% recovery with 33.3% mortality.

Poonam Mehta et al.[13] 2011 recorded the need for dialytic support in 15.1% of cases. Patients with AKI had a significantly longer duration of hospital stay (9 days vs. 7 days, p<0.02) and higher mortality (37%). U.T.N Acharya et al. encountered high mortality of 73.2% and they attributed the causes of high mortality to late referral and severe AKI as evidenced by significantly higher levels of blood urea, creatinine and potassium in patients who died. Bhowmik Souravi et al. observed that mortality was high in patients requiring dialysis as compared to children managed conservatively (38.4% vs. 18.5%).[14,15]

5. Conclusions

Acute kidney injury cases were more common in children of age group >10 years, males being affected more. Fever and Oliguria/anuria were the commonest mode of presentation with malaria as the most frequent clinical condition related with AKI followed by Sepsis. The renal kind was the commonest sort of AKI. There was a moderate derangement of kidney function in most of the cases with hyperkalaemia in a significant group of patients. 47% of patients required dialytic support and case fatality was 13%. Presence of dysnatremia, hyperkalaemia, encephalopathy and shock were poor indicators of the outcome of AKI.

6. Conflict of Interest

None.

7. Source of Funding

None.

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