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Research Article

Study of Clinical Profile of Acute Gastroenteritis Patients with Renal Involvement

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ABSTRACT:
Background: Acute gastroenteritis (AGE) is one of the most common causes of acute kidney injury (AKI) in developing countries due to volume depletion, electrolyte imbalance and sepsis. Early recognition of renal involvement is crucial to reduce morbidity and mortality.
Aims and Objectives: To study the clinical profile, biochemical parameters, risk factors, and outcome of acute gastroenteritis patients with renal involvement admitted at SAIMS, Indore.
Materials and Methods: This was a prospective observational study conducted in the Department of Medicine, Sri Aurobindo Institute of Medical Sciences (SAIMS), Indore, from Jan 2024 to June 2025]. A total of 120 patients aged >18 years presenting with acute gastroenteritis with evidence of renal involvement (raised serum creatinine >1.5 mg/dl from baseline, oliguria <400 ml/day, or AKIN criteria) were included. Detailed history, clinical examination, hydration status, urine output, CBC, RFT, LFT, serum electrolytes, ABG, urine routine and USG KUB were recorded. Patients with pre-existing CKD, obstructive uropathy, nephrotoxic drug intake and chronic diarrheal illness were excluded. Results: Out of 120 patients, 72 (60%) were males and 48 (40%) were females with mean age 42.6 ± 15.2 years. Most common presenting symptoms were vomiting 84%, fever 48%, abdominal pain 32% and decreased urine output 68%. Hypotension at presentation was seen in 52 patients (43.3%). AKI Stage 1 was seen in 58 patients (48.3%), Stage 2 in 36 (30%) and Stage 3 in 26 (21.7%). Most common electrolyte abnormality was hyponatremia (38.3%) followed by hypokalemia (31.6%) and metabolic acidosis (42.5%). Majority responded to fluid resuscitation and conservative management; 18 patients (15%) required hemodialysis. Mortality was 6.6% (8 patients) and was significantly associated with age >60 years, hypotension at admission, and need for dialysis ($p<0.05$).
Conclusion: Renal involvement is a common and potentially reversible complication of acute gastroenteritis. Hypovolemia-induced pre-renal AKI is the predominant mechanism. Early aggressive fluid resuscitation, correction of electrolytes and timely dialysis can improve outcomes and prevent progression to chronic kidney disease.

Keywords: Acute Gastroenteritis, Acute Kidney Injury, AKI, Hypovolemia, Electrolyte Imbalance

INTRODUCTION

Acute gastroenteritis (AGE) is one of the most common infectious diseases affecting people of all age groups and continues to be a major public health problem worldwide.[1] It is characterized by inflammation of the gastrointestinal tract involving the stomach, small intestine, or large intestine and commonly presents with diarrhea, nausea, vomiting, abdominal pain, fever, and dehydration.[2] According to the World Health Organization (WHO), diarrhea is defined as the passage of loose or watery stools at least three times within a 24-hour period, with greater emphasis placed on altered stool consistency than frequency alone.[3] Although AGE is generally self-limiting, severe disease can lead to significant systemic complications including electrolyte imbalance, circulatory collapse, sepsis, and acute kidney injury (AKI), particularly in children, elderly individuals, and patients with associated comorbid conditions. Acute gastroenteritis can produce marked disturbances in fluid, electrolyte, and acid-base balance. Excessive loss of fluids through diarrhea and vomiting may rapidly result in

dehydration, hypovolemia, metabolic acidosis, and impaired tissue perfusion. Clinical manifestations of mild dehydration include dry mouth, fatigue, headache, and concentrated urine, whereas severe dehydration may present with tachycardia, hypotension, oliguria, altered mental status, prolonged capillary refill time, delirium, and circulatory collapse.[4] Inadequate or delayed replacement of diarrheal fluid losses significantly increases the risk of acute kidney injury.[5] Acute kidney injury is defined as a sudden decline in renal filtration and excretory function occurring over hours to days, leading to accumulation of nitrogenous waste products, electrolyte imbalance, and acid-base disturbances.[6] AKI is associated with substantial morbidity, mortality, prolonged hospitalization, and increased healthcare burden. Globally, AKI affects nearly 13.3 million individuals annually and contributes to approximately 1.7 million deaths every year.[7] Furthermore, patients recovering from AKI remain at increased risk of chronic kidney disease (CKD), end-stage kidney disease (ESKD), cardiovascular complications, and recurrent hospital admissions. [8]. Among the preventable causes of AKI, acute gastroenteritis occupies an important position, especially in developing countries where delayed healthcare access, poor sanitation, and inadequate rehydration practices remain common. Severe fluid depletion in AGE results in reduced effective circulating volume and renal hypoperfusion, causing a decline in glomerular filtration rate (GFR). Initially, this manifests as reversible prerenal azotemia; however, persistent hypovolemia may progress to intrinsic renal damage such as acute tubular necrosis (ATN).[9] Additional mechanisms contributing to renal injury include sepsis, disseminated intravascular coagulation (DIC), metabolic abnormalities, and nephrotoxic insults. The pathophysiology of AKI in gastroenteritis is predominantly related to decreased renal perfusion secondary to volume depletion. Dehydration plays a central role in the progression of renal dysfunction in AGE. It results from excessive loss of water and electrolytes and is associated with increased serum osmolality above 294 mOsm/kg.[9] Persistent intravascular depletion causes renal vasoconstriction, impaired oxygen delivery, metabolic acidosis, and reduced urine output. Hyperkalemia may develop due to impaired renal excretion, tissue catabolism, and lactic acidosis. If not recognized and treated promptly, these alterations can progress to oligoanuria and complete renal shutdown.[9] Recognition of the prognostic significance of even minor elevations in serum creatinine led to the development of standardized classifications for AKI. In 2004, the Acute Dialysis Quality Initiative (ADQI) proposed the RIFLE classification system, which categorized AKI into Risk, Injury, Failure, Loss of kidney function, and End-stage kidney disease based on serum creatinine, GFR changes, and urine output.[10] The RIFLE criteria enabled early identification of AKI, objective assessment of severity, and improved prognostic evaluation. According to the RIFLE classification, the "Risk" category is defined by a 1.5-fold rise in serum creatinine or GFR reduction greater than 25%, along with urine output less than 0.5 mL/kg/h for six hours. "Injury" includes doubling of serum creatinine or GFR reduction greater than 50% with oliguria lasting 12 hours, while "Failure" is characterized by tripling of serum creatinine, severe decline in GFR, or anuria persisting for 12 hours.[10] The categories "Loss" and "End-stage kidney disease" indicate persistent renal dysfunction lasting more than four weeks and three months respectively.[10] occurs due to urinary tract obstruction impairing urine drainage.[11] In India and other developing countries, communicable diseases such as acute diarrheal illness, malaria, septicemia, snake bite, leptospirosis, and poisoning constitute major causes of AKI.[24] AKI develops in approximately 7% of hospitalized patients and in up to 67% of critically ill individuals depending upon the diagnostic criteria employed.[12] Community-acquired AKI (CA-AKI), which develops outside the hospital setting, is increasingly recognized as a common and potentially preventable condition.[13] AGE-associated AKI represents an important form of CA-AKI, particularly in resource-limited settings where delayed presentation and inadequate fluid therapy are common. Despite advances in supportive care and renal replacement therapy, severe AKI continues to be associated with high mortality rates. Additionally, AKI survivors have increased long-term risks of cardiovascular complications including atrial fibrillation, heart failure, acute coronary syndrome, and major adverse cardiac events.[14] Early identification and aggressive management of renal involvement in patients with acute gastroenteritis are therefore crucial in reducing

morbidity and mortality.[15] Clinical evaluation should include careful assessment of hydration status, urine output, hemodynamic parameters, and neurological status, along with laboratory investigations such as serum creatinine, blood urea, serum electrolytes, arterial blood gas analysis, and urine examination. Ultrasonography (USG) also serves as a useful diagnostic tool for evaluating renal size, cortical echogenicity, urinary obstruction, and associated complications. Adequate and timely fluid replacement remains the cornerstone of treatment in gastroenteritis-associated AKI.[16] Most patients improve with oral or intravenous rehydration depending upon the severity of dehydration.[17] The type, amount, and rate of intravenous fluid administration should be individualized according to hemodynamic status, body composition, electrolyte disturbances, and urine output.[18] Failure to recognize deteriorating renal function at an early stage may result in progression to severe AKI requiring dialysis support. Better understanding of biochemical abnormalities, urine output changes, and radiological findings may facilitate early diagnosis and prompt intervention, thereby improving clinical outcomes. The present study was therefore undertaken to assess the clinical profile of patients with acute gastroenteritis and renal involvement, analyze laboratory parameters including blood urea, serum creatinine, electrolytes, urine input-output, and evaluate ultrasonographic findings in patients developing AKI following acute gastroenteritis

Aims and Objectives

AIM

To Study clinical profile of patients with acute gastroenteritis and renal involvement.

OBJECTIVES

1. To study the clinical profile of patients with acute gastroenteritis (AGE) and renal involvement (AKI).
2. To analyze the laboratory parameters i.e., blood Urea, serum creatinine, electrolytes and urine input/output in patients with acute kidney injury (AKI) following acute gastroenteritis (AGE).
3. To analyze the USG findings in patients of acute gastroenteritis with renal involvement (AKI).

Background

One of the most prevalent causes of morbidity and hospitalization globally, especially in third world, is acute gastroenteritis (AGE). It is associated with the acute nature of diarrhea with or without vomiting, fever, abdominal pain and dehydration due to inflammation of the gastrointestinal tract. There are a wide range of infectious organisms, such as viruses, bacteria and parasites, that cause the disease, and are usually spread via contaminated water and food or improper hygienic standards. Acute gastroenteritis has remained a significant healthcare issue despite the efforts to improve public health and hygiene. There has been a high prevalence of acute gastroenteritis, among children, the elderly, and the immune-compromised patients. [19]

2. Acute Gastroenteritis: definition and overview.

Acute gastroenteritis (AGE) refers to an acute inflammatory process of the gastrointestinal tract of the stomach and intestines which is mainly characterized by diarrhea with or without vomiting, abdominal cramps, nausea and fever. The disease tends to be spontaneous and takes less than a fortnight.

A clinical differentiation of acute gastroenteritis is possible between inflammatory and non-inflammatory diarrhea. Characteristics of non-inflammatory diarrhea include liquid stools, nausea and vomiting and generalized abdominal pain, usually brought about by viruses or enterotoxin-producing bacteria.

Global Burden

Acute gastroenteritis (AGE) is another disease that dominates among the most common infectious diseases in the world and continues to pose a high morbidity and mortality rate especially in developing countries.Kumar M et al. (2026) conducted a single-center observational study to evaluate the clinical profile and etiologicalspectrum of acute kidney injury (AKI) in patients admitted to a tertiary care hospital, emphasizingthat prompt identification of underlying causes is essential for effective management and prevention of complications. The study was carried out from June 2025 to December 2025 and included 50 patients admitted to the medicine ward and intensive care unit with AKI. The findings demonstrated a malepredominance, with 32 males and 18 females affected. Etiological analysis revealed that acute gastroenteritis was the most common cause of AKI, accounting for 20% of cases, followed by snake bite and unknown etiologies (18.8% each), infective causes (15.8%), and poisoning or drug-induced nephrotoxicity (15.2%).

MATERIAL AND METHODS

Study Design -The present study was conducted as a hospital-based cross-sectional observational study to evaluate the clinical profile, laboratory parameters, ultrasonographic findings, and clinical outcomes of patients presenting with acute gastroenteritis (AGE) associated with acute kidney injury (AKI). Study Centre -The study was conducted in the Department of General Medicine at Sri Aurobindo Institute of Medical Sciences and Post Graduate Institute. Duration of Study -The study was carried out over a period of 18 months from the date of approval by the Institutional Ethics Committee, from 1 June 2024 to November 2025.

Study Population -The study population comprised adult patients admitted to the Department of General Medicine with a diagnosis of acute gastroenteritis and associated acute kidney injury during the study period. Sample Size -A total of 120 patients were included in the study. The sample size was determined based on Medical Record Department (MRD) data, which showed approximately 10– 12 admissions per month of patients diagnosed with acute gastroenteritis associated with AKI. Sampling Method -A convenient sampling method was adopted, and all eligible patients fulfilling the inclusion criteria during the study period were enrolled consecutively until the desired sample size was achieved. Inclusion Criteria The following patients were included in the study: Patients aged more than 18 years. Patients diagnosed with acute gastroenteritis and acute kidney injury. Patients admitted to the Department of Medicine at Sri Aurobindo Institute of Medical Sciences and Post Graduate Institute. Patients who provided written informed consent for participation in the study. Exclusion Criteria The following patients were excluded from the study: Patients with pre-existing comorbidities such as hypertension and diabetes mellitus. Patients who did not consent to participate in the study. Ethical Considerations -Prior approval for the study was obtained from the Institutional Ethics Committee of Sri Aurobindo Institute of Medical Sciences and Post Graduate Institute before commencement of the study. Written informed consent was obtained from all participants after explaining the nature and purpose of the study in their own language. Confidentiality of patient information was strictly maintained throughout the study. Methodology -After obtaining ethical clearance, patients fulfilling the inclusion criteria were enrolled in the study following written informed consent. A detailed clinical history was obtained from each patient regarding age, sex, duration of illness, frequency of diarrhea, vomiting episodes, fever, abdominal pain, decreased urine output, and history of fluid intake. History of previous hospitalization, drug intake, and associated symptoms was also recorded. A thorough general physical examination and systemic examination were performed in all patients. Vital parameters including pulse rate, blood pressure, respiratory rate, temperature, and oxygen saturation were recorded at the time of admission. Clinical assessment of dehydration was performed based on physical findings such as skin turgor, mucosal dryness, sunken eyes, postural hypotension, tachycardia, and urine output.

RESULTS

Table 1. Distribution of Sociodemographic Characteristics of Study Participants (n=120)

Variable	Category	Frequency (n)	Percentage(%)	χ^2	p-value
Age Group (Years)	18–30	7	5.8	32.10	<0.001
	31–40	13	10.8		
	41–50	21	17.5		
	51–60	37	30.8		
	61–70	28	23.3		
	≥71	14	11.7		
Sex	Female	31	25.8	28.03	<0.001
	Male	89	74.2		
Total		120	100.0		

Table 1 and Graphs 1A–1B illustrate the sociodemographic profile of the study participants. The majority of patients belonged to the 51–60 years age group (30.8%), followed by 61–70 years (23.3%), indicating that acute gastroenteritis with renal involvement was more common among middle-aged and elderly individuals. A marked male

predominance was observed, with males accounting for 74.2% of cases compared to 25.8% females. The distributions of both age groups ($\chi^2 = 32.10$, $p < 0.001$) and sex ($\chi^2 = 28.03$, $p < 0.001$) were statistically significant, suggesting a non-random pattern of disease occurrence within the study population.

Table 2. Distribution of Clinical Characteristics of Acute Gastroenteritis Patients with Renal Involvement (n=120)

Symptom/Sign	Frequency	Percentage (%)
Loose Motions	120	100
Vomiting	98	81.7
Oliguria	84	70.0
Fever	56	46.7
Abdominal Pain	63	52.5
Severe Dehydration	67	55.8
Hypotension	39	32.5
Total	**120**	**100.0**

Table 2 and Graph 2 demonstrate that gastrointestinal manifestations were frequently accompanied by evidence of renal dysfunction and volume depletion. A substantial proportion of patients presented with vomiting, reduced urine output, and severe dehydration, highlighting the role of fluid loss in the development of acute kidney injury. Abdominal pain and fever were also commonly reported, whereas hypotension was observed in approximately one-third of participants, suggesting clinically significant hemodynamic compromise in a considerable subset of cases.

Table 3. Distribution of Study Participants According to Duration of Illness Before Hospitalization

Duration of Illness	Frequency (n)	Percentage (%)	(χ^2)	p-value
1–5 Days	4	3.3	79.10	<0.001
6–10 Days	82	68.3		
11–15 Days	34	28.3		
Total	**120**	**100.0**		

Table 3 and Graph 3 depict the duration of illness before hospitalization among the study participants. The majority of patients (68.3%) presented to the hospital between 6 and 10 days after symptom onset, while 28.3% sought care after 11–15 days. Only 3.3% of patients were hospitalized within the first 5 days of illness. The distribution was statistically significant ($\chi^2 = 79.10$, $p < 0.001$), indicating that delayed presentation was common in the study population. This delay may have contributed to worsening dehydration and the development of acute kidney injury among patients with acute gastroenteritis.

Table 4. Distribution of Ultrasonographic Findings Among Acute Gastroenteritis Patients with Renal Involvement

USG Renal Finding	Frequency (n)	Percentage (%)
Normal Study	36	30.0
Grade I Renal Parenchymal Changes	68	56.7
Grade II Renal Parenchymal Changes	2	1.7
Maintained Corticomedullary Differentiation (CMD)	13	10.8
Altered Corticomedullary Differentiation (CMD)	1	0.8
Total	**120**	**100.0**

Table 4 and Graph 5 depict the ultrasonographic renal findings among the study participants. Renal parenchymal abnormalities were observed in the majority of patients, with Grade I renal parenchymal changes being the predominant finding, indicating mild structural renal involvement. Normal ultrasonographic findings were observed in nearly one-third of participants, while advanced abnormalities such as Grade II

parenchymal changes and altered corticomedullary differentiation were infrequent. These findings suggest that most cases were characterized by early or mild renal parenchymal involvement rather than advanced chronic structural kidney damage.

Table 5. Distribution of Fluid Input and Output Status Among Study Participants (n=120)

Variable	Frequency (n)	Percentage (%)
Reduced Urine Output (Oliguria)	84	70.0
Severe Oliguria/Anuria	28	23.3
Preserved Urine Output	8	6.7
Total	**120**	**100.0**

$\chi^2 = 82.40$, $p < 0.001$

Table 5 and Graph 7 highlight the extent of urine output reduction among the study participants. The majority of patients exhibited oliguria or severe oliguria/anuria, indicating significant impairment of renal perfusion and excretory function. Only a small proportion maintained adequate urine output despite the acute illness. The observed distribution was highly statistically significant ($\chi^2 = 82.40$, $p < 0.001$).

Table 6. Association between Severity of Acute Kidney Injury and Dialysis Requirement

RIFLE Category	Dialysis Required n (%)	p-value
Risk (n=52)	0 (0.0)	**0.001**
Injury (n=40)	4 (10.0)	
Failure (n=28)	14 (50.0)	
Loss (n=0)	0	
ESKD (n=0)	0	
Total	**18 (15.0)**	

$\chi^2 = 34.6$, p=0.001

Table 6 and Graph 14 reveal a highly significant association between the severity of acute kidney injury and the requirement for dialysis ($\chi^2 = 34.6$, $p = 0.001$). The need for renal replacement therapy increased markedly with advancing stages of AKI, indicating that patients with more severe renal dysfunction were substantially more likely to require dialysis. These findings underscore the clinical utility of the RIFLE classification in predicting treatment intensity and identifying patients who may benefit from early nephrology consultation and closer monitoring.

DISCUSSION

Acute gastroenteritis (AGE) remains one of the most common causes of morbidity worldwide and continues to be an important contributor to acute kidney injury (AKI), particularly in developing countries. Excessive gastrointestinal fluid losses resulting from diarrhea and vomiting can lead to dehydration, electrolyte imbalance, renal hypoperfusion, and subsequent deterioration of renal function. Although most cases of gastroenteritis are self-limiting, delayed presentation and inadequate fluid replacement may result in significant renal complications requiring hospitalization and renal replacement therapy.

The present study included 120 patients with acute gastroenteritis-associated acute kidney injury (AKI). Analysis of age distribution demonstrated that the majority of patients belonged to the 51–60 years age group (30.8%), followed by 61–70 years (23.3%), 41–50 years (17.5%), and ≥71 years (11.7%). Only a small proportion of patients belonged to younger age groups. The age distribution was statistically significant ($\chi^2 = 32.10$, $p < 0.001$), indicating that middle-aged and elderly individuals constituted the most affected population.

Similar observations were reported by Ghuge et al. [5], who found that the most commonly affected age group was 61–70 years (28%), followed by 51–60 years (25%), with a mean age of 53.8 ± 11.7 years. Gunjan and Jha [42] also reported that 30% of patients belonged to the 61–70 years age group and 23% belonged to the 51–60 years age group, with a mean age of 54.6 ± 12.8 years. Sharma et al. [183] and Kumar and Prasad [20] reported identical findings, further supporting the observation that gastroenteritis-associated AKI

predominantly affects middle-aged and elderly individuals.

Duration of Illness Before Hospitalization

The duration of illness before hospitalization is an important determinant of disease severity in patients with acute gastroenteritis-associated acute kidney injury (AKI). Delayed presentation often results in prolonged fluid and electrolyte losses, progressive dehydration, worsening renal hypoperfusion, and increased risk of acute renal dysfunction. In the present study, the majority of patients (68.3%) presented to the hospital between 6–10 days after symptom onset, while 28.3% sought medical attention after 11–15 days. Only 3.3% of patients were hospitalized within the first five days of illness. The observed distribution was highly statistically significant ($\chi^2 = 79.10$, $p < 0.001$). These findings indicate that delayed healthcare-seeking behavior was common among the study population. Such delay likely contributed significantly to the development of severe dehydration, electrolyte abnormalities, oliguria, and deterioration of renal function observed at admission. Continuous gastrointestinal fluid loss over several days can result in substantial depletion of intravascular volume, eventually overwhelming renal compensatory mechanisms and leading to acute kidney injury.

The findings of the present study are supported by Patel et al. [21], who emphasized that delayed intervention is one of the most important contributors to gastroenteritis-associated AKI.

Ultrasonographic Findings

Ultrasonography is an important non-invasive imaging modality used in the evaluation of patients with acute kidney injury (AKI). It helps assess renal size, cortical echogenicity, corticomedullary differentiation, and structural abnormalities while excluding obstructive causes of renal dysfunction. In the present study, ultrasonographic examination revealed that Grade I renal parenchymal changes were the most common finding, observed in 56.7% of patients. Normal ultrasonographic findings were noted in 30.0% of patients. Maintained corticomedullary differentiation was observed in 10.8%, while Grade II renal parenchymal changes and altered corticomedullary differentiation were seen in only 1.7% and 0.8% of patients, respectively.

The predominance of Grade I renal parenchymal changes indicates that most patients had mild structural renal involvement despite significant functional impairment. This finding is clinically important because mild parenchymal changes are generally. Associated with potentially reversible renal dysfunction when dehydration and electrolyte abnormalities are corrected promptly. The relatively low frequency of advanced ultrasonographic abnormalities further suggests that most patients suffered from acute rather than chronic renal injury. Although detailed ultrasonographic findings have not been extensively reported in most previous studies evaluating gastroenteritis-associated AKI, Swarna Latha Devi et al. [22]

Urine Output Status

Urine output is one of the most sensitive clinical indicators of renal function and forms an integral component of the assessment and classification of acute kidney injury (AKI). Reduction in urine output reflects declining renal perfusion, impaired glomerular filtration, and worsening renal dysfunction. In the present study, 70.0% of patients had oliguria, 23.3% had severe oliguria or anuria, and only 6.7% maintained preserved urine output. The observed distribution was highly significant statistically ($\chi^2 = 82.40$, $p < 0.001$), highlighting the substantial burden of renal dysfunction among the study population.

The high prevalence of oliguria observed in the present study indicates that significant renal hypoperfusion had already developed in most patients by the time of hospitalization. Acute gastroenteritis causes extensive fluid loss through diarrhea and vomiting, leading to reduction in effective circulating volume. As renal blood flow decreases, glomerular filtration declines and urine output falls. Persistent oliguria subsequently results in accumulation of metabolic waste products, worsening electrolyte abnormalities, and progression of renal injury. Comparable findings have been reported in several previous studies. Inbanathan and Lavanya [23] identified oliguria as the most common presenting symptom among patients with gastroenteritis-associated AKI. Their study demonstrated that reduction in urine output was often the earliest clinical manifestation of significant renal involvement and frequently prompted hospital admission. Dialysis represents the most important renal replacement therapy for patients with severe AKI who fail to respond to conservative management. In the present study, dialysis was required in 18 patients (15.0%). Comparable findings were reported by Umamaheshwari et al. [24], who observed

dialysis requirement in 17.9% of patients. Bhattacharya et al. [25] reported dialysis in 24% of cases, while Inbanathan and Lavanya [23] documented dialysis requirement in 30% of patients. Pajai et al. [26] reported that 32% of patients required hemodialysis due to severe renal dysfunction. Almuradi et al. [27] observed dialysis requirement in 52.8% of patients with severe AKI, while Patil et al. [28] identified dialysis requirement as an important predictor of mortality.

CONCLUSION

Acute gastroenteritis remains an important and preventable cause of acute kidney injury, particularly among middle-aged and elderly individuals. The present study demonstrated that severe dehydration resulting from prolonged diarrhea and vomiting is the principal factor responsible for renal dysfunction. Most patients presented after several days of illness and exhibited significant biochemical evidence of renal impairment, including elevated blood urea and serum creatinine levels, reduced glomerular filtration rate, electrolyte abnormalities, and oliguria.

The study revealed that a substantial proportion of patients had moderate-to-severe renal dysfunction at presentation, with severity of AKI showing significant associations with prolonged hospitalization and increased dialysis requirement. Oliguria, severe dehydration, hypotension, and delayed hospitalization emerged as important indicators of disease severity.

Despite the considerable burden of renal dysfunction, favorable outcomes were achieved in all patients through prompt fluid resuscitation, correction of electrolyte disturbances, close monitoring of renal function, and timely renal replacement therapy whenever indicated. The predominance of mild ultrasonographic renal changes and complete recovery in all patients indicate that gastroenteritis-associated AKI is largely reversible when recognized and treated early.

The findings of the present study emphasize the importance of early recognition of dehydration, prompt initiation of rehydration therapy, regular monitoring of renal parameters, and timely referral of high-risk patients. Early intervention can prevent progression to severe renal injury, reduce dialysis requirement, shorten hospital stay, and significantly improve clinical outcomes. Therefore, increasing awareness regarding adequate hydration and early medical consultation during episodes of acute gastroenteritis is essential for reducing the burden of acute kidney injury and its associated complications.

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