

**Original Research Article**

# **Study of spectrum of Acute kidney injury in tertiary care center**

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## **Abstract**

**Introduction:** Acute Kidney Injury is a common medical problem. AKI is responsible for major mortality and morbidity of hospitalized patients because of serious nature of the underlying illness and incidences of complication.

**Materials and methods:** A total number of 100cases of Acute Kidney Injury who fulfill the inclusion criteria were studied with a detail history, clinical examination and investigation according to need.

**Results:** Out of 100 patients 78 were male and 22 were female. Maximum numbers of patients were in age group of 51 to 60 years. Vomiting (60%) and Oliguria (48%) were common presenting features. The study showed various etiological factor associated with Acute Kidney Injury like Septicemia (43%), Acute gastroenteritis (10%), Malaria (9%), Nephrotoxicity (8%), Cirrhosis of Liver and Obstetrical cause cause (7%), Glomerulonephritis (6%), CCF (5%), Snake bite (4%), and Leptospirosis (1%). In this study, Hypotension (40%) were common complication of acute kidney injury followed by Hyperkalemia (35%).

**Conclusion:** We observed that early diagnosis and early investigation were probably responsible for good survival rate in acute kidney Injury.

## **Key words**

Acute Kidney Injury, Septicemia, Hemodialysis.

## **Introduction**

Acute Kidney injury (AKI), previously known as Acute Renal Failure, is characterized by the sudden impairment of Kidney function resulting

in the retention of nitrogen and other waste product, normally cleared by the Kidney. AKI is not a single disease but rather designation of a heterogeneous group of condition that share common diagnostic feature. Specially an increase

in the blood urea nitrogen BUN concentration and or increase in the plasma or serum creatinine concentration, after associate with a reduction in urine volume. AKI is recognized as an important risk factor for no recovery of Kidney function, increasing incidence of CKD and progression to end stage renal disease, leading to disability, high long term costs and poor qualities of life [1]. Patient with AKI have about a nine time higher risk of CKD and a two times higher risk of premature death [2]. RIFLE classification scheme and Acute Kidney Injury Network (AKIN) classification scheme have been proposed to achieve early diagnosis of AKI. Reliable and comparable date about the clinical spectrum of AKI is necessary for optimizing the management available from India using standardized criteria [3]. In India Acute Kidney Injury constitutes 1.5 of all general Hospital admission of which 60% are due to medical cause [4]. AKI is also a major medical complication, particularly in the setting of diarrheal illness, infectious disease like Malaria and Leptospirosis and natural disease such as earthquakes [5]. Major surgery is also an important cause of AKI. Advanced age, Liver disease including Renal insufficiency and Diabetes have been implicated as risk factor for the development of AKI [6].

## Materials and methods

The study was done in Anugrah Narayan Medical College, Gaya from February 2016 to January 2017. A one hundred case of Acute Kidney Injury were selected in this study. Diagnosis of AKI was made on the basis of history, sign and symptoms, supported by blood investigation and radiological data. All patients with clinical and/ or biochemical evidence of Acute Kidney Injury were included in the study.

## Exclusion criteria

- Patient of Chronic Kidney disease.
- Patients who do not give consent for study.
- Patient age below 16 years.

## Results

Total number of patient included in the study was 100. 78 patient male and 22 patients were female. Maximum patients were in the age group of 51-60 years (**Table – 1**). Out of 100 cases, 78(78%) had vomiting 60 (60%) had oliguria, 48 (48%) had fever, followed by dyspnoea in 30 (30%), edema in 26 (26%) of patients, Loose stool in 20 (20%), jaundice in 16 (16%), Altered sensorium 10 (10%), bleeding diathesis 3 (3%) and Pericarditis 2 (2%) as per **Table - 2**.

**Table – 1:** Age distribution.

Age (Years)	No of patients	Percentage
< 20	2	2%
21-30	11	11%
31-40	12	12%
41-50	23	25%
51-60	33	33%
>60	19	19%

**Table – 2:** Distribution of patients according to clinical symptoms.

Symptom and Sign	No of patients	%
Oliguria	60	60%
Vomiting	78	78%
Fever	48	48%
Loose stool	20	20%
Edema	26	26%
Jaundice	16	16%
Dyspnea	30	30%
Altered sensorium	10	10%
Bleeding diathesis	3	3%
Pericarditis	2	2%

Etiology of Acute Kidney Injury were septicemia (43%), Acute gastroenteritis (10%), Malaria (9%), Nephrotoxicity (8%), Chirrhosis of liver and obstetrical cases (7.1%), Glomerulonephritis (6%), CCF and other cardiac diseases (5%), snake bite (4%) and Leptospirosis (1%). Diabetes Mellitus (25%) was the common co morbidity condition followed by hypertension (20%) and other significant co-morbidities condition were chronic Liver disease, Stroke, Malignancy, COPD and malnutrition.

In this study hypotension (40%) were common complication of Acute Kidney Injury followed by hyperkalemia (35%) other complication of Acute Kidney Injury was Metabolic Acidosis, Encephalopathy, Pulmonary edema, Anemia, multi organ dysfunction syndrome (MODS), Hypokalemia and Hyponatremia. In the study, 79 patients managed conservatively and 21 patients underwent Hemodialysis. Out of 100 cases studied 92 patients had survived and mortality was in 8% cases of Acute Kidney Injury.

## Discussion

In present study, age group of patient with AKI range from 18 years to 70years and Maximum patient in age group of 51-61years. In our study male population (78%) were more affected than female (22%). Benich B, et al. [7] in their study of pattern of Acute Kidney failure (AKI) found that 58% were male and 36% were female. Common sign and symptom were vomiting (78%), Oliguria (60%), Fever (48%) and Dysuria (30%), other clinical feature were edema (26%), Loose stool (20%), Jaundice (16%), Altered sensorium (10%), Bleeding diathesis (3%) and Pericarditis (2%) due to uremia. Study done by Singhal AS, et al. [8] which showed that Oliguria was seen (85.2%) of patients and 80% had vomiting. Study done by Eswarappa M, et al. [3] which showed that Oliguria (67%), Fever (52%), Edema (28%), and Jaundice (21%). In the present study, cause of AKI out of 100 patients 43% patients had Septicemia, Acute Gastroenteritis (10%), and Malaria and Nephrotoxicity (9%) of patients, Obstetrical cause and Cirrhosis of Liver had 7%, Glomerulonephritis (6%), CCF and Cardiac cause (5%), Snake bite (4%), and Leptospirosis (1%). One study found that infection (55%) was responsible for that majority of cases of AKI in children (10%) and may other studies conducted both in India and Srilanka and World over have found Sepsis is the most common cause of AKI [9]. In the study of AKI by Prakash J, et al. [10] (15%) had Malaria. Study done by Eswarappa M, et al. [3] showed that Malaria 6.4%, Septicemia 38.6%, Acute Gastroenteritis

10.4%, Snake bite 2%, Cirrhosis of liver 7% and Nephrotoxicity 6% had cause of Acute Kidney Injury. Diabetes Mellitus was the common comorbidities in this study followed by Hypertension, Chronic Liver disease, Stroke, Malignancy, COPD and Malnutrition. One study demonstrated a significantly increased risk of AKI in critically ill patient with older age, Diabetes Mellitus, Hypertension and Multiple risk factor [10]. Common complications were Hypertension (40%), Hyperkalemia (35%), Metabolic Acidosis (33%), Encephalopathy (28%), Anemia (26%), Pulmonary edema (25%) and multiorgan dysfunction syndrome (MODS) (20%). In the study 78% patients were managed conservatively and 22% patient underwent Hemodialysis. In present study 100 cases 92% patients survived and about 8 patient expired. Multi organ Failure was commonest cause of death. Studies concluded four variables significantly increase the risk of death from ARF, Older age, Hyperkalemia, Oliguria and presence of Sepsis on admission [11, 12].

## Conclusion

AKI is a very common entity affecting patient suffering from a wide variety of illness. Vomiting and oliguria were still continuous to be the predominant symptoms in Acute Kidney Injury. Septicemia was the predominant cause of Acute Kidney Injury in our study.

Hypotension, Hyperkalemia, Metabolic acidosis, Encephalopathy, Anemia, Pulmonary edema and multi-organ failure were common complication. It was observed that early diagnosis and early intervention were probably responsible for good survival rate.

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