

Investigation into the Causes and Clinical Characteristics of Acute Kidney Injury in a Tertiary Care Setting

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Received: 16-02-2024 / Revised: 15-04-2024 / Accepted: 29-04-2024

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Conflict of interest: Nil

Abstract:

Background & Method: Present Study was done with an aim to find out Etiology and clinical profile of patients of Acute Kidney Injury at Tertiary Care Centre of Bettiah. After taking institutional ethical clearance and written consent from the patients a cross sectional observational study was conducted on 100 Patients admitted in Intensive Care Unit of GMCH, Bettiah. who have clinical and / or biochemical evidence of acute kidney injury, detailed thorough history taking, general physical examination, systemic examination and routine and specific lab investigations, were done to find out the underlying etiology, clinical features and outcome of Acute Kidney Injury.

Result: This study includes various etiology of acute kidney injury in the current study. Most common cause being AGE (30%) followed by septicemia (16%) and poisoning (14%). In present study 75 % of cases were of Pre Renal AKI. Post Renal and Renal AKI was present in 13% and 12% respectively.

Conclusion: The variety of clinical features were recorded and studied, the most commonly observed clinical feature was oliguria closely followed by malaise and vomiting in acute kidney injury. Acute gastrointestinal infection was the most common cause of acute kidney injury. Other frequent causes were septicemia, poisoning, multi organ dysfunction syndrome.

Keywords: Etiology, clinical & Acute Kidney.

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Introduction

The epidemiology of Acute renal failure have changed greatly over the decades mainly due to change in definition of the disease. Over the years a broader term have become more relevant that is acute kidney injury, which is a common clinical problem in critically ill patients and is associated with significant morbidity and high mortality rate. [1]

Although recovery of renal function occurs in majority of patients surviving an episode of AKI, many patients remain dialysis dependent or are left with severe renal impairment. [2] More recently it has been recognized that even patients who have complete or near complete recovery of renal function are at increased risk of CKD and that superimposition of AKI on CKD is associated acceleration in the rate of progression to ESRD. [3] Acute kidney injury is defined by the impairment of kidney functions like filtration and excretion over days to weeks, resulting in the retention of nitrogenous and other waste products normally cleared by the kidneys. AKI is not a single disease but, rather, a designation for a heterogeneous group of conditions that share common diagnostic features: specifically, an increase in serum creatinine (SCr) concentration often associated with a reduction in urine volume. [4]

It is important to recognize that AKI is a clinical diagnosis and not a structural one. A patient may have AKI with or without injury to the kidney parenchyma. AKI can range in severity from asymptomatic and transient changes in laboratory parameters of glomerular filtration rate (GFR), to overwhelming and rapidly fatal derangements ineffective circulating volume regulation and electrolyte and acid-base composition of the plasma. AKI complicates 5–7% of acute care hospital admissions and up to 30% of admissions to the intensive care unit. AKI is associated with a markedly increased risk of death in hospitalized individuals, particularly in those admitted to the ICU where in-hospital mortality rates may exceed 50%.

Material and Method

After taking institutional ethical clearance and written consent from the patients a cross sectional observational study was conducted on 100 Patients admitted in Intensive Care Unit of Government Medical College and Hospital Bettiah. Who have clinical and / or biochemical evidence of acute kidney injury, detailed thorough history taking, general physical examination, systemic examination and routine and specific lab investigations, were done to find out the underlying etiology, clinical features and

outcome of Acute Kidney Injury.

Inclusion Criteria

- 1) All inpatients with clinical and / or biochemical evidence of acute kidney injury.

Exclusion Criteria

- 1) Patients who refuse to give consent.
- 2) Critically/terminally ill Patients
- 3) Patients with pre-existing chronic renal failure or chronic renal disease.
- 4) HIV Positive Patients

Statistical Analysis: All the data analysis was performed using IBM SPSS ver. 20 software. Frequency distribution and cross tabulation was used to prepare the tables. Quantitative variables were expressed as the mean and standard deviation. Categorical data was expressed as percentage. Categorical variables were compared by chi-square test. Mean was compared using one way ANOVA analysis. PRISM and Microsoft office was used to prepare the graphs. P value of <0.05 is considered as significant.

Results

Table 1: Sex Distribution

Sex	Number of Patients (N=100)	Percentage
Female	40	40
Male	60	60

Table 2: Etiology of Acute Kidney Injury

Diagnosis	Number of patients (N= 100)	Percentage
AGE	30	30
ENVENOMATION	8	8
SEPTICEMIA	16	16
GLOMERULONEPHRITIS	9	9
POISON	14	14
MODS	3	3
MALARIA	5	5
BPH/BOO	4	4
BURN	2	2
CANCER	2	2
RENAL CALCULI	7	7

This table represents various etiology of acute kidney injury in the current study. Most common cause being AGE (30%) followed by septicemia (16%) and poisoning (14%).

Table 3: Type of Renal Failure

Type of renal failure	Number of patients (N= 100)	Percentage
Renal	12	12
Pre Renal	75	75
Post Renal	13	13

In present study 75 % of cases were of Pre Renal AKI. Post Renal and Renal AKI was present in 13% and 12% respectively.

Table 4: Urea Levels

Urea Levels	Number of Patients	Percentage
Less than 100	41	41
101 to 150	30	30
151 to 200	23	23
201 & above	6	6

Discussion

AKI is a common entity in ICU Setup with a high mortality rate, but a timely diagnosis with a proper line of treatment its effect can be reversed. In my study out of 100 patients majority were below 55 years of age with mean age of the study group was 42.9 years. [5] In my study 60 were males 40 were females resulting in male: female ratio of 1.5:1

which was comparable to ratio found in various studies from developing countries. [6] The Male: Female ratio in developed countries was reported to be of 1:1. In my study oldest patient was of 83 years old and the youngest was of 16 years old. [6] Compared to the studies of Benrich B et al [7] and Ravindra L Mehta et al [8] the mean age of this study group was significantly younger but male to female ratio were comparable to them. Benrich B et al had a

mean age of 56.2 years with 58% male and 42% females and Ravindra L Mehta et al had a mean age of 59.5 in his study with 59% males and 41% females.

Conclusion

The variety of clinical features were recorded and studied, the most commonly observed clinical feature was oliguria closely followed by malaise and vomiting in acute kidney injury. Acute gastrointestinal infection was the most common cause of acute kidney injury. Other frequent causes were septicemia, poisoning, multi organ dysfunction syndrome.

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