

**Original article:**

## **Clinical profile of acute kidney injury in intensive care unit in tertiary care centre**

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### **Abstract**

**Introduction:** Acute Kidney Injury is a common medical problem in ICU. Delay in diagnosis is associated with increased mortality. Variety of conditions can lead to AKI. Many factors can influence the outcome of AKI. This study was done to find the predictive factors related to outcome of AKI. This study was done to analyze the common causes and clinical manifestation of Acute Kidney Injury in I.C.U. patients.

**Methodology :** A total number of 50 cases of acute kidney injury in ICU of tertiary care centre, who met the inclusion criteria were studied . All these patients included, were studied with a detailed history, general physical examination, systemic examination and investigations whose blood urea & serum creatinine [ $>2$  ] increases above normal.

**Results :** This study showed Male to Female ratio of 1.27 : 1. Maximum incidence was seen  $> 65$  year age group. Mortality was high in 45-64 (12.5%) age group. The study showed various etiological factors associated with AKI like septicemia, AGE ,CCF, and Surgical causes are like Renal stone, post operative period ,stricture urethra, BPH. Common complications were Hyprkalemia, Pulmoary edema, Encephalopathy, Multi organ dysfunction and metabolic acidosis. However septicemia was the predominant cause of AKI in our study and Multi organ failure was commonest cause of death. Out of all cases 78% patients had medical causes, 18% patients had surgical & 4% had obstetrical causes of AKI.

**Conclusions:** In this study about 92% patients were survived. 76% of patients were treated conservatively and 24% patients underwent haemodialysis .We observed that early diagnosis and early intervention were probably responsible for good survival rate.

**Keywords:** Heamodialysis, Glomerular filtration rate

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### **INTRODUCTION**

Acute Kidney Injury is a syndrome characterized by rapid decline in glomerular filtration rate ( hours to day) and retention of nitrogenous waste products such as blood urea, nitrogen and creatinine and perturbation of extra cellular fluid volume and electrolyte and acid – base homeostasis.<sup>4</sup> Serum creatinine level more than or

equal to 2 mg /dl or increase in serum creatinine more than or equal to 20% of base line. AKI complicates approximately 5 % of hospital admission and upto 30% of admission to intensive care units.<sup>1</sup> Oliguria is frequent but not invariable features.<sup>5</sup> AKI reveals in patient of recent increase in plasma urea & creatinine concentration.<sup>1</sup> Kidney being relatively unique

among the organ of the body in its ability to recover from almost complete loss of function.<sup>1</sup> AKI is responsible for major morbidity and mortality of hospitalized patients because of serious nature of the underlying illness and high incidences of complications.<sup>1</sup> AKI is common clinical conditions in hospitalized patients.<sup>2</sup> The incidences of AKI in hospitalized patients is between 2% and 5%.<sup>3</sup> In a study done showed oliguria was common clinical features seen is 82.5% of patient followed by clinical features of encephalopathy, vomiting and acidosis.<sup>3</sup> AKI impairs renal excretion of Na,<sup>+</sup> K<sup>+</sup> & water and perturbs divalent cation homeostasis and urinary acidification mechanisms.<sup>1</sup> The most common course of AKI are : volume depletion, hypotension, aminoglycoside antibiotics and Radiocontrast agents. Major surgery is also an important cause of AKI. Advanced age, liver disease, underlying renal insufficiency and diabetes have been implicated as risk factor for the development of AKI.<sup>3</sup>

#### **MATERIALS AND METHODS**

This was a study of patients with Acute Kidney Injury admitted to Dr. D. Y. Patil Hospital, Pimpri, Pune from year 2007 – 2009, A total number of 50 cases admitted with signs and symptoms of acute

kidney injury in our hospital were taken. Diagnosis of AKI

was made on basis of history, signs and symptoms, supported by blood investigations, and radiological data. All patients with clinical and / or biochemical evidences of Acute Kidney Injury (patients whose blood urea & serum creatinine [ >2 ] increases above normal ) were included. Patients with preexisting chronic renal failure or chronic renal disease. ( preexisting increase in Blood urea and serum ceratinine) Patients aged below 14 years were excluded.

#### **RESULTS**

A total number of 50 cases of acute kidney injury patients, admitted in Padmashree Dr. D. Y. Patil Medical college, Pimpri, Pune, who met the inclusion criteria were studied. Out of 50 cases studied, 28 ( 56%) patients were males and 22 (44% ) were females. Out of these 22 females 2 females had AKI due to post partum hemorrhage & aseptic abortion. In males most of the patient had AKI due to septicemia, secondary to primary diseases. Multifactorial etiologies are seen in some patients. Age ranged from 20 to 65 years, 12 patients was their between 45 – 64 years showed 12.5% mortality in this age group.

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**Table No 1- Clinical Presentation**

Symptoms and sign	Number	percentage
Vomiting	40	80%
Oliguria	33	66%
Fatigue	31	62%
Fever	28	56%
Loose stools	11	22%
Jaundice	11	22%
Polyuria	4	8%
Dyspnea	36	72%

[ In this study 78% patients had AKI due to medical causes.18% patients had AKI due to surgical cause. 4% patients had AKI due to obstetrics in origin.]

**Table No 2- Medical Causes of AKI**

Cause	Total no cases	percentage
Septicemia	17	34%
AGE	9	18%
CCF&Other cardiac condition	4	8%
Malaria	2	4%
Glomerulonephritis	3	6%
Drug toxicity & postcontrast nephropathy	2	4%
Ascites & hepatorenal syndrome	2	4%
Leptospirosis	1	2%

**Table No -3 Surgical Causes Of AKI**

Surgical causes	No of patients	Percentage
Renal stones	3	6%
Post operative period	2	4%
Stricture urethra	1	2%
BPH	1	2%
Bladder outlet obstruction	1	2%
Polycystic kidney disease	1	2%

**Table No 4 – Complications of AKI**

Complications	No of patients	Percentage
Encephalopathy	15	30%
Hyprkalemia	25	50%
Anemia	15	30%
Multi organ dysfunction	12	24%
Hypotension	26	52%
Metabolic acidosis	14	28%
Pulmonary edema	15	30%

[ In this present study of 50 cases, 46 (92%) patients survived and about 4 (8% %) patients expired. (2 males and 2 female).Age group having more mortality was 45-64.Out of 4 (8%) patients 2 were died due to septicemia.1 patient diagnosed as COPD with septicemia was of died because of respiratory complication. And 1 patient of Leptospirosis was died because of multiorgan failure.]

**Table No 5 – Management of Patients in AKI**

	Conservative management	hemodialysis
No of patient	38 (76%)	12 (24%)
Percentage mortality	5.2%	16.66%

## DISCUSSION

A Prospective study of 50 cases of Acute kidney injury was done. These patients were diagnosed based on the clinical and laboratory evidence of elevated blood urea and serum creatinine and admitted in Padmashree Dr.D Y patil medical college pimpri pune .

This study showed Male to Female ratio of 1.27 : 1. Maximum incidence was seen > 65 year age group. Mortality was high in 45-64 (12.5%) age group .The study showed various etiological factors associated with AKI like septicemia, AGE,CCF and other cardiac conditions ,malaria, Glomerulonephritis, drug toxicity & postcontrast nephropathy, ascites & hepatorenal syndrome & Leptospirosis. Surgical causes are like Renal stone, post operative period ,stricture urethra, BPH , Bladder outlet obstruction, polycystic kidney disease. Common symptoms were vomiting ,oliguria, fatigue ,dyspnea and fever . Other clinical features were jaundice, loose stools, polyuria .Common complications were Hyprkalemia, Pulmoary edema, Encephalopathy, Multi organ dysfunction and metabolic acidosis. However septicemia was the predominant cause of AKI in our study and Multi organ failure was commonest cause of death . Out of all cases 78% patients had

medical causes, 18% patients had surgical & 4% had obstetrical causes of AKI . Study shows intrinsic renal failure (48%) is most common type of AKI. Out of 50 cases , 92% patients survived and 8% patients expired. 76% patients managed conservatively and 24% patients underwent haemodialysis.

## CONCLUSIONS

In this study 50 patients were studied prospectively. The clinical feature were studied . It was observed that clinical features were almost in accordance with studies conducted earlier.Vomiting and oliguria were still continuous to be the predominant symptoms in acute renal failure. However we observe Septicemia was the predominant cause of acute renal failure in our study. Other causes of renal failure in our study were similar to other studies like AGE , drug nephrotoxicity ,malaria, CCF and other cardiac conditions. Encephalopathy, Hyprekalemia, Pulmonary edema, Metabolic acidosis and Multi-organ dysfunction are common complications in our study. About 92% patients were survived. 76% of patients were treated conservatively and 24% patients underwent haemodialysis .We observed that early diagnosis and early intervention were probably responsible for good survival rate.

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