Journal of Cardiovascular Disease Research

ISSN: 0975-3583,0976-2833 VOL13, ISSUE 08, 2022

ICU Patients with Acute Kidney Injury: Clinical Profile

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Abstract

Background: Patients in the ICU frequently suffer from AKI, and it is an independent predictor of poor outcome. Two recent large multi-center cohort studies suggested that 36% of ICU admissions were associated with acute renal damage.

Material and Methods: The current investigation was conducted at the Intensive Medical Care Unit of Department of General Medicine, Kamineni Institute of Medical Sciences, LB Nagar, Hyderabad, Telangana, India. This was an observational study that was conducted between October 2021 to September 2022 and with a sample size of 30 patients.

Results: Acute kidney injury is a kidney illness that can be treated but could ultimately be fatal. Due to its climatic and geographical diversity, as well as the varying standards of medical care, India's aetiology, course, and result are not the same as those seen in other countries. We analysed data from 30 participants in this investigation. In total, there were 21 males and 9 females.

Conclusion: Delays in diagnosis and treatment, pulmonary and other infections, the existence of Comorbidities, and multi-organ dysfunction were identified as the main causes of high mortality in the aforementioned study.

Keywords:ICU patients, acute kidney injury, clinical profile.

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Introduction

Studies on Acute Kidney Injury (AKI) like the Critical Care have been widely reported on and discussed in the medical literature over the past five years. Interestingly, as more evidence about AKI and its effect on prognosis became available, more questions and debates arose. It is now widely acknowledged that AKI affects a sizable proportion of the population (exact incidence varies), that AKI is associated with an increased risk of death, and that patients who require renal replacement therapy have an even higher risk of death. More and more evidence suggests that early AKI has a better prognosis than late AKI, and that many people with AKI go through varying degrees of severity. Researchers have identified a number of factors that affect the prognosis of AKI patients. These factors include both those that are inherent to the patient and those that can be altered, such as the size of the intensive care unit (ICU) and the type of hospital.[1-5]

The occurrence of AKI is a common clinical issue in intensive care unit patients and is an independent predictor of poor outcome. An estimated 36% of all patients admitted to the ICU suffer from AKI, as revealed in two recent major multi-centre cohort studies. A growing body of observational evidence also points to a rising trend in the prevalence of AKI. The current study was to analyse the clinical spectrum of AKI patients in the ICU, to determine the aetiology, risk, and prognostic variables for AKI, and to analyse the final result of patients with AKI. Despite these advancements, there are still many grey areas in the field of AKI,

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with the topic of RRT being particularly contentious. The mode, indication, time, dose, and provision of RRT all vary widely in clinical practice. Clinical trials have not consistently shown a survival advantage for patients on continuous RRT compared to intermittent hemodialysis, despite the common belief that a continuous mode may be preferable for critically sick patients with AKI, especially those with haemodynamicinstability.[6-11]

Material and Methods

The present study was carried out at the Intensive Medical Care Unit, of Department of General Medicine, Kamineni Institute of Medical Sciences, LB Nagar, Hyderabad, Telangana, India. This was an observational study, performed between the period of October 2021 to September 2022 on the sample size of 30 patients.

Inclusive Criteria

- A rise in serum creatinine that is greater than or equivalent to 0.3 mg/dl (>26.4 umol/L) in absolute terms
- A serum creatinine rise of greater than 50% as a percentage (1-5 fold from baseline).

Exclusion criteria

- Individuals with CKD Patients with aberrant cortico-medullary differentiation and abnormal kidney size.
- Through a thorough history review, physical examination, urine analysis, CBC, RFT, and renal USG, a thorough diagnostic evaluation was carried out.

RESULTS

The current research was conducted out at the Intensive Medical Care Unit of Department of General Medicine, Kamineni Institute of Medical Sciences, LB Nagar, Hyderabad, Telangana, India. This was an observational study that was carried out between the periods of October 2021 to September 2022 on a sample size of thirty different patients.

Table 1: Dispersion of our Study's AKI Cases by Age

Age (Years)	Males	Females
13-20	2	1
21-30	5	4
31-40	3	1
41-50	3	2
51-60	5	0
>60	3	1
Total	21	09

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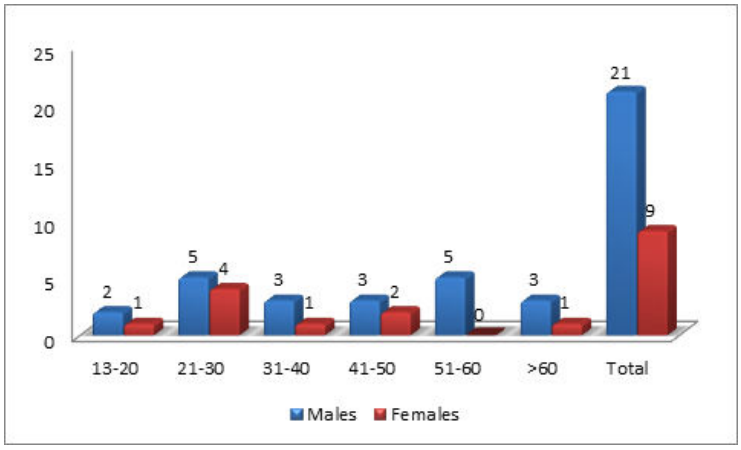

Figure 1: Dispersion of our Study's AKI Cases by Age

The third decade saw the highest incidence rate. Four of the patients were sixty or older. According to the RIFLE standards, five of them were at risk, one of them was injured, and two of them failed.

Table 2: Introducing Key Attributes

Output of Urine	Males	Females	Total
Non oliguric	6	2	08
Oliguric	11	11	22

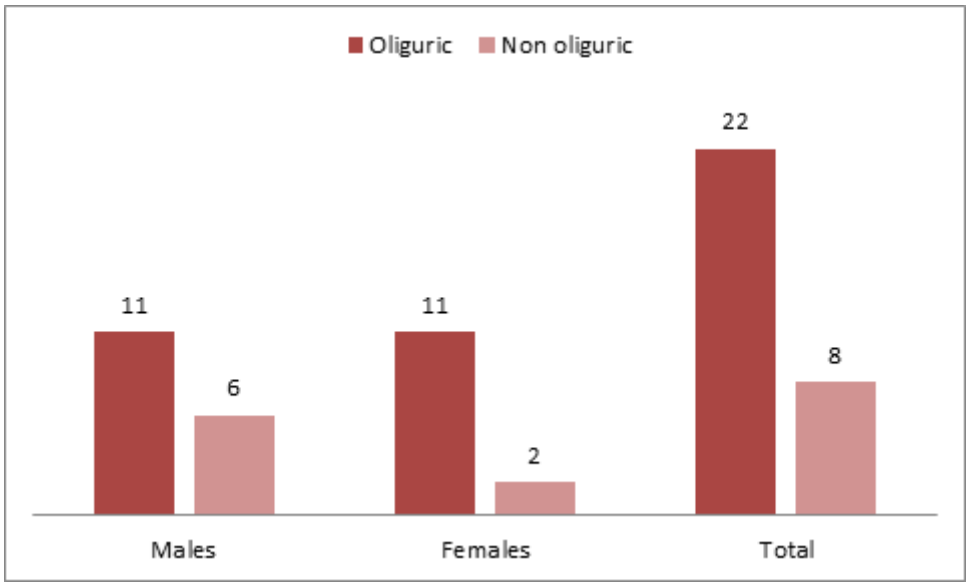

Figure 2: Introducing Key Attributes

There was a lot of foreboding in the presentation. Poisoning affected 6 of the 30 individuals who were not oliguric. Two of them had insecticide poisoning, one from an organochlorine chemical and one from an organophosphate. Oduvanthalai leaf poisoning and copper sulphate poisoning accounted for the other two incidents. Three patients with sepsis had non oliguric presentations. Non-oliguria was detected in one case of leptospirosis due to a snake bite.

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Table 3: Causes of Acute Kidney Injury

S. no	Etiology	Males	Females	Total
1	Sepsis	2	3	5
2	Poisoning	1	3	4
3	ADD	4	2	6
4	Snake bite	1	2	3
5	Malaria	1	1	2
6	Leptospirosis	4	2	6
7	Wasp sting	2	2	4
Total				30

In severely ill patients, sepsis was the leading cause of AKI. Attention Deficit Hyperactivity Disorder was the second most common culprit. The snake bite came in second. All of these individuals had a longer Whole Blood Clotting Time after being bitten by a Russell's viper. Three out of the four poisoning cases involved exposure to insecticide. A total of 4 people contracted leptospirosis, and 2 people contracted malaria. Falciparum malaria was the cause of two instances.

Table 4: Non-Oliguric AKI Causes

Etiology	Cases
Poisoning	3
Snake bite	3
Leptospirosis	2
ADD	2
Sepsis	4
Total	14

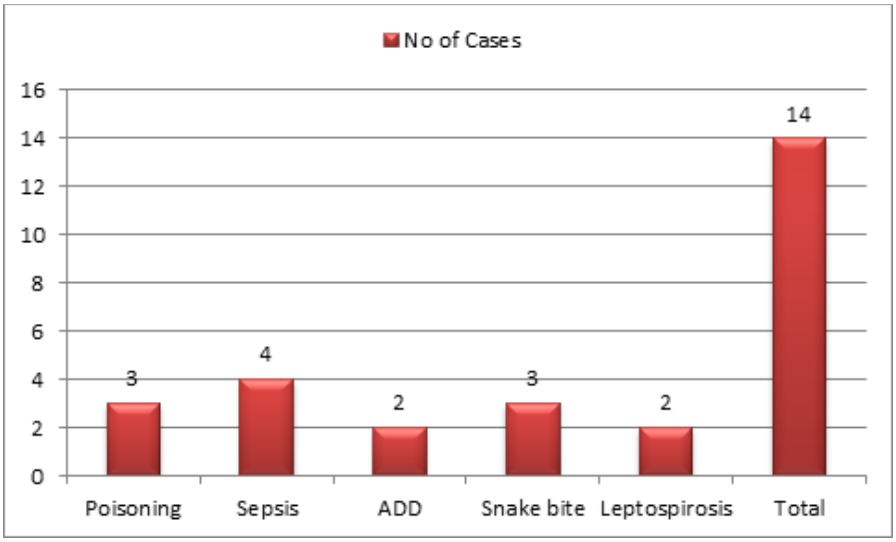

Figure 3: Non-Oliguric AKI Causes

Table 5: Management of AKI

	Cases	Conservative	HD	PD
Risk	12	20	00	00
Failure	08	06	10	08
Injury	12	04	07	01

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30 cases were categorised as class R based on RIFLE criteria. All of the patients in this category received conservative care. In contrast, there were 12 patients in class I, of whom 8 received dialysis treatment. 18 people in the FAILURE class received dialysis for their conditions. The first mode, between HD and PD, is favoured. Due to HD's low cost and higher effectiveness, it was used to treat 57% of cases that needed RRT (or 60% of all instances).

Table 6: Results of AKI

Outcome	Survived	Expired
Risk	10	3
Failure	08	2
Injury	06	4

Two at-risk patients passed away. Both of these sepsis cases were treated conservatively for the AKI while receiving ionotropic and ventilatory support. The lone patient who passed away from an injury also had sepsis with multiple organ failure.

Table 7: Associated Co-morbid Conditions

Co morbid conditions	Survived	Expired
DM	4	4
CAD	3	2
SHT	2	2
Ionotropics	2	5
Ventilation	4	6
MOD	2	5
CLD	0	2

There were 8 distinct cases of diabetes. Four patients had both systemic hypertension and diabetes. SHT, CAD, and CLD each occurred as lone instances. Only one of the seven individuals with multiorgan dysfunction survived. Ionotropic or ventilatory support was given to a total of 7 individuals, 7 of whom passed away. The morality rate among patients receiving MOD plus ionotropic support was 85%.

DISCUSSION

Although acute kidney injury is treatable, it can be lethal if left untreated. Different diseases have different etiologies, courses, and outcomes in India as a result of the country's climate, geography, and medical practices. In our study, we analyzed data from 30 different people. There were a total of 21 males and 9 females. The median age when it happened was 38.26. The peak incidence years were the third through the fifth decades. In our research, oliguric acute renal damage predominated (80%). Previous research by M.A. These results are supported by research conducted by Muthusethupathi et al. in 1999. According to our findings, sepsis is the leading cause of death worldwide. This is supported by all multi-center research. The research conducted by M. found that leptospirosis is the leading cause of AKI. Authors A. Muthusethupathi et al. Sepsis has been diagnosed in 19 cases (38%). Of those patients, 42% required dialysis while the remaining 58% were treated with more restrained methods. The death toll has risen to six, with 32 percent of those deaths attributed to sepsis. Compared to M's stated 34.7%, just one of the nine persons diagnosed with ADD died from an arrhythmia. Authors A. Muthusethupathi et al. According to the findings of S. K. Agarwal et al., 11% of acute kidney injury (AKI) cases in the north of India can be attributed to ADD. Awareness was increased through dehydration therapy and referral, which also reduced

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fatalities. Snakebites affected seven victims, or 14%, and all were caused by the hematotoxicrussel's viper. Hyperkalemia played a role in the death of one person who had been bitten by a snake.[12-20]

There were 3 cases of acute renal damage due to malaria (6%). Whereas 42.5% of patients with malarial AKI died in the study by Zinna et al., no similar deaths were observed here. When Prakash et al. looked at the prevalence of Malaria AKI24 in eastern India, they found 4.2% of individuals had the condition. The significant drop in malaria-related mortality seen in recent years can be entirely attributed to the rapid detection of malaria and the quick administration of HD. The percentage of patients who got Leptospirosis was lower in this study (41%) than it was in the one by M.A. Only four cases were observed by Muthusethupathi et al. (8%). We confirmed the reported cases using the Modified Faines criterion. Dialysis was necessary for 2 patients, whereas the other 2 were treated with less invasive methods. No deaths were reported in our study. The case in point: M.A. In their analysis of 70 participants, Muthusethupathi et al. discovered a mortality rate of 20.8%. The low fatality rate in our study can be related to the wide availability of data on leptospirosis and its standard diagnostic criteria, treatment, and early referral. The 2007 study by Ostermann, Chang, and R.W. found that the fatality rate for Class F RIFLE was 57%, Class I was 45%, and Class S was 21%. 61 Patients with AKI had a worse hospital outcome than those without AKI, but this was less due to the severity of AKI than to the presence of other organ failure.[21-24]

CONCLUSION

AKI is largely oliguric. However, oliguric-resistant AKI must be considered. Sepsis causes most ICU AKI. Its mortality rate is the highest. Multi-organ failure must be avoided in sepsis patients. Multi-organ failure in sepsis should be treated early to lower the high mortality rate. Patients had vigorous and cautious dialysis. Hemodialysis is advised. Peritoneal dialysis is used when hemodialysis isn't possible or recommended. Widespread HD and greater efficacy have reduced PD incidence. High fatality rates are caused by delayed diagnosis and treatment, infections, Comorbidities, and multi organ failure. AKI was connected to poorer hospital outcomes, but its severity was predicted by another organ failure.

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