

CLINICAL PROFILE IN PATIENTS WITH ACUTE KIDNEY INJURY- A PROSPECTIVE STUDY

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Abstract

Background: Acute kidney injury is a clinical condition that complicates other diseases and when it is associated with other diseases the mortality and morbidity will increase. The Objective is to distinguish among the different types of AKI and to analyse the clinical profile in patients with AKI. **Materials and Methods:** Sixty seven patients with AKI admitted at VIMS Bellary were taken in study where patients included are aged above 15 years excluding existing renal disease. Patients were assessed at presentation for the cause of AKI. **Result:** Out of 67 patients mortality rate was 13.43%, 31.3% patients presented with acute GE, 20.09 % patients were hypertensive, 38.8 % patients were diabetic, 31.3% patients presented with oliguria, 17.9 % patients required oxygen, 6 % patient required dialysis. **Conclusion:** Patients presented with acute GE with Oliguria had good prognosis, mortality was seen high in Pneumonia.

INTRODUCTION

Acute kidney injury is not a single disease but a terminology for a group of conditions that have similar diagnostic features, importantly, an elevation in the blood urea nitrogen (BUN) level and / or an elevation in the plasma or serum creatinine (S.Cr) concentration, often associated with a decrease in urine volume.^[1]

AKI can vary in severity from asymptomatic and transient changes in laboratory measures of glomerular filtration rate (GFR), to exaggerated and rapidly fatal derangements in effective circulating blood volume, electrolyte and acid-base composition of the plasma.

AKI is the cause for 5–7% of acute care hospital admissions and 30% of intensive care admissions. The epidemiology of AKI varies enormously between developed and developing regions, because of differences in demographics, social and cultural factors. But recent change in cultural habits, life style changes and social values in developing regions produce the near similar picture as developed countries.

The incidence of AKI has increased by more than fourfold in the United States from 1988 and is calculated to have a yearly incidence of 500 per 100,000 persons, more than the yearly incidence of cerebrovascular accidents. AKI causes a markedly

increased risk of death in hospitalized persons, especially in those admitted to the ICU where in patient death rates may be more than 50%.

The term acute renal failure was changed to "acute kidney injury." The term failure denotes only portion of the spectrum of damage to the kidney that occurs clinically. Also the term renal is not well understood in the general population and this makes understanding with patients and their caretakers more difficult; so the term renal failure has been changed to acute kidney injury.

Western literature has lot of data regarding the occurrence and nature of acute kidney injury both in the community and inpatient setting. Sadly we are lagging behind in this regard as there are not many records or reports on this topic .This prompted me to take up this study which would throw light on the present scenario of acute kidney injury in intensive care unit.

MATERIALS AND METHODS

This study was carried out on 67 cases of acute kidney injury attending the Department of Medicine, Vijayanagar Institute of Medical Sciences, Bellary, Karnataka. Study period was from 1st January 2020 to 31st Oct 2021. Simple random sampling was used.

Inclusion criteria

1. Patient aged more than 15 years
2. Patient with increased serum creatinine at admission with no history of chronic kidney disease
3. Patient with normal serum creatinine at admission and increase in serum creatinine by 0.3mg/dl or more within 48 hours or increase in serum creatinine to 1.5times baseline or more within 7days
4. Patient with urine output <0.5ml/kg/hour for 6 hours 5 patient with decrease in GFR by >25%

Exclusion Criteria

1. Patient who are known chronic kidney disease
2. Patient aged >15 years.

Data will be collected in a pre-tested proforma by meeting objectives of study, detailed history, physical examination, thorough general condition and systemic examination and necessary investigations are recorded.

The investigations to which patients were subjected are as Complete blood count, Peripheral smear, Urine analysis on 2 occasion, B. urea, S creatinine, S. electrolytes USG abdomen.

Whenever necessary- LFT, Chest X-ray PA view, stool examination, coagulation profile.

RESULTS

Study was done in total 67 patients. Among them 58 patients got discharged accounting 86.57%, 9 patients got expired accounting 13.43%.

The peak incidence was in 4th to 6th decade. Out of 67 cases, 24 cases (35.8%) were seen in 4th to 6th decade of life, 22 cases (32.8%) in 2nd to 4th decade next 16 cases (23.9%) seen in 6th to 8th decade, 4 cases(6%) were seen in 1st to 2nd decade. 1 case was seen in 8th decade

Out of 67 cases admitted, 58 patients got discharged. Among 58 patients who got discharged, 23 patients (39.6%) belong to age group of 41-60 years. 19

patients (32.7%) belong to age group of 21-40 years. 13 patients (22.4%) belong to age group of 61-80 years. 2 patients (3.4%) belong to age group of 1-20 years. 1 patient (1.7%) belong to 80-100 years. Outcome was good in the patients who belongs to age group of 41-60 years.

Out of 67 patients, 9 patients got expired. Among 9 patients, 3 patients (33.33%) belong to age group of 21-40 years and 60-80 years as well.

In total 67 cases, according to our chart 21 patients i.e 31.3% presented with vomiting and loose stools. Second common presentation was cough, fever and dyspnea which was seen in 10 patients i.e 14.9%. Next to those complaints we had 7 cases of snake bite i.e 10.4%, pain abdomen in 6 patients i.e 9% and burning micturition in 6 patients i.e 9%. 3 patients presented with paraquet poison consumption accounting 4.5%.6 patients presented with lower limb swelling accounting 9%.

Patients who presented with vomiting, loose stools and burning micturition, snake bite, pain abdomen had good outcome. [Table 1]

Among all these presentation, mortality was seen more in patients who presented with complaints of fever, cough and breathlessness i.e out of 10 patients who presented with fever cough , breathlessness, 5 patients have expired, accounting to 55.6%. Next mortality was seen in patients who presented with complaints of paraquet poisoning. Out of 3 patients who presented with history of paraquet poison consumption, 3 patients succumbed accounting to 33.3% of total mortality. out of 6 patients who presented with lower limb swelling, 1 got expired accounting 11.1% of mortality.

Out of 67 cases, hypertension was seen among 14 cases (20.9%). Out of 14 cases 11 patients (18.96%) got discharged, 3 patients (33.33%) got expire. [Table 2]

Out of 67 cases, 26 patients (38.8%) had diabetes mellitus. out of 26 patients, 22 patients (37.93%) got discharged, 4 patients (44.44%) got expired. [Table 3]

Table 1: Presenting Complaints in AKI.

Complaints	Total		Outcome			
	Number	Percent Age	Discharge		Expired	
			Number	Percent Age	Number	Percentage
Abdominal Distension	1	1.5	1	1.7	0	0
Altered Sensorium	1	1.5	1	1.7	0	0
Chestpain, Dyspnea	1	1.5	1	1.7	0	0
Decreased Urine Output	1	1.5	1	1.7	0	0
Fever,Burning Micturition	6	9.0	6	10.3	0	0
Fever,Cough,Dyspne A	10	14.9	5	8.6	5	55.6
Fever, Pain Abdomen, Burning Micturition	2	3.0	2	3.4	0	0
Left Lowerlimb Swelling	2	3.0	2	3.4	0	0
Painabdomen	6	9.0	6	10.3	0	0
Paraquet Poisoning	3	4.5	0	0	3	33.3
Pedal Edema, Dyspnea	1	1.5	1	1.7	0	0
Right Lowerlimb Swelling, Fever	4	6.0	3	5.1	1	11.1
Snake Bite	7	10.4	7	12.0	0	0
Vomiting, Loos stools	21	31.3	21	36.2	0	0
Vomiting, Fever, Dysp Nea	1	1.5	1	1.7	0	0
Total	67	100.0	58	100.0	9	100.0
			Chi square value(X) ² = 39.05		P=0.00	

Table 2: Hypertension in AKI

HTN	Total		Outcome			
			Discharge		Expired	
	Number	Percentage	Number	Percentage	Number	Percentage
Yes	14	20.9	11	18.96	3	33.33
No	53	79.1	47	81.04	6	66.67
Total	67	100.0	58	100.0	9	100.0
			Chi square value(X) ² =0.973		P=0.324	

Table 3: Diabetes Mellitus in AKI

DM	Total		Outcome			
			Discharge		Expired	
	Number	Percentage	Number	Percentage	Number	Percentage
Yes	26	38.8	22	37.93	4	44.44
No	41	61.2	36	62.07	5	55.56
Total	67	100.0	58	100.0	9	100.0
			Chi square value(X) ² =0.139		P=0.709	

Table 4: Oxygen in AKI.

Oxygen	Total		Outcome			
			Discharge		Expired	
	Number	Percentage	Number	Percentage	Number	Percentage
Yes	12	17.9	5	8.62	7	77.78
No	55	82.1	53	91.38	2	22.22
Total	67	100.0	58	100.0	9	100.0
			Chi square value(X) ² =25.34		P=0.00	

Out of 67 cases patients, 21 patients (31.3%) presented with oliguria and 46 patients (68.7%) patients with normal urine output. Out of 21 patients who presented with oliguric AKI, 20 patients (34.49%) got discharged and 1 patient (11.11%) got expired. Out of 46 patients who got admitted with normal urine output, 38 patients (65.51%) got discharged, 8 patients (88.89%) got expired.

Out of 67 cases, 53 patients presented with hypotension among them 46 patients got discharged, 7 patients got expired.

Out of 67 cases, 41 patients treated with fluids, among them 39 patients got discharged, 2 patients got expired. Out of 67 cases, 28 patients got treated with inotropes, among them 22 patients got discharged, 6 patients got expired. Out of 67 cases, 43 patients (64.2%) had normal urine routine, 9 patients (13.4%) had albumin 2+ with pus cells, 3 patients (4.5%) had albumin 1+, 3 patients (4.5%) had pus cells, albumin 1+ with pus cells, albumin 2+, albumin + pus cells seen in 2 patients each. Out of 43 patients who presented with normal urine routine, 37 patients got discharged, 6 patients expired.

Out of 67 patients, 12 patients (17.9%) got treated with oxygen, remaining 55 cases (82.1%) were not required oxygen. Out of 12 patients who required oxygen 5 patients (8.62 %) got discharged, 7 patients (77.78%) got expired. Out of 55 patients who were not in need of oxygen, 53 patients (91.38%) got discharged, 2 patients (22.22%) got expired. [Table 4]

DISCUSSION

Hoste et al,^[2] did a study on AKI in early days and reported a incidence of 4.9 percentage which was less comparable to the present status and the mortality rate was 25%. Few years later,

Nash et al,^[3] found that the in-hospital AKI incidence was around 7.2%, and the mortality rate was 19.4%. The predominant causes were decreased perfusion, toxins and major surgeries. These were the earlier data.

Mehta RL et al,^[4] reported from a multicenter study which was conducted in Australia, that, incidence of AKI in ICU was 5.2% with a yearly increase of 2.8% the mortality rate of AKI patients was 42.7%. The total duration of stay was more in the survivors than those expired.

In famous PICARD study it was found that an incidence of 25% - 60%, and reported a heterogeneity of distribution of AKI among all aspects. The common causes include ATN, intrinsic renal disease due to sepsis, nephrotoxin administration, cardiac diseases, and liver diseases. This mainly gave a conclusion of changing trends in the epidemiology of AKI.^[5]

The BEST study⁶ (the beginning and ending supportive therapy for the kidney) is the largest prospective cohort study conducted over this topic. The mortality rate was around 60%. The predominant causes were septic shock, postoperative states, cardiac diseases, and toxin administration. The predictors of mortality were old age, sepsis, oliguria, blood urea nitrogen, severity score. Our study partially resembles this study in certain variables.

In the Indian studies for example, study on hospital acquired AKI conducted by Siew ED et al,^[6] over 12 months in a prospective manner, showed that baseline creatinine value, maximum RIFLE category, decreased urine output, metabolic acidosis were the predictors of mortality. They concluded that the epidemiology of AKI has been more or less similar to the western data. In another study amongst 1000 patients screened, 65 had AKI. 27(41.5%),

15(23.0%) and 23(35.38%) patients belonged to risk, injury and failure classes of AKI respectively as per RIFLE criteria, and there was incremental risk of mortality (25.92%, 46.33% and 86.95%, $p < 0.001$). In-patients with pneumonia, chronic liver disease and acute gastroenteritis have greater odds of developing AKI, with chronic liver disease having a high mortality (90%). Hypotension (OR- 5.5:1, $p = 0.002$) or leucocytosis at presentation (OR-2.8:1, $p < 0.001$), smokers (OR-2.2:1, $p = 0.03$) and alcoholics (OR- 2.5:1, $p = 0.047$) had greater odds of developing AKI. 33(50.7%) patients with AKI died and 27(41.5%) recovered before day 28. Five (7.7%) were seen in class L who had persistently elevated creatinine at day 90 i.e. progressed to ESRD, class E.^[7]

A total of 79 (41 anuric, 33 oliguric and 5 nonoliguric) patients were included in the study. Sepsis was the predominant cause of AKI. Recovery was seen in 34% of patients. Patients with relatively preserved urine output recovered with PD in comparison to the anuric patients (p value < 0.01). 58% of patients, majority of whom were anuric needed Hemodialysis (HD) in due course (7 ± 3 days) of time. The mortality in our study was 7.5%.^[8]

CONCLUSION

It was that outcome was good in the patients who belongs to age group of 41-60 years. Patients who presented with vomiting, loose stools and burning micturition, snake bite, pain abdomen had good outcome. mortality was seen more in patients who presented with complaints of fever, cough and

breathlessness Treating with fluids has significant relation to AKI with p value of 0.01. Oxygen has significant co relation to AKI with p value of 0.00.

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