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CLINICAL PROFILE OF ACUTE KIDNEY INJURY IN INTENSIVE CARE UNIT PATIENTS AT A TERTIARY CARE HOSPITAL: AN OBSERVATIONAL STUDY

General Medicine

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ABSTRACT

BACKGROUND: Acute kidney injury (AKI) is a common clinical problem in intensive care unit (ICU) patients and independently predicts poor outcome.Recently, two large multicenter cohort studies reported the occurrence of AKI in an estimated 36% of all patients admitted to the ICU. Moreover, additional observational data indicate that the incidence of AKI is rising.

AIM: 1. To Analysis the clinical spectrum of AKI patients in ICU
2. To Identify the cause, risk and prognostic factors for AKI
3. To Analysis the final outcome of the patients with AKI.

MATERIALS AND METHODS: A Hospital-based cross sectional study was conducted in intensive medical care unit in the Department of General Medicine, Santhiram medical college, and the general hospital for six months, total of 50 cases. **RESULTS:** Out of 50 patients a male preponderance of 56% was found in the study. The peak incidence was in the third decade. The presentation was predominantly oliguric. 40 Patients presentation was predominantly oliguric.10 pateints are non oliguric. The most common cause of AKI in critically ill patients was sepsis. The second common cause was ADD. Next to it was the snake bite and then Poisoning. According to RIFLE criteria, 20 cases classified under class R. All the patients under this class were treated conservatively. While the patients who came under class INJURY were 12 of whom 8 were treated with dialysis. The FAILURE class constituted 18 patients who were all treated with dialysis.10 with HD,8 patients with PD. Two patients who were at risk expired. Both were case of sepsis that were on ionotropic and ventilatory support managed conservatively for the AKI. The only patient who died of Injury was also a case of sepsis with multiorgan dysfunction. 85% morality was observed among patients with MOD and ionotropic support.

CONCLUSION: The presentation of AKI is predominantly oliguric. But nonoliguric AKI should be borne in mind. Sepsis is the most common cause of AKI in critically ill patients. It has the highest mortality rate too. It is highly essential to prevent the emergence of multi organ failure in any case of sepsis. Similarly, Multi organ failure in the setting of sepsis should be treated aggressively to decrease the high mortality associated with sepsis. Our patients were managed equally with dialysis whenever indicated and conservatively. Hemodialysis is the preferred mode of dialysis. Peritoneal dialysis is begun only when HD is not available or when it is contraindicated. The frequency of PD is decreased so drastically because of availability of HD and higher efficacy of HD. Delayed diagnosis and treatment, pulmonary and other infections, the frequent presence of complications and multi organ dysfunction is the chief reason of high mortality. There was an association between AKI and hospital outcome but, an organ failure has a greater impact on the prognosis of severity of AKI.

KEYWORDS

INTRODUCTION: Acute kidney injury (AKI) is a common clinical problem in intensive care unit (ICU) patients and independently predicts poor outcome.14 Recently, two large multicenter cohort studies5,6 reported the occurrence of AKI in an estimated 36% of all patients admitted to the ICU. Moreover, additional observational data indicate that the incidence of AKI is rising.

AIMS AND OBJECTIVES:
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MATERIALS AND METHODS:
A Hospital-based cross sectional study was conducted in intensive medical care unit in the Department of General Medicine, Santhiram medical college, and the general hospital for six months, total of 50 cases.

DURATION OF STUDY: From July 2023 to January 2024.
SAMPLE SIZE: 50
METHODS OF DATA COLLECTION:
- All the selected cases admitted to Santhiram medical college and general hospital In ICU with AKI, fulfilling the inclusion criteria, were taken for study after taking prior informed consent.
- Information is collected through a pre-structured proforma for each study subject
- The study was carried out on patients with diagnosed AKI
- Qualifying study subjects will be undergoing detailed history, clinical examination, and laboratory investigations.

SAMPLING TECHNIQUE: Simple Random Sampling

INCLUSION CRITERIA:
- An absolute increase in serum creatinine of more than or equal to 0.3mg/dl (>26.4umol/L). A percentage increase of serum creatinine of more than equal to 50% (15 fold from baseline).
- Patients who are willing to participate and give informed written consent.

EXCLUSION CRITERIA:
- Patients with CKD
- Patients with abnormal kidney size and abnormal cortico medullary differentiation.
- A thorough diagnostic evaluation was done by a detailed history, physical examination, urinary analysis, CBC, RFT, Renal USG. In appropriate place, serology of leptospirosis, enteric fever, peripheral smear Materials and Methods for MP/MF, other related investigations were done.
- The patients were started on appropriate therapy once the diagnosis was made. Wherever possible the etiological factors were treated. RRT was given according to the clinical and biochemical indications.

DATA ANALYSIS:
1. Data was collected using a pretested proforma meeting the study's objectives. Detailed history, physical examination, and necessary investigations were undertaken.

2. The chi-square and Fisher's Exact test were used in statistical analysis to compare proportions. At a P-value of 0.05, statistical results were considered significant <0.01.

RESULTS:
Table 1: - Age distribution of AKI in our Study

Age(Years)	Males	Females

13-20	3	2
21-30	7	8
41-50	4	6
51-60	3	0
>60	5	3
Total	28	22

The peak incidence was in the third decade. There were 8 patients above the age of 60 years. Five of them were at risk , one developed injury and two of them developed failure according to RIFLE criteria.

Table 2: - Presenting Features

Urine Output	Males	Females	Total
Oliguric	22	18	40
Non oliguric	6	4	10

The presentation was predominantly oliguric. Out of the ten non oliguric patients 4 patients were a case of poisoning. Two of them were due to insecticide poisoning, one due to OPC poisoning and the other due to organochlorine compound. The other two cases were due to oduvanthalai leaf poisoning and copper sulphate. 3 cases of sepsis presented with non oliguria. One case of snake bite , leptospirosis also presented with non oliguria.

Table 3: - Etiological Profile of AKI

S.no	Etiology	Males	Females	Total
1	Sepsis	8	11	19
2	ADD	6	3	9
3	Snake bite	4	3	7
4	Poisoning	4	2	6
5	Leptospirosis	3	2	5
6	Malaria	2	1	3
7	Wasp sting	1	0	1
				50

The most common cause of AKI in critically ill patients was sepsis. The second common cause was ADD. Next to it was the snake bite. The Whole Blood Clotting Time was prolonged in all these patients and all were due to 54 a Russell's viper bite. Among the 6 cases of poisoning three of them had insecticide poisoning. There was 5 and 3 patients of leptospirosis and malaria respectively. Two cases of malaria were falciparum species. There was case of wasp sting.

Causes of Non Oliguric AKI

Etiology	No of Cases
Poisoning	4
Sepsis	3
ADD	1
Snake bite	1
Leptospirosis	1
Total	10

Outcome of AKI

Outcome	Survived	Expired
Risk	18	2
Injury	9	1
Failure	11	7

DISCUSSION:

AKI is a potentially fatal, but reversible renal disease. The etiology, course, outcome differ in various parts of the world and also within India due to its climatic and geographic diversity and the variable standards of medical care. In our study 50 patients were analysed. There were 28 males and 22 females. Mean age of occurrence was 38.26 years. Maximum number of cases occurred in third to fifth decade. In our study oliguric AKI was predominant (80%). Sepsis accounts for 19 cases (38%) of the cases70. Of them, 42% were treated with dialysis and 58% treated conservatively. Six patients died. Mortality observed due to sepsis was 32%. Out of the 9 cases of ADD only one died due to arrhythmia which is very less when compared with the report from M.A.Muthusethupathi et al70 (34.7%). There were 7 cases (14%) of snake bite all of which were russel's viper with hematotoxicity. There was one death due to snake bite which was complicated by hyperkalemia on presentation. There were 3 cases (6%) of Malarial AKI. There was no death from malarial AKI as against the 42.5% mortality in the study by Zinna et al80. A study by Prakash et al from eastern India reported 4.2% of Malarial AKI24. Mortality is decreased mainly due to early diagnosis of malaria and early use of HD. We had 4 patients (8%) with Leptospirosis in contrast to 41% cases in M.A.Muthusethupathi et al study70. We confirmed the cases based on Modified Faines criteria. Out of the 4 patients, 2 were treated with dialysis and the other 2 conservatively. There was no mortality in our study. In the study of M.A. Muthusethupathi et al 20.8% mortality was present70. Low mortality in our study was due to awareness of leptospirosis, its standard diagnostic criteria, therapy, and early referral.

CONCLUSION:

The presentation of AKI is predominantly oliguric. But non-oliguric AKI should be borne in mind.Sepsis is the most common cause of AKI in critically ill patients. It has the highest mortality rate too. It is highly essential to prevent the emergence of multi organ failure in any case of sepsis. Similarly, Multi organ failure in the setting of sepsis should be treated aggressively to decrease the high mortality associated with sepsis.Our patients were managed equally with dialysis whenever indicated and conservatively. Hemodialysis is the preferred mode of dialysis. Peritoneal dialysis is begun only when HD is not available or when it is contraindicated. The frequency of PD is decreased so drastically because of availability of HD and higher efficacy of HD.Delayed diagnosis and treatment, pulmonary and other infections, the frequent presence of complications and multi organ dysfunction is the chief reason of high mortality. There was an association between AKI and hospital outcome but, an organ failure has a greater impact on the prognosis of severity of AKI