

**Original article:**

## **Study of clinical profile of patients with acute renal failure requiring hemodialysis in a tertiary care hospital**

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### **Abstract:**

**Introduction:** Acute kidney injury (AKI), previously known as acute renal failure (ARF), is a syndrome characterized by rapid decline of glomerular filtration rate (hours to weeks), retention of nitrogenous waste\_products and perturbation of extracellular fluid volume and electrolyte and acid base homeostasis.

**Material and methods:** This was a prospective study of patients of acute renal failure admitted to Pravara Rural Hospital, Loni from september 2017 to September 2019. All 50 patients with clinical and biochemical evidence of Acute renal failure requiring haemodialysis were included in the study.

**Results:** In present study, maximum patients had breathlessness & decreased urine output . Only 7(14%) patients had convulsions and 7(14%) patients had loose stools, 22 (44%)patients complained of fever while 24(48%) patients complained of swelling over leg and face. Maximum cases were of septicemia (25 cases ) ( 50%) & acute gastroenteritis (9 cases ) (18%) ,followed by vasculotoxic snake bite (6 cases)(12%),obstetric causes (4 cases)(8%)while with multiple myeloma , stroke , poisoning were only one case each.

**Conclusion:** In our present study, maximum patients had breathlessness & decreased urine output complaints. Prognosis is also found to be poor in patients with co morbid illnesses.

50% cases were with septicemia, comparing to other etiological factors. On outcome basis 44% of these patients were survived. 18% cases were with acute gastroenteritis; on outcome basis 88% of them were survived. Patients with acute pancreatitis, obstetric cause and snake bite all were survived while patients with hepatorenal syndrome, multiple myeloma, stroke, and Dengue shock syndrome were not survived. However statistically we could not conclude outcome due to limited number of cases.

### **Introduction:**

Acute kidney injury (AKI), previously known as acute renal failure (ARF), is a syndrome characterized by rapid decline of glomerular filtration rate (hours to weeks), retention of nitrogenous waste\_products and perturbation of extracellular fluid volume and electrolyte and acid base homeostasis<sup>1</sup>. The term failure reflects only part of the spectrum of damage to the kidney that occurs clinically. In most cases of damage, the reduction in kidney function is modest. Nevertheless, this modest change has been documented to be associated with negative effects on outcome.<sup>2</sup>

**Material and methods:**

This was a prospective study of patients of acute renal failure requiring haemodialysis admitted to Pravara Rural Hospital ,Loni from september 2017 to September 2019.

All 50 patients with clinical and biochemical evidence of ARF requiring haemodialysis were included in the study.

The present study was approved by Institutional Ethical Committee. Sample size was estimated with the help of expert .Patients with chronic renal disease and aged below 12 years were excluded. Detailed history was recorded, general physical examination, systemic examination was done and necessary investigations were done. All the patients were followed up till time of discharge/death

**Results:**

In present study 68 % patients were above 60 years old while only 10% patients were less than 25 years old. 70 % patients were male while only 30% patients were female.

**Table 1) Etiological presentation of Acute Renal Failure**

<b>Etiology</b>	<b>Number of patients</b>
Septicemia	25
Acute Gastroenteritis	9
Vasculotoxic Snake bite	6
Obstetric Cause	4
Hepatorenal Syndrome	2
Stroke	1
Poisoning	1
Multiple Myeloma	1
Dengue Shock Syndrome	1

**Table 2) Clinical Presentation of cases**

S.NO.	Symptoms	Number of cases (%in bracket ) )	Not observed
1	Breathlessness	40 (80%)	10
2	Decreased urine ouput	36(72%)	14
3	Altered sensorium	30 (60%)	20
4	Swelling over leg & feet	24 (48%)	26
5	Fever	22(44%)	28
6	Vomiting	14 (28%)	36
7	Loose stool	7 (14%)	43
8	Convulsion	7(14%)	43
9	Yellowish discolouration eye & urine	6 (12%)	44

**Table 3) comparison of pre-dialysis & post- dialysis test results**

Laboratory Test	Pre dialysis Test Results	Post dialysis Test Results	Z test	Test of significance
Serum Potassium	4.72 ±1.80mEq	4.11±1.03mEq/L	P=0.044	Significant
Serum Sodium	130.60± 12.09mEq/L	125.33 ±7.55 mEq/L	P= 0.031	Significant
Serum creatinine	6.9±1.22 mg/dl	4.24 ±0.88mg/dl	P=0.0029	Highly Significant
Serum Urea	161.50±8.23mg/dl	96.46 ±6.32mg/dl	P=0.0072	Highly Significant

(P<0.05 = Significant, P<0.005 = Highly Significant)

In present study , while comparing pre-dialysis & post- dialysis test results , serum potassium & serum sodium level was significantly affected ( P <0.05)while serum urea and serum creatinine level affected were highly significant( P <0.005)

In this study 58% patients were survived while 42% patients outcome was death.

**Table 4: Association of outcome of patients with etiological factors.**

<b>Etiological factors</b>	<b>Number of patients</b>	<b>Survived</b>	<b>Survived ( in% )</b>	<b>Death</b>	<b>Death ( in% )</b>
SEPTICEMIA	25	11	44	14	56
ACUTE GASTROENTERITIS	9	8	88	1	11
SNAKE BITE	6	6	100	0	0
HEPATORENAL SYNDROME	2	0	0	2	100
OBSTETRIC CAUSE	4	4	100	0	0
MULTIPLE MYELOMA	1	0	0	1	100
POISONING	1	0	0	1	100
STROKE	1	0	0	1	100
DENGUE SHOCK SYNDROME	1	0	0	1	100

**Discussion:**

In our present study, maximum patients had breathlessness & decreased urine output . Only 7 patients had convulsions and 9 patients had loose stools. 22 patients complained of fever while 24 patients complained of swelling over leg and face.

The clinical feature and various etiology of acute kidney injury were studied. It is observed that clinical features are almost in accordance with studies conducted earlier. 50 cases of acute renal failure requiring hemodialysis coming from rural areas were studied of which 9 were pre renal, 41 renal group In our present study, minimum age of patient was 19 years to maximum age was 76 years. In our present study 70 % patients were male while only 30% patients were female. Male Female ratio was 2.3:1

Other causes of acute kidney injury were similar to other studies like drug nephrotoxicity, acute gastroenteritis and septicemia.

Maximum cases were of septicemia (25 cases ) (50%) & acute gastroenteritis (9 cases ) (18%) followed by vasculotoxic snake bite (6 cases)(12%), obstetric cause(4 cases)(8%), while with multiple myeloma , stroke , poisoning were only each one case . 68 % patients were above 60 years old while only 10% patients were less than 25 years old . The main indications for haemodialysis were raising BUN and creatinine, anuria/oliguria, fluid overload and hyperkalemia. Acute renal failure is increasingly common, particularly in elderly people, although reported incidences vary according to the definition used and the population studied.<sup>5</sup>

In 1993 a community based study found an incidence of severe acute renal failure (serum creatinine > 500 µmol/l) of 172 per million adults per year, of whom 72% were over 70.<sup>6</sup> Age related incidence rose from 17 per million per year in adults under 50 to 949 per million per year in the 80-89 age group.

More recent prospective studies report an overall incidence of acute renal failure of almost 500 per million per year and an incidence of acute renal failure needing dialysis of more than 200 per million per year.<sup>7</sup>

The major risk factor affecting prognosis of the patients were presence of multi-organ failure, high baseline serum creatinine level and complication developed during the course of illness. In this study, mortality is seen among the patients who had high serum creatinine on admission as compared to survived patients. Prognosis is also found to be poor in patients with co morbid illnesses. In present study , while comparing pre-dialysis & post- dialysis test results , serum potassium & serum sodium level was significantly affected ( P <0.05) while serum urea and serum creatinine level affected were highly significant( P <0.005) 58% patients were survived while 42% patients outcome was death.

The burden of AKI may be most significant in developing countries with limited resources for the care of these patients once the disease progresses to kidney failure necessitating RRT. <sup>6</sup> Addressing the unique circumstances and needs of developing countries, especially in the detection of AKI in its early and potentially reversible stages to prevent its progression to kidney failure requiring dialysis, is of paramount importance. AKI is amenable to early detection and potential prevention..

One possible explanation may be the difficulty in accurately diagnosing metabolic acidosis due to lack of blood gas analysis .<sup>7</sup> Consistent with other studies from developing world, this study has also shown that infections are the primary causes for dialysis. Most of these causes can be prevented with simple interventions such as health education on oral rehydration, quality emergency care, appropriate management of infections and taking appropriate precautions when prescribing potentially nephrotoxic medications.

#### **Conclusion:**

In our present study, maximum patients had breathlessness & decreased urine output.. 50% cases were with septicemia, comparing to other etiological factors. On outcome basis 44% of these patients were survived. Another 18% cases were with acute gastroenteritis; on outcome basis 80% of them were survived.

Prognosis is also found to be poor in patients with co morbid illnesses

Patients with acute pancreatitis, obstetric cause and snake bite, all were survived while patients with hepatorenal syndrome, multiple myeloma, stroke, and Dengue shock syndrome were not survived. However statistically we

could not conclude outcome due to limited number of cases. Even though the renal failure has been taken care by early initiation of renal replacement therapy in cases like septicaemia and vasculotoxic snake bite, patients died because of failure of other organs. Hence outcome of the patient depends on cause of the renal failure and other supportive treatment provided to the patient along with early initiation of renal replacement therapy.

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