



“STUDY OF CLINICAL PROFILE OF PATIENTS REQUIRING EMERGENCY HAEMODIALYSIS IN A TERTIARY CARE HOSPITAL.”

Nephrology

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ABSTRACT

Renal Failure is a prevalent condition among admissions to the emergency department (ED). There are two spectra of kidney disease i.e. acute kidney injury (AKI) and chronic kidney disease (CKD). Chronic Kidney Disease (CKD) affects up to 16% of the world population, while Acute Kidney Injury (AKI) is associated with 5–20% of hospital admissions. AKI is characterized by rapid reduction in kidney function usually not exceeding three months. According to Kidney Disease: Improving Global Outcomes (KDIGO) consensus conference in 2020, chronic kidney disease (CKD) is defined as a GFR < 60 ml/min per 1.73 m² or markers of kidney damage present for >3 months. It is a major public health problem and was ranked as the 12th cause of mortality worldwide in 2015. The global prevalence of CKD varies from 11% to 13%.

KEYWORDS

Renal Failure, Acute Kidney Injury, Chronic Kidney Injury, Kdigo Kidney Disease Improving Global Outcome.

INTRODUCTION

Renal Failure is a prevalent condition among admissions to the emergency department (ED). There are two spectra of kidney disease i.e. acute kidney injury (AKI) and chronic kidney disease (CKD). Chronic Kidney Disease (CKD) affects up to 16% of the world population, while Acute Kidney Injury (AKI) is associated with 5–20% of hospital admissions. AKI is characterized by rapid reduction in kidney function usually not exceeding three months. According to Kidney Disease: Improving Global Outcomes (KDIGO) consensus conference in 2020, chronic kidney disease (CKD) is defined as a GFR < 60 ml/min per 1.73 m² or markers of kidney damage present for >3 months. It is a major public health problem and was ranked as the 12th cause of mortality worldwide in 2015. The global prevalence of CKD varies from 11% to 13%.

MATERIALS AND METHODS

Study Site: tertiary care hospital

Study period: 6 months

Study Population: Patients requiring emergency haemodialysis.

Study Design: Cross sectional study

Sample size: 50

Statistical Analysis

Quantitative data was tested by Mean and Standard Deviation, difference between two means tested by 'Z' test.

Qualitative data was compared by Chi square. This was a facility based cross sectional study conducted in a tertiary care center involving patients requiring emergency haemodialysis from December 2023 to may 2024.

METHODOLOGY

The protocol of this study was approved by the Institutional Ethical committee of the medical college. Written informed consent was taken from all study subjects before collection of data.

All patients fulfilling inclusion criteria and exclusion criteria were included in the study. test, Fisher's exact test.

P value < 0.05 was considered significant.

AIM

To assess the clinical profile of patients requiring emergency haemodialysis in a tertiary care hospital.

OBJECTIVES

- To study the clinico-demographic characteristics of the patients requiring emergency haemodialysis.
- To identify conditions associated with emergency haemodialysis.

Inclusion Criteria

- ESRD Patients of both sexes of age more than 12 years admitted in ICU or wards requiring emergency haemodialysis.
- Those who were willing to participate in the study on their free will.

Exclusion Criteria

- Patients of less than 12 years of age.
- Those who are not willing for participation in the study.

RESULTS

In the present facility based cross sectional observational study, we have included total 50 cases of chronic kidney disease admitted for dialysis in dialysis unit due as per the sample size calculations. There was no denial to participate in the study hence finally we could analyse total 50 cases giving the response rate of 100%, important observations and results of which are presented below.

Table 1. Distribution of cases according to age groups.

Age group in years	Cases	
	No.	Percentage (%)
21-30	13	26
31-40	18	36
41-50	11	22
51-60	8	16
Total	50	100
Mean + S.D.	38.3 + 10.5 years.	

In the present study, majority 18 (36%) of the study participants were from the age group of 31-40 years followed by 13 (26%) from the age group of 21-30 years, 22% from 41-50, 16% from 51-60 years with the mean age of 38.3 ± 10.5 years.

Table 2. Distribution of cases according to gender.

Gender	Cases	
	No.	Percentage (%)
Male	32	64
Female	18	36
Total	50	100

In the present study, majority 32 (64%) of the patients were males & 18 (36%) patients were females.

Table 3. Distribution of cases according to residence.

Residence	Cases	
	No.	Percentage (%)
Urban	39	78
Rural	11	22
Total	50	100

In the present study, majority (78%) of the cases were from urban area.

Table 4. Distribution of cases according to KDIGO status.

KDIGO status	Cases	
	No.	Percentage (%)
Stage 1	3	06
Stage 2	20	40
Stage 3	27	54
Total	50	100

In the present study, majority i.e. 54 (54%) had stage 3 KDIGO status followed by 41% stage 2 and least i.e. 5% had stage 1.

Table 5. Distribution of cases according to presenting complaints.

Presenting complaint	Cases (n=100)	
	No.	Percentage (%)
Altered sensorium	2	04
Chest Pain	1	02
Diarrhoea	2	04
Dyspnoea	17	34
Fever	5	10
Haematuria	5	10
Oliguria	9	18
Pedal oedema	7	14
Periorbital swelling	2	04

In our study, most common presenting complaint was dyspnoea reported by 35 (35%) patients followed by oliguria in 9 (18%) patients, pedal oedema in 7 (14%), haematuria in 5 (10%), fever in 5 (10%) etc. other least frequent complaints were periorbital swelling (4%), altered sensorium (4%), chest pain (2%) and diarrhoea (4%).

Most common presenting complaint among the cases was dyspnoea followed by oliguria & pedal oedema.

Table 6. Distribution of cases according to presenting signs.

Presenting Signs	Cases (n=100)	
	No.	Percentage (%)
Tachypnoea	16	32
Hypotension	9	18
Ascites	4	8
Encephalopathy	3	06

In our study, most common presenting sign was Tachypnoea observed among 16 (32%) patients followed by Hypotension in 9 (18%) patients, Encephalopathy in 3 (6%) and Ascites in 4 (8%).

Table 7. Distribution of cases according to cause of AKI.

Cause	Cases	
	No.	(%)
Bilateral renal artery stenosis	1	2
Cardiorenal syndrome	2	4
Dengue	1	2
Drug induced	10	20
Glomerulonephritis	1	2
Grammaxone	4	8
Hepatorenal syndrome	1	2
Leptospirosis	1	2
OP poisoning	1	2
Pre-eclampsia	1	2
Rhabdomyolysis	1	2
Sepsis	14	28
Snake bite	10	20
TTP	1	2
Total	50	100

In the present study, most common underlying cause of AKI was Sepsis in 14 (28%) patients followed by Snake bite in 20%, Drug induced in 20%, Grammaxone in 8% and hepatorenal syndrome in 2% etc. Other rare causes include Cardiorenal syndrome (4%), Glomerulonephritis; Leptospirosis; OP poisoning; Pre-eclampsia, Bilateral renal artery stenosis; Dengue; Rhabdomyolysis; TTP (in 2% each).

Most important underlying cause of AKI was sepsis followed by snake bite and drug induced AKI.

Table 8. Distribution of cases according to eGFR function.

eGFR (ml/min.)	Cases	
	No.	%
<5	5	10
6-10	18	36
11-15	27	54
Total	50	100
Mean + SD	10.5 + 3.4 ml/min.	

In the present study, most 27 (54%) of the cases had estimated GFR of 11-15 ml/min/1.73 sqm body surface area followed by 18 (36%) were having eGFR of 6-10 ml/min, and 5 (10%) were having eGFR of ≤5 ml/min.

Table 9. Distribution of cases according to outcome.

Outcome	Cases	
	No.	Percentage (%)
Death	13	26
Discharge	37	74
Total	50	100

In the present study, most common outcome of end stage renal disease (ESRD) was discharge noted among 37 (74%) cases followed by death among 13 (26%) patients. Most common outcome was discharge.

DISCUSSION

Prior studies of patients with renal failure attending emergency departments come from high-income countries (HIC), where demographics and etiology of renal failure may differ. In addition, low-to-middle income countries (LMIC) generally have poor access to primary care, and individuals often delay seeking care. LMIC have less availability of life-saving treatments, including ventilators, dialysis and IV medications. These factors can result in different management strategies and outcomes for patients. To our knowledge, there have been very few previous studies in LMIC determining clinical profile of patients requiring emergency haemodialysis. Present study was prospective observational study, focussed on these aspects, important findings of which are discussed below.

In our study, most (36%) ESRD patients were relatively from young age group of 3rd-4th decade with the mean age of 38.3 ± 10.5 years of which majority (64%) of the patients were males. This is in line with Ahmed Ibrahim et al, Rajapurkar MM & Chaudhari ST et al who noted increasing number of patients reported from younger age. Mithilesh Kumar et al and Denis Georges Teuwafeu et al also observed male majority in ESRD cases. Majority (78%) of the cases were from urban area. Most patients (54%) had stage 3 KDIGO status followed by 40% had stage 2 and least i.e. 6% had stage 1.

In the present study, most common presenting complaint was dyspnoea (35%) followed by oliguria (18%), pedal oedema (14%), haematuria (10%), fever (10%) etc. other least frequent complaints were periorbital swelling (4%), altered sensorium (4%), diarrhoea (4%), chest pain (2%). While, most common presenting sign was Tachypnoea observed among 32% patients followed by Hypotension (18%), Ascites (8%) and Encephalopathy (6%). This is consistent with Erasto Sylvanus et al who reported shortness of breath (45.9%) and reduced urine output (39.7%) were the most common presenting complaints, Ajay Rajbhandari et al reported oliguria followed by muscle weakness, pedal edema, and breathlessness & Denis Georges Teuwafeu et al in their study noted asthenia (68.2%), lower limbs swelling (52.1%) and anorexia (41.8%) as chief presenting symptoms while main clinical signs were high blood pressure (74.92%), and pallor (60.5%) and altered general state (55%), uremic encephalopathy (33.4%) and pulmonary oedema (25.7%). In the present study, most common underlying cause of AKI was Sepsis in 14 (28%) patients followed by Snake bite in 20%, Drug induced in 20%, Grammaxone in 8% and Cardiorenal syndrome (4%) etc. Other rare causes include hepatorenal syndrome in 2%, Glomerulonephritis; Leptospirosis; OP poisoning; Pre-eclampsia, Bilateral renal artery stenosis; Dengue; Rhabdomyolysis; TTP (in 2% each).

Similar to our study, Nancy Kasongo et al reported that the reason for admission to the ED were sepsis and/or sepsis shock in 25.0%, diabetic hyperglycaemia emergencies in 20.0%, hypertensive crisis in 10.5%, respiratory failure (9.9%), severe malaria (7.9%), this could be explained by the fact that in those studies cases of acute kidney injury

(AKI) were included in their methodology. In our study, most common outcome was discharge in 74% cases & death among 26% patients.

Summary

In the present prospective observational study, we have analysed all 50 patients. summary findings of which are presented below.

In our study, most (36%) of the study participants were from 3rd-4th decade with the mean age of 38.3 ± 10.5 years of which, majority (64%) of the patients were males. Majority (78%) of the cases were from urban area. Most patients (54%) had stage 3 KDIGO status followed by 40% had stage 2 and least i.e. 6% had stage 1.

In the present study, most common presenting complaint was dyspnoea (35%) followed by oliguria (18%), pedal oedema (14%), haematuria (10%), fever (10%) etc. other least frequent complaints were periorbital swelling (4%), altered sensorium (4%), chest pain (3%) and diarrhoea (3%). While, most common presenting sign was Tachypnoea observed among 32% patients followed by Hypotension (18%), Ascites (8%) and Encephalopathy (6%).

In the present study, most common underlying cause of AKI was Sepsis in 14(28%) patients followed by Snake bite in 20%, Drug induced in 20%, Grammaxone in 8% and Cardiorenal syndrome (4%) etc. Other rare causes include, hepatorenal syndrome in 2%; Glomerulonephritis; Leptospirosis; OP poisoning; Pre-eclampsia, Bilateral renal artery stenosis; Dengue; Rhabdomyolysis; TTP (in 2% each).

In the present study, most (55%) of the cases had estimated GFR of 11-15 ml/min/1.73 sqm body surface area followed by 35% were having eGFR of 6-10 ml/min, and 10% were having eGFR of ≤ 5 ml/min.

In our study, most common outcome was discharge in 74% cases & death among 26% patients.

CONCLUSION

1. ESRD patients in our study group were relatively young and comprised mostly men.
2. Dyspnoea, oliguria & pedal oedema were the common presenting complaints.
3. Sepsis was the most common underlying cause of AKI in 28% cases.
4. Most common outcome was discharge in 74% cases & mortality among 26%.

Limitations

1. We have not taken comparison group due to feasibility reasons but it would be better to include so as to refute the inferences.

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