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Research Article

**STUDY TO KNOW OUTCOME OF ACUTE RENAL FAILURE
AND FACTORS INFLUENCING ITS OUTCOME**¹Dr.AYISHA Afzal, ²Dr.Ayesha syed, ³Dr.Risham Fatima Pirzada¹University College of Medicine and Dentistry, Lahore²Foundation University Medical College, Islambad³University College Of Medicine and Dentistry, Lahore**Abstract:**

Objective: Acute renal failure (ARF) is a major problem to treat. Increased mortality is associated with late diagnosis. There are various causes of ARF. The final outcome of ARF can affect many factors. This study was conducted to know the factors affecting and influencing the ARF outcome.

Study Design: A Retrospective study.

Place and Duration: In Mayo Hospital, Nephrology Department for one year period from December 2016 to December 2017.

Method: We studied 100 patients with acute renal failure in adults admitted. Specific factors related to the ARF outcome have been analyzed and identified.

Findings: Significantly poor prognostic markers were found between the levels of oliguria, urea, creatinine and potassium in such factors, with respect to the result of the treatment modality in the one-way analysis. The multivariate analysis revealed that oliguria was the only significant predictor of good results with dialysis ($P < 0.001$).

Conclusion: Oliguria was the main determinant of the renal function improvement.

Key Words: Acute renal failure, Oliguria, creatinine, urea.

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INTRODUCTION:

Acute renal failure is a problem that is less appreciated by various etiologies. The ARF can be reversed if it is recognized and administered early. The delay in acute renal failure can lead to irreversibility, which cannot be followed by an increase in mortality and morbidity. Acute renal failure early diagnosis and treatment, good prenatal care and prudent treatment decisions can significantly decrease the ratio of ARF and its efficacy. The data on the general epidemiology of the IRA are very important in terms of the implementation of adequate resources for the management of this institution. According to the results of the WHO, different aspects have been examined in different regions of the world in terms of severity scores, configuration of intensive care, age, dialysis and underlying diseases. In patients with acute renal failure the death probability remains high. A valid prognostic index can help the patient decide admission and follow-up. ARF can be an application problem, as well as a common complication for conditions outside of ARF in previously hospitalized patients. It affects 5% of hospitalized patients, patients with multiple organ dysfunction with a greater incidence in ICUs and elderly patients with complex diseases. Patients with ARF have higher mortality rates than patients with ARF in hospital settings. ARF has mortality rate of 46.5% and is the most common cause of sepsis, death, multiple organ failure and respiratory failure. ARF is the principal indicator of the underlying disease but not the death cause. This study was conducted to know the etiologic factors of several ARFs in Lahore major teaching Hospitals. It focuses on a number of factors that can affect the ARF outcome. With a low financial support system country, the prognosis of ARF can be determined as it is a reversible condition, especially for medical care.

Patients and methods

This Retrospective study was held in Mayo Hospital, Nephrology Department for one year period from December 2016 to December 2017. More than 100 patients aged 15 years or older who requested admission to the Mayo Hospital were included in the study, following the criteria for inclusion in the study. Patients with more than 24 hours of oliguria or anuria that show an increase in creatinine and urea levels or creatinine of 0.5 mg increase per deciliter by reference value or 50% increase above the normal value. In inclusion criteria patients who not meet the

criteria or who were excluded from the study were patients with known kidney disease, hypertensive or diabetic nephropathy, patients with kidney dimensions greater than 2.0 cm or having polycystic kidney. Clinical evaluation included vomiting, nausea and / or bleeding, diarrhea, heart failure, previous renal insufficiency or having recently jaundice, dyspnea, chronic liver disease, symptoms of hepatitor edema, discoloration of urine or high blood pressure, past and present medications, the use of any contracture dye and kidney stones, or evidence of a low urination pathway. In a self-designed ARF survey all results were recorded. Urinalysis and microscopy was performed in all patients. The fractional excretion of electrolytes in urine, especially sodium, was estimated. Serum creatinine, Urea, CBC, Ultrasonography and BUN were performed in all cases. HOME between LECCELL, immunological tests, C4 and C3. In selected cases, a renal biopsy was performed. Daily urine production, creatinine, urea were estimated and therapeutic options / treatment exposure were recorded. The therapeutic treatment options are dialysis and conservative. Hemodialysis was performed through a double lumen catheter. The double lumen placement date was observed with the field. The number of days required for individual patients and the number of dialysis sessions were also noted.

The results of the follow-up patients were recorded in four categories.

1. It requires conservative treatment and is developed.
2. Make the dialysis support improved or temporary.
3. Require high dialysis with the recommendation for future dialysis and sometimes temporary.
4. In spite of all, the time has expired.

The data entry was made using the SPSS package. All patients were daily followed until they leave Hospital, until they reached normal renal function.

RESULTS:

100 of all patients with ARF having 48 years of mean age were selected for the study. The age ranges from 19 to 81. 1.6 was the M:F ratio. The conditions that led to the ARF included, 17% surgery, 75% medical origin and 5% obstetric. Three cases did not belong to both groups. The medical disease that causes ARF is acute gastroenteritis secondary to hypo-volemia (32%). Postpartum hemorrhage and two cases associated with ARF eclampsia in obstetric cases (Table 1).

Table 1. Etiological Subgroups of ARF in Hospitalized Patients.

S.No.	Etiological Group	Etiological Sub Group	Number of Cases	Total
1	Medical	Gastroenteritis	24	75
		Sepsis	16	
		Myocardial infarction and CHF	10	
		Malaria	9	
		Cerebro vascular accident	6	
		Pancreatitis	5	
		Chronic liver disease	2	
		Rhabdomyolysis	2	
		Autoimmune hemolytic anemia	1	
2	Surgical	Laprotomy	5	17
		Cholecystectomy	4	
		CABG	3	
		Miscellaneous	3	
		Orthopedics Surgeries	2	
3	Obstetrics	Postpartum hemorrhage	3	5
		Eclampsia	2	
4	Others		3	3
Grand Total				100

The patients were divided into two treatment modalities, either dialysis or conservative. Seventy-four patients were on conservative treatment and 26 remaining patients were dialysed. The prevalence of these treatment for patients with medical origins of the disease. Surgical diseases were mostly treated conservatively, and four were dialyzed into four obstetric groups (Table 2).

Table 2. Treatment Modalities for Etiological Groups.

S.No	Etiological Groups	Conservative (% of Total)	Dialyzed (% of Total)	Total
1	Medical	55 (73)	20 (27)	75
2	Surgical	15 (88)	2 (12)	17
3	Obstetrical	1 (20)	4 (80)	5
4	Others	3 (100)	0	3
Grand Total		74	26	100

Two large outcomes were cured (87) or complete (13) in this study. Sixty-three (72%) of those who recovered at the end of the study (n = 87) were treated conservatively and 20 (22%) were marked temporarily. Long-term dialysis was recommended for four (5%) patients. Conservative treatment was performed in 11 (84%) and dialysis was performed in 2 (16%) patients with an expiration date (n = 13). The factors that affect the chronic renal failure patients outcome in terms of recovery and duration are given in Tables 3 and 4.

Table 3. Univariate analysis of factors affecting outcome of ARF.

	Variables	Number of Cases	Outcome		P. Value
			Improved	Expired (% of cases)	
1	Etiology				
	Medical	75	62 (85)	11 (15)	0.083
	Surgical	17	15 (88)	2 (12)	
	Obstetrical and Others	8	8 (100)	-	
2	Oliguria				
	Present	54	47 (87)	7 (13)	0.990
	Absent	46	40 (87)	6 (13)	
3	Acidosis				
	Present	47	40 (85)	7 (15)	0.596
	Absent	53	47 (89)	6 (11)	
4	Age				
	< 40	34	32 (94)	2 (6)	0.228
	≤ 40	66	55 (83)	11 (17)	
5	Treatment				
	Conservative	74	63 (85)	11 (15)	0.551
	Dialyzed	26	24 (92)	2 (8)	
6	Level of K				
	< 5.0	85	76 (89)	9 (11)	0.197
	> 5.0	15	11 (73)	4 (27)	
7	WBC				
	< 11,000	37	31 (84)	6 (16)	0.671
	> 11,000	63	56 (89)	7 (11)	
8	Urea				
	≤200	67	61 (91)	6 (9)	0.162
	> 200	33	26 (79)	7 (21)	
9	Creatinine				
	≤5.5	57	48 (84)	9 (16)	0.513
	> 5.5	43	39 (91)	4 (9)	
10	Associated Diseases				
	Present	49	44 (90)	5 (10)	0.65
	Absent	51	43 (84)	18 (16)	

Patients into subgroups were divided for each factor according to the levels defined in Tables 3 and 4. For the ARF results, these subgroups were compared (Table 3).

Table 4. Univariate analysis of factors affecting outcome of ARF for Treatment Modality.

S. No.	Variables	Number	Treatment		P Value
			Conservative	Dialyzed	
			(% of Cases)		
1	Etiology				
	Medical	75	58 (77)	17 (23)	NS
	Surgical	17	10 (59)	7 (41)	
	Obstetrical and Others		8	6 (75)	2 (25)
2	Oliguria				
	Present	54	31 (57)	23 (43)	0.001
	Absent	46	43 (94)	3 (6)	
3	Acidosis				
	Present	47	38 (81)	9 (19)	NS
	Absent	53	36 (68)	17 (32)	
4	Age				
	<40	34	28 (82)	6 (18)	NS
	>40	66	46 (70)	20 (30)	
5	Urea				
	<200	67	56 (84)	11 (16)	<0.01
	>200	33	18 (54)	15 (46)	
6	Creatinine				
	<5.5	57	50 (88)	7 (12)	<0.001
	>5.5	43	24 (56)	19 (44)	
7	Hb				
	<12	45	29 (64)	16 (36)	NS
	>12	55	45 (82)	10 (18)	
8	Heart Rate				
	<100	58	44 (76)	14 (24)	NS
	>100	42	30 (71)	12 (29)	
9	Serum K				
	<5	85	67 (79)	18 (21)	<0.01
	>5	15	7 (47)	8 (53)	

For each subgroup in terms of ARF results, treatment groups were compared (Table 4). Multivariate analysis is the only significant independent determinant of the presence of oliguria for dialysis ($P < 0.001$).

DISCUSSION:

Acute renal failure is a frequent occurring condition. Another prospective study, Barrett and colleagues report a three-year study, 200 patients with ARF in hospitalized patients in the Arabian Gulf, announced the 77 patients with ARI within 2 years. A study from

a Philippine university hospital reported 110 patients with RFA for a period of 5 years. This study included 100 patients with RFA in a university hospital for 3 years. ARF is a syndrome that has many causes that are common in hospitalized patients. ARF affects patients seen by almost all health professionals.

Liano, ARF doctor (34%), ICU (27%), surgery (23%), obstetrics (1%), nephrology (13%) and traumatic (2%) were grouped as ARF. Saxena classified the etiology of ARF in medical (75%), obstetric (15%), obstructive and surgical (10%). In this study, the development and difference of the rate of etiological groups in the developed world, medical conditions are the main reason, as reported by Naqvi et al (57%), and that obstetric (24%), obstructive (7%), surgery (5%) and unclear reasons (7%). Because, as a cause of ARF, infections have declined worldwide continues to be an important and important reason for kidney failure in developing countries. Much of the medical causes in developing countries are caused by a high infection, especially gastrointestinal diseases and falciparum malaria. Because of the ability to provide long-term renal replacement therapy, a poor renal outcome is not necessarily fatal, such as dialysis or kidney transplantation. Mortality rates of ARF of 14-70% have been reported in different studies. The IRA observed in the intensive care unit has a worse prognosis than the ARI treated in other areas of the hospital. In hospitalized patients there are many factors that affect the outcome of the IRA. Dela Cruz et al.¹⁰ concluded that four variables significantly increased the risk of death due to ARI: the presence of sepsis in the elderly, hyperkalemia, oliguria and admission. Obialo and his colleagues reported oliguria as a factor that causes an increase in mortality in patients with RFA. In this study, factors such as increasing age, high levels of FEI, urea, creatinine and medical disorders related to potassium, oliguria and acidosis caused a high mortality.

CONCLUSION:

Our analysis showed that the detection of renal function of the oliguria was the most important determinant ($P < 0.001$), as reported in almost all the other studies mentioned above.

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