

# Experience with 70 Adult Cases of Acute Renal Failure in Dhaka Medical College Hospital

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## Summary :

Seventy adult patients with acute renal failure (ARF) admitted in Nephrology Unit of Dhaka Medical College Hospital from July 1991 to December 1992 were studied to determine their clinical presentation, biochemical status, to identify their possible aetiology and also to study their prognosis. The mean age of the patients was  $36 \pm 14$  years, 46 cases were male and 24 cases were female. The cause of ARF was pre renal in 73%, renal in 24 % and postrenal in 3% of cases. Amongst prerenal 51% cases developed ARF following gastroenteritis. 6% were due to blood loss from obstetrical cause and gastrointestinal bleeding. 7% due to hepatitis and cirrhosis of liver, 3% due to cardiogenic shock following myocardial infarction. Renal causes were acute glomerulonephritis in 21% and nephrotic syndrome in 3% cases. Postrenal cause was bilateral ureteric obstruction by carcinoma of cervix in 1.5% cases and ureteric calculus in 1.5% cases. Postrenal cause was bilateral ureteric obstruction by carcinoma of cervix in 1.5% cases and ureteric calculus in 1.5% cases. The presentation was anuria in 37% cases and oliguria in rest 63% cases. Clinically 60% patients were dehydrated and 27% were overhydrated. 26% patients were hypertensive and most of them had AGN. Study of renal function revealed mean blood urea level  $26.4 \pm 16.5$  mmol/L and mean serum creatinine level of  $849 \pm 451$  micromol/L. Peritoneal dialysis was done in 61% cases and rest 39% cases were treated conservatively. Complete recovery occurred in 63% cases, 21% cases improved and 13% patients expired. It can be concluded that ARF in adults is a common renal problem. Most of the cases developed ARF following diarrhoea and blood

loss which can be prevented. A significant number of cases are due to AGN the prognosis of which is worse. The overall prognosis of ARF in adult is satisfactory.

## Introduction :

Acute renal failure is frequently encountered in hospitalized patients. Anderson et al<sup>1</sup> reported 130 cases of severe ARF at 3 general hospitals over a period of 1 year. It is also a common problem in Bangladeshi adults as elsewhere in the world as reported by different nephrology units of this country. It was found to be the fifth common renal disorder encountered in hospitalized patients in Nephrology Unit of IPGM&R Dhaka and accounts for 9% of cases.<sup>2</sup> In Bangladesh majority of the patients present with anuria and report to the hospital quite late.<sup>3</sup> Although ARF results in a wide variety of serious and potentially lethal complications, it is one of the few condition in adults where complete recovery is possible with proper management. In a study carried out in IPGM&R, cure rate was found to be around 70%<sup>4</sup> and is comparable of that of other countries.<sup>5</sup>

This study presents an overview of ARF in a teaching hospital of Bangladesh. The aim of this study is to determine clinical presentation, biochemical status, aetiology & prognosis of ARF in adults.

## Materials and Methods:

All cases of ARF admitted into the Nephrology unit of Dhaka Medical College Hospital from July 1991 to December 1992 were included in this study. Some cases were admitted directly into the nephrology unit and some were referred from other units of this hospital. Diagnosis of acute renal failure was made

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by history, clinical examination and laboratory investigation. A detailed history of all the patients were taken to find out the cause of renal failure. A thorough physical examination was made immediately after hospitalization. Hb% estimation, total and differential white cell count, urine routine and microscopic examination, culture, blood urea, serum creatinine, serum electrolytes, blood sugar, X-ray Chest, ECG, plain X-ray KUB was done in all cases. Liver function test was done in selected cases. Blood urea, serum creatinine and electrolytes were repeated later as required. Ultrasonogram, renogram, and IVU was done in selected cases. Patients were managed either by conservative or by intermittent peritoneal dialysis (IPD). IPD was done in those cases who failed to respond to conservative therapy, those who presented with rapidly deteriorating renal excretory function and also who were clinically severely ill.

### Results:

70 cases of ARF were analyzed. The mean age of the patients were  $36 \pm 14$  years. The age distribution of patients are shown in table-1. 60% of the patients

**Table —I**

*Age Distribution of the patients (N=70)*

Age Group	No	Percent
Less than 20yrs	04	06%
20-29yrs.	22	31%
30-39yrs	20	29%
40-49 yrs	06	08%
50-59yrs	12	18%
60 yrs and above	06	08%

were between 20-39 years of age. 46 were male and 24 patients were female with a male female ratio of 1.9:1. Out of 70 patients 51(73%) patients developed ARF due to pre renal cause, 17(24%) had renal cause and 02(3%) were due to post renal cause. Table-2 shows the different pre renal causes of ARF. Among 36 cases of gastroenteritis, V cholerae was isolated in six cases. Five cases had shigellosis. Organism could not be isolated in other cases. Two patients developed ARF following cardiogenic shock due to acute myocardial infarction. One patient had

**Table—II**

*Pre renal causes of ARF (N=51)*

Causes	No	Percent
Gastroenteritis	36	51%
Hepatitis and Cirrhosis of Liver	05	07%
Blood loss (obst. and G.I bleeding)	04	06%
Cardiogenic shock	02	03%
Puerperal sepsis	02	03%
Crush syndrome	01	1.5%
DIC	01	1.5%

DIC due to obstetric complication and two patients had septic abortion. Another two patients developed ARF following acute viral hepatitis and 3 cases of cirrhosis of liver developed ARF due to hepatorenal syndrome. Table-3 shows the renal and postrenal causes of ARF. 15 cases presented with acute nephritic illness. All had oliguria, puffy face, microscopic haematuria, 8 had RBC cast. Renal biopsy was performed in 4 cases and showed proliferation of endothelial and epithelial cells and

**Table—III**

*Renal and postrenal causes of ARF (N=19)*

Causes	No	Percent
Acute Glomerulo-nephritis	15	21%
Nephrotic syndrome	02	03%
Carcinoma cervix	01	1.5%
Bilateral ureteric calculus	01	1.5%

large number of crescents. Two cases of nephrotic syndrome developed ARF due to vigorous diuretic therapy. Table-4 shows the clinical presentation of the patients with ARF. All patients had either oliguria

**Table—IV**

*Clinical Presentation of ARF (N=70)*

Causes	No	Percent
Anuria	26	37%
Oliguria	44	63%
Dehydration	42	60%
Overhydration	19	27%
Hypertension	18	26%

or anuria. 42 patients were dehydrated, among them 10 patients were severely dehydrated. Hypertension was found in 18 cases, of them 15 had AGN. Table-5 shows the biochemical status on admission in all the 70 patients. The blood urea and serum

**Table—V**

*Biochemical status on admission (N=70)*

Blood level	Mean± SD
Blood Urea	26.4±16.5 mmol/L
Serum creatinine	849±45.1µ mol/L
Serum Na+	128 ±10.0 mmol/L
Serum K+	4.8 ±1.5 mmol/L
Serum Cl-	97±11 mmol/L
Serum HCO <sub>3</sub>	13±06 mmol/L

creatinine were raised in all the patients. The serum sodium and bicarbonate were low in most of the patients. Table-6 shows the outcome of treatment in 70 patients suffering from ARF. 43 of the 70 patients required peritoneal dialysis and 27 received conservative treatment. IPD was done as facilities for hemodialysis was not available in Dhaka Medical College Hospital. 44 Patients recovered completely, of which 24 patients belonged to dialysis group and 20 patients belonged to conservative group. 15 cases recovered partially of which 12 belonged to dialysis group. 9 cases expired, of them six had AGN. 2 patients were discharged on risk bond.

**Table—VI**

*Outcome of treatment (N=70)*

Outcome	No	Percent
Complete recovery	44	63%
Improved	15	21%
Expired	09	13%
Discharged on risk bond	02	03%

**Discussion :**

The result of this study shows that ARF in adults is a common condition comprising a significant number of patients in Hospitals and it occurs in a variety of clinical conditions. Rashid HU et al<sup>4</sup> reported that 16%

of all admissions in Nephrology unit IPGM&R over a period of 12 months from February, 1985 to March, 1986 had ARF. According to Buschinski et al<sup>6</sup> four percent of 2419 prospective admissions in medical and surgical services develop some degree of ARF. A review of several recent reports also demonstrates a high frequency of oliguric and non-oliguric form of ARF which occurs in diverse clinical settings<sup>7,8,9</sup>. It is not possible to give the exact prevalence rate from this study.

The causes of ARF in this study conforms with the causes found in other studies in Bangladesh<sup>3,4</sup>. Gastroenteritis has been found to be most common cause of ARF in this series. ARF following gastroenteritis has disappeared completely from developed countries whereas the disease is still predominating in this country. Belslov and Jorgensen<sup>10</sup> reported that only 3.2% of their cases developed ARF following gastroenteritis. Socio-economic condition, poor housing condition, lack of sanitation and non-availability of pure water supply are the main factors for the prevalence of the disease. The causes of gastroenteritis was identified to be cholera in 6 cases and shigellosis in 5 cases. But no cause was identified in 25 cases. Although the organism could not be identified the possibility of viral infection could not be excluded as search for viral infection was not made. ARF following diarrhoea of unknown origin has also been reported to be a common entity by Rashid HU et al<sup>4</sup>. Though falciparum malaria and leptospirosis has been reported to be a common cause of ARF in developing countries.<sup>11</sup> We failed to identify any of them in this series. The next common cause in the series was due to viral hepatitis and cirrhosis of liver. Two cases developed ARF following viral hepatitis and 2 cases due to hepatorenal syndrome from cirrhosis of liver. The patients with viral hepatitis showed evidence of transient glomerular involvement as suggested by proteinuria and microscopic haematuria. Acute renal failure associated with uncomplicated viral hepatitis has been reported by Rahman MA et al<sup>12</sup>. One of our patient had positive hepatitis B surface antigen. Glomerulonephritis following virus B hepatitis have been reported on many occasions<sup>13,14</sup>. It is not known whether virus A or non A non B viruses can cause

transient glomerulonephritis<sup>15</sup>. In a study by Wilkinson et al<sup>16</sup>, 12 patients of viral hepatitis were studied all of whom presented with acute renal failure, 10 of them had HBsAg Negative hepatitis. The mechanism of renal failure in uncomplicated viral hepatitis is uncertain. In the study of Wilkinson et al fluid and electrolyte imbalance caused by repeated vomiting was responsible for ARF in one of their patients but the cause of renal failure in the remaining patients could not be ascertained. One of our patient also had repeated vomiting. Acute glomerulonephritis causing ARF comprised 21% of cases in this series. In a study carried out by Rashid H U et al<sup>4</sup> AGN causing ARF comprised 13% of cases. Safiullah M et al<sup>17</sup> reported that ARF due to AGN comprised 29% of patients of their series. Obstetric cause such as inadvertent abortion by untrained person is the frequent cause of ARF in Bangladesh. Although 4 patients in this series had ARF following obstetric bleeding and septic abortion the prevalence rate will be much higher than this. All of our patients had either oliguria or anuria. No case of non-oliguric ARF as found in this series. Overall prognosis of ARF was good. Among 70 patients 59 cases (84%) either recovered completely or had significant improvement. This corresponds with the result of other studies in Bangladesh. In a study undertaken by Rashid H.U. et al<sup>4</sup> cure rate was found to be around 70% and is comparable to that of other countries.<sup>5</sup> Mortality was 13% in this series. Out of 9 patients who died 6 had ARF due to AGN. So the prognosis of AGN causing ARF appears to be worse. Peritoneal dialysis was found to be very helpful in the management of ARF in adults. Among 43 patients who were dialyzed 36 patients either made complete recovery or improved significantly.

In conclusion it is suggested that as most of the cases developed ARF following gastroenteritis, improvement of socio-economic conditions, sanitation and provision of pure water supply will go a long way to prevent ARF in our country. Arrangement of peritoneal dialysis in district hospitals, rational use of drugs, training of manpower and trained doctors are required for proper management and can save life of those suffering from ARF in Bangladesh.

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