

Original Article

Postpartum Acute Kidney Injury - a Study at Faridpur Medical College Hospital

SK Mondal¹, AK Biswas², SB Joy³, MMSU Islam⁴, BK Pal⁵,
S Kar⁶, S Anisuzzaman⁷, SG Muktadir⁸

Abstract:

Postpartum Acute Kidney Injury (AKI) is one of the serious complications of pregnancy and is associated with high mortality and morbidity. Although Postpartum AKI has decreased markedly in developed countries in the last 50 years, but it is a challenging health problem in pregnant women, specially in the developing countries like Bangladesh. Aim of this study was to determine the contributing factors and outcome of postpartum AKI. This observational study was conducted in the department of nephrology, Faridpur Medical College Hospital from January 2018 to December 2019. During that study period thirty two patients with postpartum AKI were admitted in the above mentioned department. Demographic, clinical and laboratory data of those patients were recorded. Mean age of patients was 25.3 ± 4.2 years, and the 72% patients underwent cesarean section. Oliguria was the main presentation (91%). Puerperal sepsis (38%), postpartum hemorrhage (22%), and Eclampsia (16%) were the common contributing factors. Hemodialysis was required for most of the patients (75%). Therefore early diagnosis, identification and treatment of cause, timely initiation of renal replacement therapy is mandatory.

Key words: Postpartum, Acute kidney injury, Sepsis, Dialysis.

Introduction:

Acute Kidney Injury (AKI) is a clinical syndrome characterized by a sudden decline in glomerular filtration rate leading to decreased excretion of nitrogenous waste products like urea, creatinine and other uremic toxins. Postpartum AKI is a common

occurrence and is associated with high maternal mortality and morbidity in developing countries¹. Its incidence has decreased in the developed countries to only 1-2.8 % due to better antenatal care^{2,3}. However, in the developing countries it is still frequent and the incidence is around 4.2-15%. High incidence in developing countries is mainly due to limited accessibility of antenatal care and emergency obstetric healthcare facilities^{4,5}. Postpartum AKI is mostly due to puerperal sepsis and postpartum hemorrhage (PPH)^{4,6}. In our country, there is limited data on postpartum AKI. Therefore, this study was designed to find out the contributing factors and maternal outcomes of AKI in postpartum period.

Materials & Methods:

This observational study was conducted in the department of nephrology at Faridpur medical college hospital from January 2018 to December 2019. During the study period, total 32 patients admitted with postpartum AKI were included in the study. Postpartum AKI patients with history of DM and previous renal disease were excluded from this study. Detailed history (age, urine output, bleeding, blood transfusion), relevant physical examinations (Anaemia, temperature, hypertension) and laboratory investigations (Urine R/E, CBC, S. creatinine, USG of whole abdomen) were

1. Dr. Swapan Kumar Mondal, MBBS, MD (Nephrology), Assistant Professor, Dept. of Nephrology, Faridpur Medical College, Faridpur.
2. Dr. Ananta Kumar Biswas, MBBS, DA, Assistant Professor, Dept. of Anaesthesiology, Faridpur Medical College, Faridpur.
3. Dr. Swapna Biswas Joy, MBBS, MCPS, MS (Gynae and Obs.), Medical Officer, Faridpur Medical College Hospital, Faridpur.
4. Dr. M.M. Shahin-UL- Islam, MBBS, FCPS (Medicine), MD (Gastroenterology), Associate Professor (CC), Dept. of Gastroenterology, Faridpur Medical College, Faridpur.
5. Dr. Bablu Kumar Pal, MBBS, MD (Nephrology), Assistant Professor, Dept. of Nephrology, Comilla Medical College, Comilla.
6. Dr. Shubharthi Kar, MBBS, MD (Nephrology), Assistant Professor, Dept. of Nephrology, Sylhet M. A. G. Osmani Medical College, Sylhet.
7. Dr. Syed Anisuzzaman, MBBS, MD(Nephrology), Assistant Professor, Dept. of Nephrology, Rangpur Medical College, Rangpur.
8. Dr. Syed Golam Muktadir, MBBS, Assistant Registrar (Nephrology), Diabetic Association Medical College, Faridpur.

Address of correspondence :

Dr. Swapan Kumar Mondal, MBBS, MD (Nephrology), Assistant Professor, Dept. of Nephrology, Faridpur Medical College, Faridpur. Phone: +88- 01914122828, E-mail: swapan.nephrology@gmail.com

done and data were collected in a structured data collection sheet. After collection, data were analyzed to find out the contributing factors and outcome of postpartum AKI patients.

Results:

Total thirty two patients with postpartum AKI were admitted during the study period. The mean age of patients was 25.3 ± 4.2 years with minimum of 17 years and maximum of 33 years. Multigravida constituted 56% of patients and primigravida were 44%. Caesarean section was performed in 72% patients while 28% patients delivered vaginally. Most of the patients were anaemic with a mean hemoglobin of 9.6 ± 2.4 gm/dl. The patients had a mean creatinine of 5.4 ± 2.3 mg/dl. Mean duration of hospital stay was 12.6 ± 2.4 days (Table I).

Table I: Distribution of patients according to demographic & biochemical profile (n=32)

Parameter	Value in mean ±SD or Percent age
Mean age (years)	25.3 ± 4.2
Mean hemoglobin (gm/dl)	9.6 ± 2.4
Mean Creatinine (mg/dl)	5.4±2.3
Mean Hospital stay (Day)	12.6±2.4
Multigravida	18 (56%)
Primigravida	14 (44%)
Cesarean Delivery	23 (72%)
Vaginal delivery	9 (28%)

The most common clinical presentation was oligouria (91%) followed by oedema (68%), breathlessness (56%), hypotension (48%), fever (42%), hypertension (35%) and encephalopathy (24%) (Fig-1).

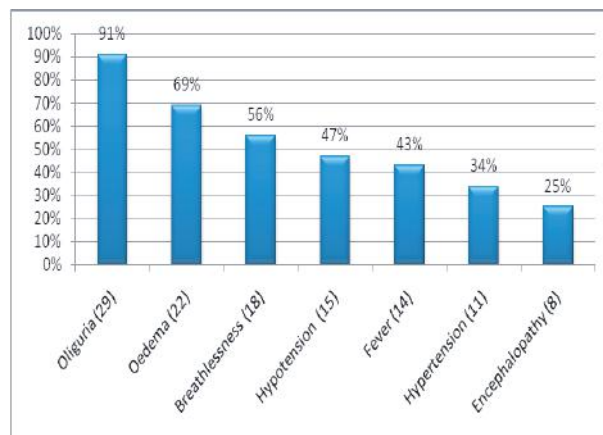


Figure I: Bar Chart showing clinical presentation of postpartum AKI (n=32)

Sepsis was the most common contributing factor for postpartum AKI accounting for 12 cases (37.5%), followed by postpartum hemorrhage (PPH) in 7 patients (21.8%), Eclampsia in 5 cases (15.6%), Nephrotoxic drugs in 3 patients (9.4%), Haemolysis Elevated Liver Enzyme Low platelet count (HELLP) syndrome in 2 cases (6.3%), Disseminated intravascular coagulation (DIC) in 1 patient (3.1%), while no obvious contributing factor was found in 2 cases (6.3%). (Fig-2)

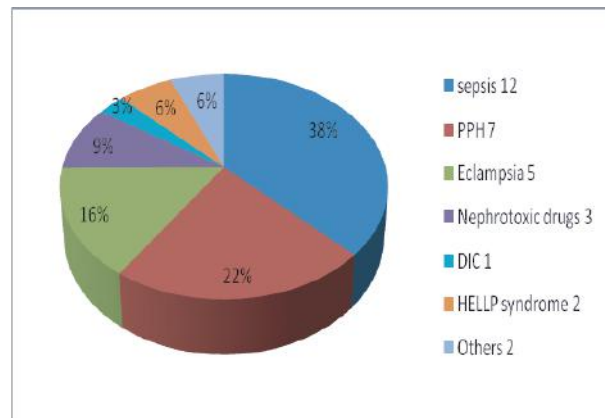


Figure II: Pie Chart showing Contributing Factors of Postpartum AKI (n=32)

Out of thirty two postpartum AKI patients 24 patients (75%) needed hemodialysis. Among those twenty four patients, 10 patients got complete recovery, 8 patients became dialysis dependent, remaining 6 patients got partially recovery from AKI and became chronic kidney disease (CKD) patients. Those ten postpartum AKI patients did not need hemodialysis, 7 patients completely recovered with conservative treatment while 3 patients died with adequate conservative treatment due to sepsis and multi organ failure. (Table-II)

Table II: Distribution of patients according to outcome (n = 32)

Outcome	Number of patients (%)
Dialysis required	24(75%)
Conservative Treatment	8 (25%)
Complete recovery	11(34.4%)
Partial recovery	9 (28.1%)
Dialysis dependent	7 (21.9%)
Death	5 (15.6%)

Discussion:

Postpartum AKI affects peak reproductive age group. In our study the mean age of patients was 25.3 years. Similar to our study, Parween et al reported the mean age of postpartum AKI patient was 25.7 years¹. Similar observations were reported also by other workers^{3,5}.

Puerperal sepsis was the most common etiology of postpartum AKI in the Indian subcontinent in several studies^{7,8}. The high incidence of Puerperal sepsis is mainly due to caesarian section and obstructed labor deliveries by unskilled professionals at primary health care centers in rural areas and late referral to tertiary care centers. Sepsis was more common in postpartum period due to retain placenta in the uterus.

In our study, sepsis accounted for postpartum AKI in 37.5% patients. Similar to our study, Mir et al also found, sepsis is the most common cause for postpartum AKI accounting for 39.3% cases⁴. Similar observations were reported also by other workers^{7,9}. However Goplani et al noted Puerperal sepsis as the most common (61%) etiology of postpartum AKI in their study⁶. Patients with sepsis present with generalized vasodilatation, which causes renal hypo perfusion and consequently renal failure⁴.

In our study, postpartum hemorrhage (PPH) was found in 21.8% patients. Similar observations were reported by other workers, they found that PPH constitutes 18.8% and 25% of postpartum AKI respectively^{9,10}. Although some other study found a higher incidence of PPH responsible for postpartum AKI 58% and 38% respectively^{7,11}.

In this study, we found that 15.6% Post partum AKI patients had eclampsia. Similar to our study, Mir et al reported eclampsia as a cause of postpartum AKI in 14% patients⁴. But another study found a higher incidence (25%) Post Partum AKI patients had eclampsia⁸.

In this study, 75% postpartum AKI patients required hemodialysis. Another study reported that 80.55% postpartum AKI patients required hemodialysis which is similar to our study³. But Mir et al found 46% postpartum AKI patients required hemodialysis⁴.

In our study, overall maternal mortality rate was 15.6%. Mir et al reported overall maternal mortality rate was 8.3%, but another study found overall maternal mortality rate 18.5% ,which is similar to our study^{3,4}.

Conclusion:

Postpartum AKI is one of the major complications of pregnancy in our country and is associated with high morbidity and mortality. In our study the most common contributing factors were puerperal sepsis, PPH and eclampsia and majority of the patients needed hemodialysis. Routine antenatal care and institutional delivery should be provided to every pregnant lady. Early recognition and treatment of underlying cause and timely initiation of renal replacement therapy are the priorities in the management of postpartum AKI.

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