



RENAL OUTCOME OF PREGNANCY ASSOCIATED ACUTE KIDNEY INJURY NEEDED HEMODIALYSIS

Dr Sourav Ghosh

Post Graduate Trainee, Department Of Obstetrics And Gynaecology, N.R.S Medical College And Hospital

Prof. (Dr) Pinaki Mukhopadhyay*

M.D; D.M (Nephrology), Department Of Nephrology, N.R.S Medical College And Hospital *Corresponding Author

Prof. (Dr) Runa Bal

M.S Department Of Obstetrics And Gynaecology, N.R.S Medical College And Hospital

ABSTRACT **Background:** Pregnancy-related acute kidney injury (PAKI) is associated with significant morbidity and mortality in young and often otherwise healthy women. Proper management helps to recover many cases whereas PAKI leads to chronic kidney disease and dialysis dependent in some patients.

Materials and methods: 53 cases of pregnancy associated acute kidney injury who received atleast one session of hemodialysis was selected and followed up at 2 weeks, 3 month, and 6 month.

Results: Oligoanuria is the most common presenting features (73.5%). sepsis is the most common etiology (40%). single session hemodialysis receivers showed higher mortality than who received multiple session. The study shows high mortality rate among "Failure" group. (p=0.02). one kidney biopsy was performed and shows acute renal cortical necrosis. 15% cases shows progression to chronic kidney disease.

Conclusions: Although the PAKI is infrequent it can lead to significant mortality and morbidity.

KEYWORDS : Chronic kidney disease, hemodialysis, pregnancy associated acute kidney injury

Introduction

Pregnancy-related acute kidney injury (PAKI) is associated with significant morbidity and mortality in young and often otherwise healthy women.[1,2]. Patients are given renal replacement therapy if acute kidney injury is severe and biochemical or volume-related, or if uremic toxemia related complications are of concern. If patients survive their illness and do not have premorbid chronic kidney disease, they typically recover to dialysis independence. However, evidence suggests that patients who have had acute kidney injury are at increased risk of subsequent chronic kidney disease.[3]

Aims and objectives

The aim of the study is to describe the renal outcome in terms of dialysis dependency and progress to chronic kidney disease.

Materials and methods**STUDY AREA**

This study was conducted among Indoor Patients of Department of Obstetrics and Gynaecology, department of Nephrology, NilratanSircar Medical College and Hospital. All the patients will undergo the study, fulfilling eligibility criteria and giving consent.

INCLUSION CRITERIA

All the patients admitted in Obstetrics unit, with pregnancy induced acute kidney injury (PAKI) received for at least one session of haemodialysis was enrolled and evaluated. Patients were defined pregnancy induced acute kidney injury as per RIFLE Criteria [10].

EXCLUSION CRITERIA

- Patients has existing/ previous history of renal disease i.e. Diabetes Mellitus Hypertension prior to pregnancy, small or Unequal kidneys.
- Post transplant Recipients
- Patients not giving consent to be a part of study

STUDY PERIODS

One year

STUDY DESIGN

Single centred, institution based observational based observational prospective study.

METHODOLOGY

Fifty three cases fulfilling the inclusion criteria and exclusion criteria underwent Renal Replacement Therapy i.e. intermittent haemodialysis according to protocol and situation demand 3-4 hours

per session. They will be followed up at 2 weeks, 3 month and 6 month by measuring serum creatinine level. Necessary investigation like serum creatinine, ultrasonography, urine protein measurement was performed and haemodialysis and renal biopsy was done when necessary.

STATISTICAL ANALYSIS

- All the data will analyzed with SPSS (Recent version) according by univariate analysis followed by multivariate Analysis will be done to identify the surrogate predictor.
- Time series comparison of serum creatinine values shall done by Friedman's analysis of variance with Dunn's test.
- 95% confidence interval value will be presented where relevant.

Results

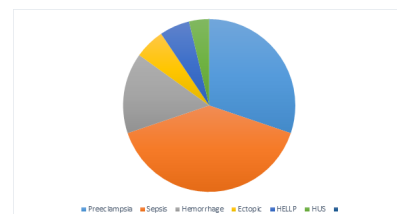
All the cases received Renal Replacement Therapy for at least one session during pregnancy and puerperium period. 51 cases received hemodialysis in postpartum period. Two cases received hemodialysis in antepartum period.

Oligoanuria is the most common presenting features (73.5%) followed by hepatic dysfunction. (table no 1)

Table no 1: Presenting features of cases

Presenting feature	No of cases	Percentage(%)
oligo anuria	39	73.5
Dyspnea	04	7.54
Shock	02	3.8
Seizure	02	3.8
Jaundice	06	11.3

Figure no 1: Etiologies of PAKI

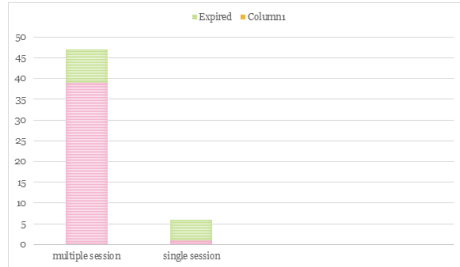


Sepsis is the most common cause of PAKI (40%) cases followed by preeclampsia (30%) cases. (Fig no 1). Thirteen cases (24.52%) among 53 cases were expired were expired during the study period within cases.

In terms of renal outcome, 6 cases (11.32%) received one session of hemodialysis while 47 cases(88.67%) required multiple sessions of hemodialysis(average 8 sessions).Five among six cases received single session of hemodialysis were expired.Eight cases among 47 cases received multiple session of hemodialysis were expired. So single session hemodialysis receivers showed higher mortality than who received multiple session.(Fig no 2).

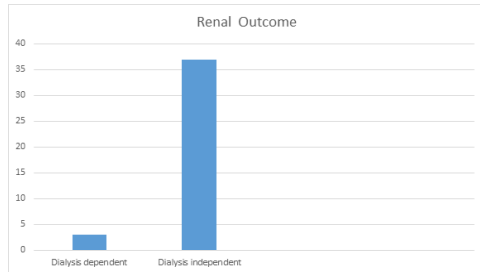
The mean number of Hemodialysis session is 6.94± 9.003.Mean Latency period of hemodialysis was 2.31±0.971 days.

Figure no 2: Number of cases in terms of survival and no of hemodialysis sessions



Among 40 survived case,37 were dialysis independent and 3 were dependent after 6 months follow up. Three were inincomplete recovery group and 34 are complete recovery group in dialysis independent group. (Fig no 3)

Figure no 3: Distribution of cases according dialysis dependency



Distribution of PAKI was done as per maximum RIFLE criteria .As per criteria ,outcomes of PAKI were outlined.6 cases(11.32%) were from “Injury” group and 47cases(88.7%) were from “Failure” group. One cases expired from “injury” group and twelve from “Failure” group. These were indicated clearly regarding high mortality rate among “Failure” group.(p=0.02).

Kidney biopsy wasperformed indialysis independent patients with raised creatinine level (>2.5 mg/dl) after 3 month follow up with two normal size,non obstructed kidneys .one patient underwent biopsy and had biopsy proven acute patchy cortical necrosis.Twopatients were planned for biopsy for presumed acute cortical necrosis but kidney size did not allow that. At the end of 6 months follow up ,the biopsy proven and presumed total 3 patients became dialysis free with serum creatinine >3 mg/dl.

Time series comparison of serum creatinine value was done. Friedman's analysis of variance with Dunn's test for post hoc comparison of serum creatinine between any two time points was tabulated below. It was clearly evident that the RRT effectively and significantly improves AKI and lowers creatinine from admission value and patient became dialysis independent. But in cases ,where if failed to lower creatinine level at 3 months, scenario didn't improve at 6 month creatinine value ,suggest that these patients should be watched for status of renal function.(Table no 2)

Table no 2: Time series comparison of serum creatinine

Dunn's Multiple Comparison Test	Difference in rank sum	Significant? P < 0.05?	P value
Cr_admissionvs Cr_2w	41.0000	Yes	p < 0.01
Cr_admissionvs Cr_3m	89.0000	Yes	p < 0.001
Cr_admissionvs Cr_6m	80.0000	Yes	p < 0.001
Cr_2w vs Cr_3m	48.0000	Yes	p < 0.001
Cr_2w vs Cr_6m	39.0000	Yes	p < 0.01
Cr_3m vs Cr_6m	-9.00000	No	ns

This analysis excludes 13 death cases

Eight cases(15.09%) were progressed as chronic kidney disease from PAKI. Among them 7 were in stage 3 and one case was at stage 4 CKD as per e GFR <60ml/min/1.73 m2 for 3 months duration criteria.

Conclusion

RIFLE criteria have been effectively used in different PAKI study for classification of this entity and prognostication. While all cases of this study were classified into “Injury” and “Failure” categories, in study of Silva et al regarding dialysis-dependent PAKI patients, predictably a higher prevalence of “Loss” and “Failure” stages was noted[4], whereas Bentata et al. noted the presence of “Risk” category in 50% patients with complete recovery of renal function in their cohort.[5]These studies indicate that the severity of renal failure in PRAKI correlates negatively with renal recovery, supportive of the present study.

Present study reports that 80% cases complete recovery,12.5% cases partial recovery among survivedpatients.Goplani et al showed 54% complete recovery,12% complete recovery .In present study the rate is higher.[6] Casablanca study reported complete recovery in 87.35% of their patients of PAKI.[7]

The numerous incidence of patchy cortical necrosis in post obstetric AKI is still a threatened condition. Prakash et al showed up to 24% of cortical necrosis in post obstetric complications.[8]. However, in a recent study from India, Prakash et al. reported that renal cortical necrosis following obstetrical complication decreased significantly; 4.7% in the 1990 s to 0.5% of the total AKI cases, in the 2000 s [9] which is corroborative with western literature.in present sudy it is nearly 5.6%.

REFERENCES

- Stratta P1, Besso L, Canavese C, Grill A, Todros T, Benedetto C, Hollo S, Segoloni GP.(1996). Is pregnancy-related acute renal failure a disappearing clinical entity?. Ren Fail, 18(4)
- Joseph KS1, Liu S2, Rouleau J2, Kirby RS3, Kramer MS4, Sauve R5, Fraser WD6, Young DC7, Liston RM8.(2010). Severe maternal morbidity in Canada, 2003 to 2007: surveillance using routine hospitalization data and ICD-10CA codes. J ObstetGynaecol Can, 32(9)
- Bellomo R1, Kellum JA, Ronco C.(2012) Acute kidney injury. Lancet, 380(9843)
- Silva GB Jr1, Monteiro FA, Mota RM, Paiva JG, Correia JW, BezerraFilho JG, Macedo RN, Lima RS, Daher EF.(2009). Acute kidney injury requiring dialysis in obstetric patients: a series of 55 cases in Brazil. Arch GynecolObstet, 279(2)
- Bentata Y1, Housni B, Mimouni A, Azzouzi A, Abouqal R.(2012) Acute kidney injury related to pregnancy in developing countries: etiology and risk factors in an intensive care unit.. J Nephrol, 25(5)
- Goplani KR1, Shah PR, Gera DN, Gumber M, Dabhi M, Feroz A, Kanodia K, Suresh S, Vanikar AV, Trivedi HL.(2008). Pregnancy-related acute renal failure: A single-center experience.. Indian J Nephrol, 18(1)
- Hachim K1, Badahi K, Benganhem M, Fatihi EM, Zahiri K, Ramdani B, Zaid D.(2001).[Obstetrical acute renal failure.Experience of the nephrology department, Central University Hospital ibnRochd, Casablanca]. Nephrologie, 22(1)
- Prakash J1, Tripathi K, Pandey LK, Gadela SR, Usha.(1996).Renal cortical necrosis in pregnancy-related acute renal failure. J Indian Med Assoc, 94(6)
- Prakash J1, Vohra R, Wani IA, Murthy AS, Srivastva PK, Tripathi K, Pandey LK, Usha, Raja R. (2007).Decreasing incidence of renal cortical necrosis in patients with acute renal failure in developing countries: a single-centre experience of 22 years from Eastern India. Nephrol Dial Transplant, 22(4)