

PRAKI - Pregnancy Related Acute Kidney Injury - A Prospective Study of 42 Cases and Outcome

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Abstract: ***Aims and objectives:** To study association and contributing factors in pregnancy related Acute kidney injury at tertiary referral hospital, Ahmedabad over a period of one and half year. **Methods:** A prospective study of number of 42 cases of Acute kidney injury complicating pregnancies in 1.5 year, were studied and analysed. Etiological factors, associated liver pathology, coagulation abnormality, thrombocytopenia, sepsis, recovery status and feto-maternal outcome were studied and results tabulated. **Observation:** The incidence of ARF in pregnancy was found to be 0.30%. Hypertension and its related complications were the most common causative factor. 59.5% of cases required Hemodialysis and except for 6 cases (14.3%) all had complete or at least partial recovery from failure. **Conclusion:** AKI complicating pregnancies are not uncommon in tertiary care centres. If recognized and treated promptly recovery is assured in majority of 85.7% of cases. Early identification and prompt management of preeclampsia and sepsis can prevent majority of ARF cases*

Keywords: PRAKI, Pre-eclampsia, hemodialysis.

1. Introduction

Acute kidney injury is a syndrome characterised by the rapid loss of kidney's excretory function and is typically diagnosed by accumulation of end products of nitrogen metabolism (urea and creatinine) or decreased urine output or both.

RIFLE: Risk, Injury, Failure, Loss, End stage.

No specific therapy attenuate AKI. Acute kidney injury (AKI) is rare complication of pregnancy but it is associated with increased maternal and perinatal mortality and morbidity

The incidence of AKI in pregnancy declined significantly over the second half of the 20th century in industrialized countries due to advances in contraception, legalizing abortion and more careful monitoring of the perinatal period (2). It currently affects 1 per 20,000 pregnancies (2). The incidence of pregnancy-related acute renal failure in the developed countries is 1% - 2.8%, whereas in the developing countries this is about 4.2% - 15% [3]. Hypertensive complications of pregnancy (preeclampsia/eclampsia or hemolysis, elevated liver enzymes, and low platelets count syndrome) are the leading cause of AKI in pregnancy worldwide [4]

It is essential to focus on the prevention, periodic evaluation of pregnant women and improvement in the care during the peripartum period to improve maternal and perinatal outcomes. The objective of our study is to report the etiology and fetomaternal outcome of AKI during pregnancy

2. Materials and Methods

The PRAKI cases admitted at our Hospital from oct 2015- april 2017 were studied. Criteria for inclusion was (1) Sudden Oliguria 24hr UOP <400ml, (2) Anuria , (3)Sr.creatinine >1.5mg/dl
Already known cases of chronic kidney diseases were excluded

Parameters studied:

- 1) Socio demographic factors –Age ,parity
- 2) Period of gestation.
- 3) Etiological factors
- 4) Feto-maternal outcome
- 5) Renal recovery
- 6) Associated laboratory abnormalities
- 7) Severity of renal failure.

3. Result

Total 42 cases of PRAKI were studied.

The mean age of period of gestation at time of presentation was 34 weeks.

PRAKI was found in intrapartum and postpartum period in 92.9% of cases and in 3rd trimester in 4.8% and 2.3 % cases in 2nd trimester. It followed normal delivery in 78,7 % and caesarean in the19% cases..And 2.3 %cases had obstetric hysterectomy for rupture uterus.

Table 1: Age

Age	n=42	%
<25	14	33.3
>25	28	66.7

The mean age was 28 yrs

Table 2: Parity

Parity	n=42	%
Primipara	16	38
multipara	26	62

Table 3: Severity of renal failure:

Severity	Serum creatinine	No	%
Mild	<5mg/dl	24	57.2
Moderate	5-10 mg/dl	17	40.5
Severe	>10mg/dl	1	2.3

Severity of renal failure was graded based on serum creatinine values .57.2% cases were in the mild category with sr. creatinine <5mg/dl and these patients had a faster recovery with a better prognosis

Table 4: Showing the various etiological factor of PRAKI in present study.

S. No	Etiological factor	n=42	%
1	PIH	26	61.9
2	Abruption	2	4.7
3	Septicemia	10	23.8
4	Hemorrhage [APH+PPH]	4	9.5

Pregnancy induced hypertension and its complications like pre-eclampsia, HELLP syndrome, eclampsia, abruption all together are the main etiological causes for PRAKI, PIH was present in 61.9% of cases and 2nd common cause septicemia was present in 23.8% of cases.

Table 5: Renal recovery

S. No	Recovery	n	%
1	Complete	34	81
2	Partial	2	4.8
3	Death	6	14.3

Complete renal recovery was seen in 34 (81%) cases, partial recovery in 2 (4.8%) cases and maternal death occurred in 6 (14.3%) cases.

From 6 cases of maternal death, all cases were referred case., dignosed during intrapartum and postpartum period. Admission to delivery time was 3 to 12 hours in cases of maternal death. 3 cases delivered vaginally and in other 3 cases delivered by caesarian section. Out of 6 one case had severe and other 5 cases had moderarte severity of renal failure.

Table 6: Fetomaternal outcome

S. No	Maternal/ fetal	Outcome	n=42	%
1	Maternal outcome	Recovery	36	85.7
		Death	6	14.3
2	Fetal outcome	Live birth	12	28.6
		Still birth	13	31.0
		IUD	17	40.4

In the present study 85.7% of cases had recovery and maternal death occurred in 6 cases (14.3%). Regarding fetal outcome 28.6% were live births, 31% were still births and 40.4% were Intrauterine deaths.

Table 7: Associated lab abnormalities(more than 1 abnormal lab finding)

Sr No	Laboratory findings	n=42	%
1	Anemia	32	76.1
2	Thrombocytopenia	17	40.4
3	Leucocytosis	28	66.6
4	Abnormal LFT	19	45.2
5	Coagulation failure	13	30.9
6	Hyperkalemia	4	9.5
7	Hypokalemia	6	14.2
8	Hypernatremia	3	7.1
9	Hyponatremia	4	9.5

Table 8: In comparison to N.Uma et al (2016)study and Madiha et al (2015) study.

	N.Uma(2016)	Madiha(Oct 2015)	Present study
Incidence [%]	0.25%	0.5%	0.30%
m.c .cause	PIH	PIH	PIH
Recovery [%]	94%	93%	85.7

4. Discussion

AKI is a clinical syndrome denoted by a decline in kidney function evidenced by increase in Serum Creatinine (SCr) and decrease in urine output. AKI is defined as an increase in SCr by 0.3 mg/dl (26.5 μmol/l) within 48 hours or increase in SCr to 1.5 times baseline, which is known or presumed to have occurred within the prior 7 days; or Urine volume of <0.5 ml/kg/h for 6 hours.

ARF is an infrequent but life threatening complication. Though PRAKI accounts for 17-43% of total ARF cases. The worldwide incidence of Pregnancy-Related Acute Kidney Injury (PRAKI) has decreased markedly in the past 50 years through the legalization of abortion and improvement of antenatal and Obstetric care. In the recent years, the incidence of PRAKI has decreased in developed countries to only 1 to 2.8%. However, PRAKI is still frequent in developing countries the incidence is around 4.2-15%. Caring for pregnant women diagnosed with AKI is a real challenge for obstetrician and the associated medical team.

Hypertension and its related complications were most common cause of PRAKI in present study followed by sepsis.

The reported mortality rate of PRAKI was upto 56% in various studies, but in present study 6/42. (14.3%).

Prevention, early recognition and prompt treatment is ideal. Avoiding nephrotoxic drugs, ensuring volume status/perfusion pressure, functional haemodynamic monitoring and monitoring of Sr. Cr. and UOP is a must.

5. Conclusion

ARF due to the obstetric complications remains an important problem. Prolonged duration of oliguria and antepartum haemorrhage were strong predictors of poor renal outcome and irreversible renal failure. . Multidisciplinary care is required for PRAKI including obstetrician/ICU/nephrologist/neonatologist.

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