CODEN [USA]: IAJPBB ISSN: 2349-7750

INDO AMERICAN JOURNAL OF
PHARMACEUTICAL SCIENCES

http://doi.org/10.5281/zenodo.3236017

Available online at: http://www.iajps.com *Research Article*

PREGNANCY RELATED ACUTE KIDNEY INJURY

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Article Received: March 2019 **Accepted:** April 2019 **Published:** May 2019

Abstract:

Objective: *To determine the frequency of pregnancy related acute kidney injury (PRAKI).*

Subject and Methods: *This was a Case series study that was conducted at Sheikh Zayed Hospital Lahore, Jinnah Hospital, Lahore and THQ Hospital, Layyah from July to December 2018 in which pregnant females of age 20 to 40 were included. The RIFLE Criteria was used to label acute kidney injury. According to this criteria, acute kidney Injury was labeled as yes when there is two-fold increase in the serum creatinine, or GFR decrease by 50 percent, or urine output <0.5 mL/kg per hour for 12 hours.*

Results: *In this study there were total 100 females with mean age of 31.42±4.48 years. There were 20 cases as primigravida and 80 cases with multigravida. PRAKI was seen in 24 (24%) of cases. PRAKI was seen higher in age group 31 to 40 years where it was seen in 18 (27.70%) of cases with p= 0.46. PRAKI was higher in multigravida as compared to primigravida where it was seen in 20 (25%) of 80 cases as compared to 4 (20%) of 20 cases in their respective groups with p= 0.88.*

Conclusion: *PRAKI is common and is seen in every 4th case and it is more common in higher age groups and those with multigravida.*

Key Words: *PRAKI, RIFLE, Pregnancy*

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Please cite this article in press Muhammad Ali et al., ***Pregnancy Related Acute Kidney Injury.,*** *Indo Am. J. P. Sci, 2019; 06(05).*

INTRODUCTION:

Pregnancy results in various hemodynamic changes that can affect the body in multiple ways. In the first trimester of pregnancy, there is increased production of nitric oxide and relaxin leading to peripheral vasodilatation that results in decreased systemic vascular resistance. [1] Increase in cardiac output by 40 to 50% and vasodilatation leads to decrease in blood pressure. Blood pressure then increases slightly due to fluid retention and reach at a level of 10% less than the normal pre pregnancy level and then almost reach the normal pre pregnancy level but its never higher than the normal BP at any stage of the pregnancy. [2] Multiple other mechanisms like thirst stimulation and vasopressin release affects the osmotic changes. This increase in volume also leads to decrease in osmolality and sodium concentration. Progesterone also acts on respiratory center and lead to hyperventilation. This hyperventilation can result in respiratory alkalosis and to compensate that body loses bicarbonate. Other complications of pregnancy like pre eclampsia, eclampsia, HELLP syndrome can also add to these. [3]

Pregnancy related acute kidney injury is not uncommon and various criteria have been used in the past and RIFLE is one of the salient one. It is still reported in good number of cases at tertiary care hospitals as most of the cases are referred for higher degree of care and opinion. There number is higher in the developing and under developed countries due to lack of care and higher complication rates. [4] The number of such cases has declined significantly over years due to better antenatal care. The decreased incidence of abortion rates due to legal implementation is thought to be another cause. [5-6]

The incidence reduced from 40% in the 1960s to less than 10% in the recent years. [7] The higher decline rate was more observed in the western countries such as countries in Europe and North America. Some studies summarized that the incidence of PRAKI was 1.0%–2.8% in developed nations versus 4%–26% in developing nations. [8]

OBJECTIVE:

To determine the frequency of pregnancy related acute kidney injury (PRAKI).

MATERIAL & METHODS:

Study design;
Case series study
Study Setting;
Sheikh Zayed Hospital Lahore, Jinnah Hospital, Lahore and THQ Hospital, Layyah **Duration;**
July to December 2018
Sampling technique;
Non-probability consecutive sampling
Sample Selection:

Inclusion criteria:

1. All pregnant females of any trimester pregnancy.
2. Cases with age range of 20-40 years
3. Both genders.

Exclusion criteria:

1. Known cases of chronic renal failure
2. Cases with end stage liver or cardiac failure.

After taking an informed written consent, the cases were selected according to the criteria and detailed relevant history was collected. These cases were then followed during their whole period of pregnancy and six weeks post partum and they were assessed for serum urea, creatinine, GFR and urine output in cases of admitted cases to label for acute kidney injury. The RIFLE Criteria was used to label acute kidney injury. According to this criteria, acute kidney Injury was labeled as yes when there is two-fold increase in the serum creatinine, or GFR decrease by 50 percent, or urine output <0.5 mL/kg per hour for 12 hours. Statistical analysis was done by using SPSS version 22.0. Quantitative variable were presented as mean and standard deviation. Frequency and percentage were calculated for qualitative data. The data was stratified by using chi square test and p value < 0.05 was considered as significant.

RESULTS:

In this study there were total 100 females with mean age of 31.42±4.48 years. There were 20 cases as primigravida and 80 cases with multigravida. Majority of the cases 65 (65%) presented in their 3rd trimester of pregnancy. Pregnancy related acute kidney injury (PRAKI) was seen in 24 (24%) of cases. PRAKI was seen higher in age group 31 to 40 years where it was seen in 18 (27.70%) of cases with p= 0.46 as in table 1. PRAKI was higher in multigravida as

compared to primigravida where it was seen in 20 (25%) of 80 cases as compared to 4 (20%) of 20 cases in their respective groups with p= 0.88 as in table 2.

TABLE 1

PRAKI WITH RESPECT TO AGE GROUPS
n=100

Age groups (years)	PRAKI		Total
	Yes	No	
20 to 30	06 (17.14%)	29 (82.86%)	35 (100%)
31 to 40	18 (27.70%)	47 (72.30%)	65 (100%)
Total	**24 (24%)**	**76 (76%)**	**100 (100%)**

p=0.46

TABLE 2

PRAKI WITH RESPECT TO GRAVIDA

n= 100

Gravida	PRAKI		Total
	Yes	No	
Primigravida	4 (20%)	16 (80%)	20 (100%)
Multigravida	20 (25%)	60 (75%)	80 (100%)
Total	**24 (24%)**	**76 (76%)**	**100 (100%)**

p=0.88

DISCUSSION:

Pregnancy-related acute kidney injury (PRAKI) contributes to 3–7% of overall acute kidney injury (AKI) cases in Indian subcontinent. The aim of this study was to determine the outcomes of PRAKI and risk factors associated with renal injury and maternal mortality.

Pregnancy related acute kidney injury (PRAKI) was seen in 24 (24%) of cases. This was similar to other studies done in the Pakistan as well. In a study done by Hassan et al the PRAKI was seen in 30% of the cases. While the other studies from India by Najar et al and Goplani et al the incidence was see in 7% and 9% of the cases respectively.[9-10] The reason of lesser number in India as compared to present study can be explained by the presence of health care facilities as well as the difference in the inclusion criteria can be another cause leading to this difference in outcomes.

In the present study the PRAKI was seen higher in age group 31 to 40 years where it was seen in 18 (27.70%) of cases with p= 0.44 and also in those that were multigravida as compared to primigravida where it was seen in 20 (25%) of 80 cases as compared to 4 (20%) of 20 cases in their respective groups with p= 0.88. This was also observed by the other studies as well.[11-13] The reason of this can be explained by the presence of co morbid conditions like DM and

Hypertension in older age groups and also the lesser degree of the concerns in the developing countries in terms of pre natal visits and health seeking in multigravida as compared to primigravida leading to higher number in the multi gravida cases; although this difference was not statistically significant. Moreover prevalence of anemia in sub sequent pregnancies can also be a causes contributing to this complication.

CONCLUSION:

PRAKI is common and is seen in every 4th case and it is more common in higher age groups and those with multigravida.

REFERENCES:

1. Khanal N, Ahmed E, Akhtar F. Epidemiology, causes and outcome of obstetric acute kidney injury. Vijayakumar S (Ed.), Novel insights on chronic kidney disease, acute kidney injury and polycystic kidney disease. InTech, Rijeka. 2012;1:67–81
2. Machado S, Figueiredo N, Borges A, São M, Freitas L, Moura P, *et al.* Acute kidney injury in pregnancy: a clinical challenge. J Nephrol. 201;25(1):19–30.
3. Sahay M. Acute kidney injury in pregnancy. Basic nephrology and acute kidney injury. InTech Rijeka, 2012. pp. 151–172.
4. Ansari MR, Laghari MS, Solangi KB. Acute renal failure in pregnancy: one year observational study at Liaquat University Hospital, Hyderabad. J Pak Med Assoc. 2008;58(2):61–64.
5. Ganesan C, Maynard SE. Acute kidney injury in pregnancy: the thrombotic microangiopathies. J Nephol. 2011;24(5):554–63.
6. Najar MS, Shah AR, Wani IA, Reshi AR, Banday KA, Bhat MA, *et al.* Pregnancy related acute kidney injury: a single center experience from the Kashmir Valley. Indian J Nephrol. 200818:159–161
7. Arrayhani M, El Youbi R, Sqalli T. Pregnancy-related acute kidney injury: experience of the Nephrology Unit at the University Hospital of Fez, Morocco. ISRN NephroL. 2013;23:1-10
8. Bentata Y, Housni B, Mimouni A, Azzouzi A, Abouqal R. Acute kidney injury related to pregnancy in developing countries: etiology and risk factors in an intensive care unit. J Nephrol. 2012;25(5):764–75.
9. Hassan I, Junejo AM, Dawani ML. Etiology and outcome of acute renal failure in pregnancy. J Coll Physicians Surg Pak. 2009;19:714–7.
10. Krane NK, Hamrahian M. Pregnancy: Kidney diseases and hypertension. Am J Kidney Dis. 2007;49:336–45.
11. Silva GB, Jr, Monteiro FA, Mota RM, Paiva JG, Correia JW, Bezerra Filho JG, et al. Acute kidney injury requiring dialysis in obstetric patients: A series of 55 cases in Brazil. Arch Gynecol Obstet. 2009;279:131–7.
12. Hoste EA, Clermont G, Kersten A, Venkataraman R, Angus DC, De Bacquer D, et al. RIFLE criteria for acute kidney injury are associated with hospital mortality in critically ill patients: A cohort analysis. Crit Care. 2006;10:R73.
13. Siam S, Abd El Hameed AA, Matar H. Evaluation of acute kidney injury defined by RIFLE criteria and its association with mortality in critically Ill obstetric patients: A retrospective study. Med J Cairo Univ. 2011;79:589–93.