DOI: https://doi.org/10.53350/pjmhs2115102580

ORIGINAL ARTICLE

Frequency of Pre-Eclampsia Induced Acute Kidney Injury

BILAL RASOOL[1], HINA AKBAR[2], ANEES MUHAMMAD[3], MUZAMMIL RIAZ MALIK[4]
[1]Consultant Nephrologist, Fauji Foundation Hospital, Lahore
[2]Registrar Nephrology, University of Lahore Teaching Hospital, Lahore
[3]Professor of Nephrology, KEMU/Mayo Hospital, Lahore
[4]Assistant Professor Nephrology, Sargodha Medical College, Sargodha
Correspondence to Dr. Bilal Rasool, Consultant Nephrologist, Fauji Foundation Hospital, Lahore

ABSTRACT

Aim: To determine the frequency of preeclampsia induced acute kidney injury in patients presenting in a tertiary care hospital.
Study design: Cross sectional study.
Study setting: Department of Nephrology, KEMU/Mayo Hospital Gynecology, Lady Atchison Hospital Lahore,
Methodology: All 180 pregnant females having acute kidney injury as per operational definition between 15 years to 50 years presenting in 3rd trimester of pregnancy for delivery were included in study after taking informed consent. Pregnant females with Blood Pressure >140/90mmHg after 20 weeks of pregnancy and laboratory investigation i.e. proteinuria were recorded. All investigations were done from laboratory of KEMU /Mayo hospital Lahore. After the diagnosis was made, the patients were treated according to the guidelines in hospital setting.
Results: In this study, out of 180 cases, 118(65.56%) were between 15-32 years of age whereas 62(34.44%) were between 33-55 years of age, mean±SD was calculated as 30.21±5.35 years, mean blood pressure of the patients was recorded as 154.27±108.15mmHg, mean serum creatinine of the patients was calculated as 4.39±0.28 mg/dl, frequency of urinary protein was recorded as 62(62.22%) while **68(**37.78%) patients had no proteinuria, frequency of preeclampsia induced AKI in pregnancy was recorded in 47(26.11%).
Conclusion: Frequency of preeclampsia induces acute kidney injury is very high and it must be diagnosed and treated appropriately in time to reduce maternal mortality and morbidity.
Keywords: Pre-eclampsia, acute kidney injury, frequency

INTRODUCTION

Pregnancy related acute kidney injury (AKI) is a serious condition[1]. There are many causes of pregnancy induced renal disorders. The most common renal problem in pregnancy is urinary tract infection and the renal disease most commonly seen in the second half of pregnancy is pre-eclampsia[2]. In acute kidney injury (AKI), there is an increase in serum creatinine of more than 0.3mg/dl, an increase in serum creatinine of more than 50% or the development of oliguria[3].

In developed countries, the incidence of pregnancy induced AKI requiring dialysis is 1 in 20,000 pregnancies[4]. Due to certain physiological changes during pregnancy, serum creatinine value falls. So for pregnant women, a creatinine value of 1mg/dl will reflect renal impairment, although it is normal in non-pregnant women[5].

The objective of the study was to determine the frequency of preeclampsia induced acute kidney injury in patients presenting in a tertiary care hospital.

METHODOLOGY

After getting permission from IRB, sample size of 180 cases is calculated with 95% confidence level, 6% margin of error, taking the expected percentage of preeclampsia induced acute kidney injury 21% Sampling technique used was non-probability consecutive sampling. Pregnant females having acute kidney injury with age 15-50 years and presenting in third trimester of pregnancy were included in the study. Pregnant females with preexisting hypertension, diabetes mellitus**,** H/O renal disorder and H/O fits at the time of delivery were excluded. All 180 pregnant females having acute kidney injury between 15-50 years presenting in 3rd trimester of pregnancy were included after taking informed consent. Pregnant females with BP>140/90mmHg after 20 weeks of pregnancy and laboratory tests i.e. proteinuria were recorded. The data was analyzed using SPSS 20.

Received on 07-05-2021
Accepted on 17-09-2021

RESULTS

The detail of results is given in tables 1,2,3,4

Table 1: The mean blood pressure

Parameters	Mean	SD
BP(mmHg)	154.3	108.15
Creatinine (mg/dl)	4.4	0.28

Table 2: Frequency of urinary protein

Urinary protein	n	%age
Yes	112	62.2
No	68	37.8
Total	180	100

Table 3: Preeclampsia induced AKI in pregnancy

Preeclampsia induced AKI	n	%age
Yes	47	26.1
No	133	73.9

Table 4: Stratification of preeclampsia induced AKI in pregnancy WRT age

Age (years)	Preeclampsia induced AKI		P value
	Yes	No	
15-32	30	88	0.77
33-55	17	45	

DISCUSSION

In our study, out of 180 cases, 118(65.56%) were between 15-32 years of age whereas 62(34.44%) were between 33-55 years of age, mean±sd was calculated as 30.21±5.35 years, mean blood pressure of the patients was recorded as 154.27±108.15mmHg, mean serum creatinine of the patients was calculated as 4.39±0.28mg/dl, frequency of urinary protein was recorded as 112(62.22%) while 68(37.78%) patients did not have any proteinuria, frequency of preeclampsia induced AKI in pregnancy was recorded in 47(26.11%).

Gopalakrishnan N and others revealed that incidence of acute kidney injury in pregnancy is 7.8% and preeclampsia is found as a cause of acute kidney injury in 21% of the cases.[6] The findings of our study are in agreement with their study. All over the world, a decline in the incidence of Pregnancy induced acute kidney injury was observed over the past 50 years.[8] The incidence reduced from 20-40% in the 1960s to <10% in the recent years. The incidence of Pregnancy induced acute kidney Injury was 1.0%–2.8% in developed nations versus 4%–26% in developing nations[7]. In the developed nations, a study done in France demonstrated a decrease in rate of Pregnancy induced acute kidney Injury from 40% to 4.5% over a 12-year period following the legalization of abortion.

A retrospective study in Canada illustrated that the incidence of obstetric acute kidney injury was elevated in both Canada and the USA. The rate of Pregnancy induced acute kidney injury in Canada increased from 1.6 per 10 000 deliveries in 2003 to 2.3 per 10 000 deliveries in 2007. Data from the USA also showed that the rate increased from 2.3-- 4.5 per 10 000 deliveries over a 10-year period between 1998 and 2008[9]. The reason for the growing rate of Pregnancy induced acute kidney Injury might be due to the increasing sensitivity of acute kidney injury diagnosis with close obstetric observation. Moreover, the incidence of dialysis required pregnancy induced acute kidney injury also declined[10].

CONCLUSION

Frequency of preeclampsia induce acute kidney injury is very high and it must be diagnosed and treated appropriately in time to reduce maternal mortality and morbidity and to improve fetal outcome.

Conflict of interest: Nil

REFERENCES

1. Mehrabadi A, Liu S, Bartholomew S et al. Hypertension disorders of pregnancy and the recent increase in obstetric renal failure in Canada: population based retrospective cohort study. BMJ 2014;349;g4731.
2. Martin A C, Brown M A. Renal complications in normal pregnancy. In:Johnson R.J, Feehaly J, Floege. Comprehensive Clinical Nephrology, 5th edition. United States of America: Elsevier saunders;2015:506-511.
3. Jefferson J A, Thurman J M, Schrier R W. Pathopysiology and etiology of acute renal injury.In:JohnsonR.J,Feehlay J Floege. Comprehensive Clinical Nephrology , 5th edition. United States of America: Elsevier saunders;2015:802.
4. Rashid H, Akram M, Malik MB. Acute renal failure in pregnancy, its causes and outcome, 1 year study at Sheikh Zayed Hospital Lahore. Annals of KEMU.2013;19(1):33-36.
5. Parakash J. The Kidney in pregnancy: A journey of these decades. India J nephrol.2012 May-jun;22(3):159:167.
6. Gopalakrishnan N, Dhnaapriya J, Muthukumar P et al. Acute kidney injury in pregnancy—a single center experience.Ren Fail.2015;37(9):1476-80.
7. Najar MS, Shah AR, Wani IA et al. Pregnancy related acute kidney injury: a single center experience from the Kashmir Valley. Indian J Nephrol 2008;18:159–61
8. Ganesan C, Maynard SE. Acute kidney injury in pregnancy: the thrombotic microangiopathies. J Nephol 2011;24:554–63
9. Bentata Y, B. Housni, A. Mimouni, A et al. Acute kidney injury related to pregnancy in developing countries: etiology and risk factors in an intensive care unit J Nephrol 2012;25:764–75
10. Lunn, J. Obedin-Maliver, C.Y. Increasing incidence of acute kidney injury: also a problem in pregnancy? Am J Kidney Dis 2015;65:650–4