EPIDEMIOLOGICAL PROFILE OF OBSTETRIC ACUTE KIDNEY INJURY- A PROSPECTIVE STUDY FROM TEACHING HOSPITAL OF EASTERN INDIA

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ABSTRACT:

OBJECTIVE(S): To study the incidence, risk factors, aetiologies, of acute kidney injury in obstetrics.

MATERIALS AND METHODS: This prospective study was conducted in 9270 deliveries including 79 cases of acute kidney injury in pregnancy at a tertiary teaching hospital of eastern India for the duration of one year. All pregnant and postpartum women attending OPD and emergency as booked and unbooked cases were included in our study. A detailed analysis of all patients regarding age group, socioeconomic status, literacy status, gravidity, refferal from other hospital, risk factors and aetiologies were recorded. Diagnostic criteria for acute kidney injury includes (a) sudden oliguria (24 hours urine output <400 ml) or anuria (b) serum creatinine level >1.5gm/dl.

RESULT: The incidence of pregnancy related acute kidney injury was 0.87%. The mean age of women was 23.23+/- 5.03 years. In our study it was seen that AKI was more common in primiparas (56.96%), in their postpartum periods (70.89%), as well as in the referred cases (84.81%) and patients following Caesarean section (51.89%). In the present study, Sepsis was the important aetiology followed by hypertensive disorders in pregnancy and postpartum haemorrhage.

KEYWORDS: PRAKI**,** incidence, risk factors, aetiologies.

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INTRODUCTION

Acute kidney injury related to pregnancy is one of the rare complication of pregnancy which endangers life defined as rapid decline in GFR over several minutes to days. Though it is mostly a preventable problem mainly due to complications during pregnancy & not due to intrinsic renal diseases but still associated with substantial maternal mortality (9-55%)[1,2] in developing countries. Recently, there is a marked fall in the incidence of pregnancy ralated AKI due to legalization of abortion leading to reduction in the septic abortions cases, which was the main cause of AKI during past decades.[3]

The diagnosis of pregnancy related acute kidney injury is based on the increase in the level of serum creatinine rather than estimating glomerular filtration rate which is not validated in this population.

Pregnancy ralated AKI can be due to various disorders such as acute tubular necrosis. It may be associated with septic abortion, hypertensive disorders in pregnancy, postpartum haemorrhage, hyperemesis gravidarum induced dehydration etc.

This present study was carried out to evaluate the incidence, risk factors & aetiologies of pregnancy related acute kidney injury, so as we can prevent AKI in obstetrics by treating the complicating factors early.

MATERIALS AND METHODS

This prospective study was conducted in the Department of Obstetrics and Gynaecology, NRS Medical College and Hospital, Kolkata. The study was carried out in 9270 deliveries including 79 cases of ARF in pregnancy for the duration of one year. The study was conducted after approval of Institutional Ethics

Comittee. All pregnant and post-partum women attending OPD and emergency as booked and unbooked cases from different districts of West Bengal and adjacent states were included in our study. A detailed history was taken and physically examined all. A detailed analysis of all patients regarding age group, socioeconomic status, literacy status, gravidity, refferal cases from other hospital, risk factors, aetiologies were recorded. Diagnostic criteria of AKI includes (a) sudden oliguria (24hours urine output<400ml) or anuria. (b) serum creatinine level >1.5mg/dl.

INCLUSION CRITERIA INCLUDES:

1. Mother with pregnancy related AKI complicated by obstetric conditions such as hypertensive disorders in pregnancy, antepartum haemorrhage, sepsis, IUFD etc.

2. Developing AKI following delivery due to post-partum hemorrhage, anaesthetic complications during Caesarean section, puerperal sepsis.

3. Septic abortion induced AKI.

EXCLUSION CRITERIA INCLUDES:

Mother with pre existing chronic renal disease or those with chronic renal failure prior to pregnancy (serum creatinine level>1.5mg/dl).

Now a prospective study was conducted to find out the incidence, risk factors, causes of AKI in these patients.

The data were tabulated, using descriptive statistics & calculating percentage for quantitative variables. Mean +/- SD were calculated for age.

RESULT

During our study period 9720 women were delivered and out of these 79 women (0.87%) were diagnosed with AKI.

The mean maternal age was 23.23 +/- 5.03 years. Most of the patients that is 32 (40.51%) out of 79 patients were between age group of 15-20years.

In our study it was seen that AKI was more common in the low socioeconomic groups (73/79, 92.44%), illiterates (68/79, 86.1%), and primiparas (45/79, 56.96%) in their post-partum period (56/79, 70.89%). It was commonly seen in referred cases (67/79, 84.81%) and patients following Caesarean sections (41/79, 51.89%).

Table 1 shows -Distribution of cases showing mode of delivery in PRAKI patients

Mode of delivery	**No. Of cases**	**Percentage (%)**
LSCS	41	51.899
VAGINAL DELIVERY	32	40.506
ABORTION	5	6.329
ECTOPIC PREGNANCY	1	1.266
TOTAL	79	100

Table 2 shows- Period when AKI developed

Period when AKI developed	**No. of Cases(n=79)**	**Percentage (%)**
ANTEPARTUM	17	21.518
POSTPARTUM	56	70.89
POST ABORTAL	5	6.327
POST ECTOPIC PREGNANCY	1	1.265

TOTAL	79	100

Table 3 shows- Case distribution according to the cause

The table below depicted that sepsis (40.51%) was the leading cause of PRAKI in our study.

Causes	**No. of cases**	**Percentage (%)**
SEPSIS	32	40.51
PPH	17	21.53
APH	2	2.53
ECLAMPSIA	10	12.66
PRE ECLAMPSIA	10	12.66
IUFD	3	3.80
DIC	2	2.53
HUS	1	1.26
ACUTE FATTY LIVER	1	1.26

ECTOPIC PREGNANCY	1	1.26
TOTAL	79	100

DISCUSSION

PRAKI still a rare critical complication of obstetrics. In our study, 79 cases among 9270 deliveries were diagnosed as acute kidney injury which is related to obstetrics with an incidence of 0.87%. Similar study was done by prakash et al & Sliva et al where the incidence rate were 0.08% and 1.78%.[4, 5] Incidence of acute kidney injury related to pregnancy is gradually decreasing from 14.5% in 1957 to 4.3% in first decades of this century. [6, 7] This is due to reduction in the cases of septic miscarriages & early intervention in the management of complicated pregnancy more successfully. [8]

The mean maternal age of our patients were 23.23 +/- 5.03 years. Most of the patients (40.5%) were of the age group 15- 20years. Though some authors have reported slightly higher mean age. [9, 10]

In our study it is seen that acute kidney injury was more common in their first pregnancy (56.96%) in their post-partum period (70.89%). It was also commonly seen in the referred cases (84.81%) and patients following Caesarean sections (51.89%). These above findings were correlated with the study done by others. [10,11] but in compare with the study which is done by Rizwan et al and Patel et al where multipara were the most of patients rather than primipara.[12,13]

In the present study, sepsis (40.51%) remains the most common cause of pregnancy related acute kidney injury (mostly puerperal sepsis) followed by hypertensive disorders in pregnancy (25.32%) and post-partum haemorrhage (21.53%). Majority of the other studies also showed sepsis as one of the most important cause of acute kidney injury in obstetrics.[10,14] Worldwide Pregnancy induced hypertension(PIH) remains as an important cause of PRAKI.[15] Hypertensive disorders in pregnancy

takes the position from hemorrhage over past two decades in southern India as an important cause of PRAKI .[10] In eastern India PIH is still the most important cause as depicted in the study earlier by Arora et al. PRARF seen in 33.80% cases is due to massive hemorrhage.[16]

CONCLUSION

PRAKI still a rare serious complication of obstetrics. It is more commonly seen in economically poor, illiterate, young primiparas in their Post-partum periods. It is mostly seen in referred cases and following Caesarean sections. Sepsis is the leading cause followed by hypertensive disorders during pregnancy and post-partum hemorrhage. Through this study we can evaluate the incidence, risk factors, aetiologies of AKI in obstetrics, so as we can prevent pregnancy related AKI by identifying & treating the complicating factors early.

ABBREVIATIONS

PRAKI- Pregnancy related acute kidney injury. AKI- Acute kidney injury, APH- Antepartum haemorrhage, PPH- Postpartum haemorrhage, HUS- Hemolytic uraemic syndrome; DIC- Disseminated intravascular coagulopathy, IUFD- Intrauterine fetal death, LSCS- Lower segment caesarean section.

Conflict of interest

We have no conflict of interest to declare.

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