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MATERNAL AND PERINATAL OUTCOME IN CASES OF OBSTETRIC ACUTE RENAL FAILURE

Gynecology

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ABSTRACT

Prospective observational study. Pregnant patients with acute renal failure were included in the study of 18 months in Department of Obstetrics and Gynecology, Civil hospital, Ahmedabad. All the data like history, examination, investigations, management studied and analyzed. Total 65 cases of acute renal failure with pregnancy studied. Majority of patients 67% were in third trimester of pregnancy, 20% patients in postpartum period. 10.7% patients had anuria on presentation, while 81.5% patients presented with oliguria and 7.6% patients had nonoliguric renal failure. 58% who had ARF had either Pre-eclampsia or Eclampsia. 23% had APH and 37% had PPH & developed ARF. Sepsis in 29.23%. 24(37%) Maternal deaths. Acute renal failure is not so uncommon to come up in obstetrics, unless treated timely it could be very lethal. Acute renal failure is associated with significant maternal and Perinatal mortality.

KEYWORDS

Obstetric Renal Failure, Acute Kidney Injury, Maternal Near Miss

INTRODUCTION

Acute Renal Failure (ARF) is defined as a sudden decrease in glomerular filtration rate which is usually reversible, over a period of several hours to days sufficient enough to result in retention of nitrogenous waste products (e.g. blood urea nitrogen and creatinine) in the body. Acute renal failure is termed Acute kidney Injury (AKI) by American Society of Nephrology (2005).

Fortunately incidence of renal failure associated with pregnancy (Obstetric AKI) has decreased substantively over past 50 years through the legalization of abortion and improvement of antenatal and obstetric care. In the recent years, the incidence of obstetric AKI has decreased in developed countries to only 1% to 2.8%.[1,2] But it is still frequent in developing countries; the incidence is around 4.2–18% [3,4,5] Obstetric hemorrhage, toxemia of pregnancy, disseminated intravascular coagulation & sepsis are the common etiological factors leading to Acute Kidney Injury of obstetric origin. Acute tubular necrosis (ATN) is the most common pathological lesion and has good prognosis as compared to other pathological lesions associated with disseminated intravascular coagulation DIC, HUS, severe eclampsia, and HELLP syndrome in which glomerular involvement is predominant. Another bad prognostic lesion seen in obstetric induced ARF is acute bilateral renal cortical necrosis (BRCN). Renal cortical necrosis is an uncommon entity and accounts for only 2% in all cases of acute renal failure.

MATERIALAND METHODS

It is a prospective analytical study. All cases of acute renal failure of obstetric origin in the duration from 1st July 2011 to 30th December 2013 admitted in Civil Hospital, B.J.Medical College, Ahmedabad which is a teaching hospital and main referral centre in western India were studied.

nclusion criteria: Acute Renal Failure due to obstetrical complication (antenatal and postnatal). Rise in serum creatinine level >0.4mg/dl in 24 hours. Baseline serum creatinine level >1.2mg/dl. Oliguria (<400cc/ 24hours)

Exclusion Criteria: Renal Disease prior to pregnancy, Elevated Blood Urea and Serum Creatinine levels prior to gestation. History of Hypertension or Diabetes Mellitus before gestation. History of Renal Stones, Renal scarring on Ultrasonography. Small size kidney.

All cases were studied and analyzed as per tabulated proforma containing socio-demographic details, history, examination, investigation and treatment details. The data was analyzed using simple proportion, rates and tables.

RESULTS

Total 65 cases of Acute renal failure of obstetric origin were identified in the duration of 18 months. Total number of deliveries in this duration was 17,261. Majority 46 patients were in age group of 21-30 yrs. 50 patients belonged to the rural area. 41 patients were multigravida. Only 11 patients were booked and 4 patients delivered at home. Demographic profile of patients is shown in Table 2.

TABLE 1: PREGNANCY STATUS AT THE TIME OF PRESENTATION

Sr.No.	Pregnancy status	No. of patients(65)	Percentage(%)
1	1st trimester	5	7.7
2.	2nd trimester	3	4.6
3.	3rd trimester	44	67.7
4	Post partum	13	20

TABLE 2: DEMOGRAPHIC DETAILS

	No. of patients (n=65)	% of patients
AGE GROUP		
≤ 20 years	11	16.9%
21-30 years	46	70.8%
31-40 years	8	12.3%
RESIDENCE		
Rural	15	23%
Urban	50	77%
PARITY		
Primigravida	24	37%
Multigravida	41	63%
ANTENATAL VISITS		
Booked	11	16.9%
At least one antenatal visit to any health centre	31	47.7%
No antenatal visit	23	35.4%
PLACE OF DELIVERY		
Home	4	7.14%
Institutional	52	92.8%

31 patients (44.61%) underwent LSCS. 14 LSCS were performed for indication of severe Preeclampsia, 5 for Eclampsia, 8 for Abruptio placenta,1 for Placenta Previa & 3 for other indications. 9 patients (13.84%) had FTVD delivery, 16 patients (24.61%) had PTVD. In 3 patients (4.61%) evacuation of products (Dilatation & Evacuation) was carried out.1 case (1.5%) had ruptured Ectopic Pregnancy which underwent laprotomy & left side partial salpingectomy.

TABLE 3: PREGNANCY OUTCOME

PREGNANCY OUTCOME	CASES*	PERCENTAGE (%)
FULL TERM VAGINAL DELIVERY	9	13.84%
PRETERM VAGINAL DELIVERY	16	24.61%
CAESAREAN SECTION	26	40%
CAESAREAN SECTION + OBSTETRIC HYSTERECTOMY	5	7.7%
EVACUATION OF PRODUCTION OF CONCEPTION	3	4.61%
LAPAROTOMY FOR ECTOPIC PREGNANCY	1	1.5%

*This makes total of 60 patients. Apart from above mentioned patients 4 patients were undelivered & 1 patient tried to abort at home with stick & she expired before any intervention could be done. Total studied patients were 65.

Out of 65 patients, 53 patients (81.53%) presented with oliguria, 7 patients (10.76%) had total anuria on presentation, while 5 patients had nonoliguric renal failure. Patients had more than one associated factors responsible for ARF. 22 patients (33.84%) had Pre-eclampsia and 16 patients (24.61%) had Eclampsia. HELLP syndrome was present in 15 patients (23%). 28 patients (43%) had Obstetric hemorrhage either Antepartum or Post partum or both. 15 patients (23%) had APH. Out of them 14 had Abruptio Placenta & 1 had Placenta Previa. 24 patients (36.92%) had PPH & developed ARF. 20 patients had Atonic PPH while 3 had traumatic PPH.1 patient had secondary PPH who presented on 40th Postpartum day.10 out of 65 patients (15.38%) had both Antepartum & Postpartum hemorrhage. 19 patients (29.23%) had sepsis. 2 of them had post-abortal sepsis. 22 patients developed DIC (33.82%) following other pathology like Abruptio placenta/IUFD/ Eclampsia/ Sepsis. 17 patients (26.15%) had intra uterine fetal death. 5 patients (7.69%) had Malaria, 1 patient (1.5%) had Dengue.

TABLE 4: FACTORS CAUSING ARF

FACTOR	NO.OF CASES	%
Pre-Eclampsia / Eclampsia (HELLP)**	38	58.46 %
Antepartum hemorrhage	15	23 %
Postpartum hemorrhage	24	36.92 %
Sepsis	19	29.23 %
Disseminated Intravascular Coagulation	22	33.84 %
Intrauterine Uterine Death	17	26.15 %
Malaria	5	7.69 %
Dengue	1	1.53 %

Deranged laboratory parameters and Ultrasound finding of kidneys are tabulated in Table 5 and 6.

TABLE 5: ABNORMAL LAB PARAMETERS

Lab Parameters	CASES	%
Hb < 10 g%	51	78
WBC > 17000	27	41
Platelets<150,000/cumm	33	50
Serum creatinine >1.3mg/dl	65	100
Serum Bilirubin >2 mg%	26	40
Altered Liver Enzymes	23	35
PT(INR) >1.5	29	44
APTT > 40	23	35
Fibrinogen <1.5g/dl	20	30
Raised FDP	23	35
Raised D-dimer	23	35

TABLE 6: ULTRASOUND KUB FINDINGS

USG KUB	Cases n=44	%
Raised cortical Echogenicity with preserved Cortico-Medullary Differentiation	21	47
Raised cortical echogenicity with loss of Cortico Medullary Differentiation	5	11
Normal USG	18	40

Out of 65 patients, 44 patients were subjected for USG KUB. In 21 patients USG KUB could not be carried out.

All patients were treated carefully keeping in mind serum electrolytes level and urine output. Ancillary aids like keeping CVP, Blood transfusion, Blood components and Antibiotics were taken. 21.53% of patients underwent Hemodialysis & 1.53% underwent peritoneal dialysis. 24 patients (36.92%) had been given Ventilatory support. 50 patients (76.92%) had to be given blood components either in form of PCV/WB/Platelets/FFP or Cryoprecipitate. Complete recovery was in 33 patients (50.76%) in form of normal urine output and normal renal function at the end of treatment. 7 patients (10.76%) patients had partial recovery, had satisfactory urine output but renal functions remains elevated (level of blood urea and serum creatinine had reduced as compared to the level while they were admitted). 25 patients (38.46%) had no Renal function recovery. 24 of them (36.92%) expired while 1 patient (1.53%) was alive but had no recovery of renal functions was dialysis dependent.

TABLE 7: MANAGEMENT MEASURES

Management measures	**Cases (%)**
Hemodialysis	14 (21.5)
Peritoneal dialysis	1 (1.5)
Blood Components	50 (76.9)
Ventilator support	24 (36.9)

TABLE 8: MATERNAL AND FETAL OUTCOME

MATERNAL OUTCOME	Cases (%)
Complete recovery	33 (50.7%)
Partial recovery	7 (10.7%)
Dialysis dependent	1 (1.5%)
Expired	24 (36.9%)
FETAL OUTCOME	
Live birth	29 (44.6%)
Still birth	27 (41.5%)
Undelivered	4 (6.15%)
Abortus	4 (6.15%)
Ectopic	1 (1.5%)
Early neonatal death	6 (20.6% of live birth)
Healthy neonate discharged home	23 (35.3%)

Out of 29 live births 20 babies (68.96%) were full term & 9 babies (31.03%) were preterm.6 babies (20.69%) died in first week of life. 27 were still born making total perinatal mortality 33 (27 + 6) out of 56 delieveries. High perinatal mortality can be explained on basis of complication of pregnancy which they had and complication of pregnancy for which patients were induced either at term or earlier to save the life of mother. A maternal mortality of 24 patients (37%) was observed in the present study. All patients who expired had mortality before they could recover their renal function and had associated infection / DIC/ hemorrhage/ Pre eclampsia / hepatic encephalopathy or multiple organ failure.

DISCUSSION

In our study 65 cases of obstetric ARF were identified in 18 months duration out of which 15 required dialysis. Total no. of deliveries in this period was 17,261. In study by Jai Prakash et al[6] 1985 50% of patients developed renal failure following abortion while 50% were due to complication of late pregnancy. In study by Chugh et al [7] in 1976,out of 72 patients 43 patients (59.7%) had developed ARF in early pregnancy and 29(40.35%) in late pregnancy. In our study ARF in first timester (7.7%) and second trimester (4.6%) is less. This can be explained on the basis that there has been increased awareness in people regarding facilities made available for MTP & free services made available nearby even in peripheral areas by Government. Toxemia of pregnancy in my study is high (58.46%) compared to Chugh et al (11.1%) and JayPrakash et al (15%). A study conducted in Canada by Mehrabadi A, et al.[8] reported that there was increasing incidence of obstetric acute kidney injury attributed to hypertensive disorders of pregnancy. According to the 2005-2006 National Family Health Survey, only 50% of pregnant women in India had at least 3 antenatal check-ups. Incomplete coverage of prenatal care could be an important underlying factor with these complications being missed in their initial stages. Maternal mortality in our study is high (36.9%). Various other studies also reported high mortality rates. Kilari SK et al.[9] reported 24.39% mortality.

CONCLUSION

Obstetric ARF is a dangerous complication of pregnancy with high morbidity and mortality. More, common in women who had not

received or received inadequate antenatal care. . Two important factors behind ARF developmenat in pregnancy are toxemia of pregnancy & obstetric hemorrhage. We can reduce the cases of ARF by detecting toxemia of pregnancy well in time & manage it. Active management of third stage of labour should be applied to prevent patients going into PPH. Timely referral is crucial in case of mishap. One patient had septic abortion following insertion of stick by quack , other patients had termination done in rural area so termination of pregnancy by qualified doctors and in proper institute and by proper method will prevent post abortal sepsis and reduce maternal mortality associated with it.

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