Original Article

Outcome and Causes of Acute Renal Failure in Women during Peripartum Period

Shazia Awan, Saira Dars, Saima Junejo, Shazia Rani, Raheel Sikandar

ABSTRACT

OBJECTIVE: To find the causes of occurrence and outcome of acute renal failure in women during peripartum period.

METHODOLOGY: This prospective study was conducted in department of Gynae & Obsts. in collaboration with urology department at Liaquat University of Medical & Health Sciences Jamshoro from February 2015 to January 2017. Sample size was 90, overwhelming patients coming from peripheral area. Data was analyzed in SPSS version 21.0. Mean and standard deviation for quantitative variables such as age, gravidity & parity, frequency and percentages were calculated for qualitative variables; pre-eclampsia, eclampsia, hemolysis, post and antepartum hemorrhages, high liver enzymes, puerperal sepsis, low platelets, disseminated intravascular coagulation and outcomes like complete, partial and non-recovery. T-test was applied to evaluate the causes and outcomes. P value (P < 0.05) was considered as significant.

RESULTS: Causes of 90 patients, which includes pre-eclampsia, eclampsia 11(12.22%), Postpartum hemorrhage 9(10%), Ante-partum hemorrhage 10(11.11%), 27 (30%) Hemorrhage, HELLP Syndrome 3 (3.33%), purpeural sepsis and disseminated intravascular coagulation 7(7.77%), Ruptured Uterus 4 (4.44%), hemolysis, elevated liver enzyme and Low Platelets Syndrome 5(5.55%), disseminated intravascular coagulation 4(4.44%), Dehydration 4(4.44%) and Obstructed Labor 6(6.66%).

Outcome of acute renal failure in women during peripartum period, includes maternal outcome, delayed complete recovery, partial recovery, non-recovery, referred for dialysis.

CONCLUSION: We concluded that the frequently causes were peripartum haemorrhage, eclampsia pre-eclampsia, puerperal sepsis and these sources were risk factors to increase morbidity and mortality.

KEY WORDS: Acute renal failure, Women, Peripartum period.

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INTRODUCTION

Acute renal failure during Peripartum period in Pregnancy is a life threatening yet atypical medical concern. The research has proved that pregnancy itself can be prone to acute renal failure indifferent to this aspect that the mother was healthy and did not have any kind of kidney disease prior to pregnancy[1]. When compared with ordinary pregnancy conditions with non - pregnant ones that experience of occurrence noticeable adjusted physiological and structural changes in women physic. These natural physiological adaptabilities influence kidney working and seldom result in renal failure[2,3]. The pathological results and reflections also represent variations in kidney function, ABB and BFs[4-6]. The interpretation and understanding of these changes in pathological results and physiological adaptabilities are essential to evaluate kidney disease to treat these women and proper management[7]. Generally, Acute Renal Failure during peripartum period falls in various categories such as septic abortion, nausea prerenal uremia, tubular necrosis, renal cortical necrosis and pyelonephritis. Preeclampsia, acute fatty liver, hemolytic uremic, sepsis and anterpartum hemorrhage, intrapartum or postpartum hemorrhage are cause of ARF as major syndrome[8]. Acute renal failure in pregnancy is a very serious problem during pregnancy in peripartum period and outcome were recorded in terms of their complete recovery, partial recovery and non-recovery according to various causes.

METHODOLOGY

This prospective study was conducted in department of Gynae & Obsts. in collaboration with urology department at Liaquat University of Medical & Health Sciences Jamshoro from February 2015 to January 2017. Sample size was 90, overwhelming patients coming from peripheral area.

The sample calculation was done by using the Rao-soft software of “Sample size calculation” by using the proportion (frequency of etiology of ARF are

puerperal sepsis 13 (28%), Postpartum hemorrhage 17 (38.1%), Antepartum hemorrhage 9 (19.5%), Eclampsia pre-eclampsia, hemolysis, raised liver enzymes, low platelets 6 (12.7%) and Disseminated intravascular coagulation 5 (10.3%) with 93% confidential interval and margin of error 5%, the sample size standpoints to be N=90. In this study, all peri-partum (one week pre-partum intra-partum one week postpartum) females with acute renal failure were included. Peripartum women with chronic renal disease, chronic hypertension, diabetes mellitus and renal stones were excluded this study. Investigations included complete blood count, (Diethylene Triamine Pentacaetic Acid) renal scan; Farenal biopsies were performed in selected cases where recovery was delayed for more than three weeks.

A fact sheet was chalked out containing age, gravidity & parity with following references: (A) Oligoruia = <400 ml/day, (B) ARF = raised serum creatinine up to 1.5 mg/dl, (C) Recovery = (Duration) when patient renal function comes to normal, (D) Partial recover = when patient serum creatinine was less than 2 mg/dl and there was no need of dialysis, (E) Irreversible renal failure = when patient remained on dialysis. Frequency and percentages were calculated for qualitative variables; puerperal sepsis, post and antepartum hemorrhage, pre-eclampsia eclampsia, hemolysis, high liver enzymes, low platelets, disseminated intravascular coagulation and outcomes such as complete, partial and non-recovery. Causes and outcomes were controlled by using T-test and P <0.05. Data was analyzed by using SPSS version 16. Mean and standard deviation were calculated for quantitative variables like age, gravidity and parity. Frequency and percentages were computed for qualitative variables like Puerperal sepsis, Postpartum haemorrhage, Antepartum haemorrhage, Eclampsia, pre-clampsia, haemolysis elevated liver enzymes, low platelets, disseminated intravascular coagulation and outcome like complete, partial and non- recovery. Effect modifier like etiological factors and out comes were controlled by stratification using T- Test <0.05 was taken as noticeable.

RESULTS

We found the demographic summary of patients and control cases (N=90). Patients age mean±SD 36.27±4.29 with control cases was 22.77±2.5, systolic blood pressure 177.55±13.62 with control 134.79±12.29, diastolic blood pressure 109.18±8.12 with control 83.38±5.33 and mean blood pressure 131.97±9.38 with control 103.85±6.56. P value was <0.001 in Table I.

The causes of patients are exposed in Table II, which includes 27 (30%) Hemorrhage, Postpartum hemorrhage 9(10%), Ante-partum hemorrhage 10 (11.11%), HELLP Syndrome 3 (3.33%), Eclampsia, pre-eclampsia 11(12.22%), Sepsis and disseminated intravascular coagulation7(7.77%), Ruptured Uterus 4 (4.44%), Hemolysis, elevated liver enzyme and low platelets syndrome 5(5.55%), disseminated intravascular coagulation 4(4.44%), dehydration 4 (4.44%) and obstructed labour 6(6.66%).

In Figure III shows outcome of acute renal failure in women during peripartum period, includes maternal outcome, maternal complete recovery is delay, partial recovery, non- recover and referral for dialysis.

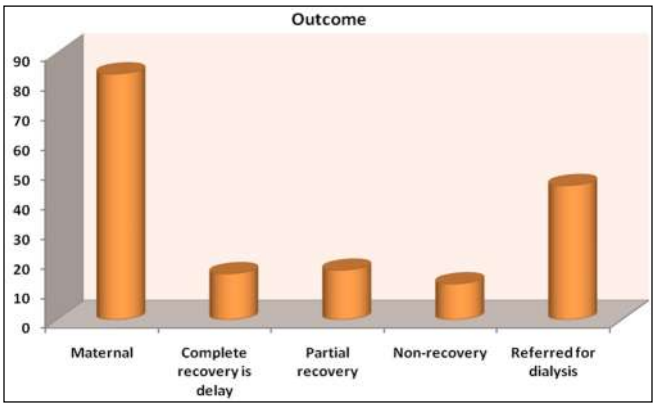
TABLE I: PROFILE OF PATIENTS AND CONTROLS CASES (n=90)

Variable	Patients Mean SD	Controls Mean SD	P value
Age	37.28±3.30	22.66±3.5	<0.001
Systolic Blood Pressure	177.66±14.53	134.69±13.15	<0.001
Diastolic Blood Pressure	109.17±7.14	83.29±6.66	<0.001
Mean Blood Pressure	131.96± 8.38	103.79±7.00	<0.001

TABLE II: ETIOLOGICAL FACTORS RELATED TO ARF (n=90)

Etiological factor	No. of Patients	Percentage
Hemorrhage	27	30
Postpartum hemorrhage	09	10
Ante-partum hemorrhage	10	11.11
HELLP Syndrome	03	3.33
Eclampsia pre-eclampsia	11	12.22
Sepsis and disseminated intravascular coagulation	07	7.77
Ruptured Uterus	04	4.44
Hemolysis, increased liver enzyme, low platelets syndrome	05	5.55
DIC	04	4.44
Dehydration	04	4.44
Obstructed Labor	06	6.66

FIGURE III: OUTCOME OF ACUTE RENAL FAILURE IN WOMEN DURING PERIPARTUM PERIOD



DISCUSSION

Postpartum haemorrhage, abruption placenta and preeclampsia–eclampsia, are general reasons of ARF during late pregnancy & postpartum period[9,10]. Hassan I 2009[11] stated that the incidence of reasons of ARF are puerperal sepsis 12(27.9%), postpartum haemorrhage 16(37.2%), antepartum haemorrhage 8 (18.6%), eclampsia pre-eclampsia, hemolysis high liver enzymes low platelets 5(11.6%) and distributed intravascular coagulation 4(9.3%).

Parkash J[12] 1996 stated that it is elevated in developing countries such as India and it is up to 24%. Ramzan M 2004[13] observed 13%, and Ali A 2004[14] noted 7 - 10% in Pakistan. Preeclampsia eclampsia was also documented as the reason of ARF in women during peripartum period in 70% of cases[15]. We observed that the pre-eclampsia and eclampsia also a reason for ARF 11 (12.22%). PPH 09(10%) and ante partum haemorrhage 10(11.11%) were responsible for ARF. Parkash J et al[16] was of the opinion based on his experience and research that APH constitutes 17% of post renal acute kidney injuries (PRAKI). Ansari MR 2008[17], stated that the PPH (38%) occurred the leading reason of PRAKI 38% and dialysis advised in 23 (47%) and also observed that puerperal sepsis is one of the cause contributing to acute renal failure[18]. WHO in 2007 reported that the puerperal sepsis was 31% of acute renal failure during pregnancy[19] and also reported by Parkash J et al[16] that 29% was found puerperal sepsis. Mcllroy DR 2010[20] stated that 54.28% and 12.85% patients found full & limited revival of their renal function. In other study, complete recovery was observed in 51.22% and partial, that is, dialysis independent, in 9.76% patients[21].

CONCLUSION

We concluded that the frequently causes were peripartum haemorrhage, eclampsia pre-eclampsia and puerperal sepsis and these sources are risk factors to increase morbidity and mortality.

Improved socioeconomic status, quality obstetric services which include early booking, proper antenatal care, early referral and proper documentation can minimize the effect of maternal outcome.

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