ORIGINAL ARTICLE

# OBSTETRICAL ACUTE RENAL FAILURE: A CHALLENGING MEDICAL COMPLICATION

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**Background:** Acute renal failure (ARF) is a syndrome characterised by rapid decline in glomerular filtration rate and retention of nitrogenous waste products such as urea and creatinine. The objective of this study was to study the prevalence, risk and outcome of women with obstetrical renal failure. **Methods:** This observational study was conducted in Department of Obstetrics and Gynaecology, Liaquat University Hospital, Hyderabad, Pakistan from October 2009 to September 2010. Thirty-five patients with obstetrical acute renal failure were included in the study, patients with chronic renal diseases, hypertension, diabetes mellitus and renal stones were excluded from the study. A detailed history was followed by thorough examination and investigation. Their clinical history, physical examination and intake/urine output was recorded. Routine laboratory investigations were done related to each case and specialised investigations like renal scan, renal ultrasonography and renal biopsies were performed in selected cases where recovery was delayed for more than 3 weeks. **Results:** Total numbers of admissions in obstetric ward were 3,285. Pregnancy related acute renal failure was found in 35 (1.065%) women. Age ranged from 18–40 years. Most of the women belonged to age group 30–35. Out of 35 women 31.42% had postpartum haemorrhage. Ante partum haemorrhage was found in 25.71%, Eclampsia in 17.14%, DIC in 14.28%, and sepsis in 11.42%. Anuria was observed in 25 patients, remaining presented with oliguria (28.57%). Haemodialysis was done in 75% of patients, others were managed conservatively. Complete recovery was observed in 53% cases. Maternal mortality was 25.71% and foetal mortality was 22.85%. **Conclusion:** Pregnancy related ARF is one of the most common causes of ARF, it is a dangerous complication of pregnancy which carries very high mortality and morbidity.

**Keywords:** acute renal failure, prevalence, outcome, complications, maternal, foetal, obstetrical

## INTRODUCTION

Acute renal failure is a challenging entity; its incidence varies from 100–600 million per year.[1] Acute renal failure is a syndrome characterised by rapid decline in glomerular filtration rate and retention of nitrogenous waste products such as blood urea nitrogen and creatinine.[2,3] In pregnancy it can occur during antenatal or postnatal periods. The important causes of obstetric acute renal failure are divided into causes in early pregnancy which include septic abortion leading to septic shock and causes in late pregnancy and immediate puerperum are ante partum haemorrhage, postpartum haemorrhage, pre-eclampsia, eclampsia, Haemolytic Uraemic Syndrome (HUS), puerperal sepsis and HELLP syndrome.[4–6] The prognosis of pregnancy induced HUS, HELLP syndrome and severe form of eclampsia is not good.[4] Another bad prognostic lesion seen in obstetric induced acute renal failure is acute bilateral renal cortical necrosis. It is rarely seen in industrialised nations but it is still very high in developing countries, in India it is about 24%.[7] In Pakistan it is 13% reported by Ramzan *et al*[8], and 7–10% reported by Ali A. Zafar[9]. It is frequently seen after acute ante partum haemorrhage and prolonged retention of dead foetus.[10] Ideal medical care of these patients needs multidisciplinary approach considering maternal and foetal complication and timely involvement.

The aim of this study was to find out the prevalence and outcome of pregnancy related acute renal failure.

## MATERIAL AND METHODS

This observational hospital based study was conducted from October 2009 to September 2010 in Department of Obstetrics & Gynaecology, Liaquat University Hospital, Jamshoro. All obstetrical patients with acute renal failure were included in the study. Patients with chronic renal disease, chronic hypertension, diabetes mellitus and renal stones were excluded from the study. Detailed history was taken and physical examination was carried out. Investigations included baseline investigations, urinalysis, blood urea nitrogen, serum creatinine, serum electrolytes, coagulation profile, ultrasound abdomen and pelvis and liver function tests. In patients with septicaemia blood culture and high vaginal swabs were taken. Moreover, 24-hour urinary protein was estimated in patients with eclampsia and pre-eclampsia. Specialised investigation like DTPA renal scan, renal biopsies were performed in selected cases where recovery was delayed for more than three weeks. Recovery from acute renal failure was declared when renal function returned to normal range. Partial recovery due to patchy cortical necrosis was suspected when renal function showed improvement but did not return

to normal even after 12 weeks. Due to lack of facility renal angiography could not be done. Patients were managed in collaboration with nephrologists. Women with obstetrical acute renal failure were shifted to Nephrology ward. Conservative treatment included management of fluids, electrolytes, blood transfusion and antibiotics. Haemodialysis was done when indicated. Data was analysed using SPSS-16.

## RESULTS

Total number of admission in obstetric ward was 3,285. Out of them pregnancy related acute renal failure was found in 35 (1.065%) women. Age ranged from 18 to 40 years. Most of the women belonged to the age group 30–35%. Most (62.85%) were grand multipara, majority belonged to rural areas of Sindh with no antenatal care, and were attended by traditional birth attendants. Out of 35 women 31.42% had postpartum haemorrhage. Ante partum haemorrhage was found in 25.71%, eclampsia in 17.14%, DIC in 14.28%, and sepsis in 11.42%.

**Table-1: Distribution according to aetiology (n=35)**

| Aetiology | No. | % |
|---|---|---|
| Postpartum haemorrhage | 11 | 31.42 |
| Ante partum haemorrhage | 9 | 25.71 |
| Eclampsia | 6 | 17.14 |
| DIC | 5 | 14.28 |
| Sepsis | 4 | 11.42 |

Anuria was observed in 25 patients, remaining presented with oliguria (28.57%). The commonest cause of acute renal failure was blood loss due to APH and PPH. Eclampsia was also a common cause in order of frequency. Percutaneous renal biopsy was done in 5 cases. The most common clinical diagnosis was acute tubular necrosis (60%). Haemodialysis was done in 75% of cases.

Complete recovery was defined as return of renal functions to normal, it was found in 20 patients (57.14%). Partial recovery was defined as patients with impaired renal function but not requiring dialysis, it was found in 10 patients (28.57%). End stage renal disease was defined as patients with impaired renal function for more than 3 months and requiring dialysis, it was found in 5 patients (14.28%). Maternal mortality was 25.71% and foetal mortality was 22.85%.

## DISCUSSION

Renal failure in pregnancy presents particular challenges in that it occurs in a system, physiologically altered from baseline and can occur due to disease processes that are specific to pregnancy and as yet incompletely understood. It is crucial for physicians caring for these patients to have a broad knowledge of physiologic alterations in the renal system in pregnancy, to apply the best evidence based diagnostic and therapeutic strategies for these disease processes and to consider both maternal and foetal effects of disease and therapy.[2] The frequency of obstetric acute renal failure was 1.065%. Although incidence of obstetric acute renal failure has decreased in developed countries but still it is one of the major health problem of developing regions. The aetiology of obstetrical acute renal failure has also changed over the last few decades. Abortion was the cause of obstetrical acute renal failure in late seventies.[11]

The proportion of acute renal failures secondary to septic abortion has decreased from 33.3 to 1.8% over past 20 years.[12] Obstetric haemorrhage was found as the major cause of acute renal failure in this study, similar observation was also found in the study by Muhammad Abdul Mabood Khalil *et al*, Ali, and Naqvi *et al*.[1,13,14] This study was in contrast to the study done by Ansari *et al* in which obstetric haemorrhage was present in 38% of cases.[15]

We found DIC in 14.28% of cases, this was in contrast to be observation found in the study conducted by Khalil *et al*[1] where DIC was found in 31% of cases. Eclampsia was found in 12.23% of cases in other studies.[16,17] Acute renal failure due to obstetric haemorrhages is rare in developed countries due to good antenatal care. Sepsis was found in 11.42% of cases, this observation was similar to the observation made by Ansari *et al*[4], but this was in contrast to observation by Khalil *et al*.[1]

Most of the patients belonged to rural area of Sindh who had not received any kind of antenatal care. Only one patient belonged to urban area, similar observation was noted by Asnari *et al*.[4] Majority (75%) of the patients required haemodialysis while the rest were treated conservatively. Similar results were found in studies conducted by Hachim *et al*[18] and Ansari *et al*[4].

Maternal mortality was 25.71% in this study. Similar increased maternal mortality was found in the study done by Ansari *et al*[4] in which it was 24% various other studies have reported low maternal mortality, Hachim *at al*, Ventura *et al*, and Renderee *et al* reported maternal death in 9.1%, 2% and 5% of cases respectively.[1,17–19] Foetal loss rate was 22.85% in contrast to the study conducted by Khalil *et al*[1] in which it was 66.66%. Obstetric acute renal failure is still an epidemic in the developing countries.[20,21] This can be prevented by good antenatal care and provision of health facilities.

## CONCLUSION

Pregnancy related ARF is one of the most common causes of ARF, it is a dangerous complication of pregnancy which carries very high mortality and morbidity.

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