

Incidence of Obstetric Acute Renal Failure (ARF) at Tertiary Referral Centre in Central Maharashtra Region

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Abstract: *Incidence in Acute Renal Failure (ARF) remains impressively high despite diagnostic and therapeutic advances made in the field of obstetric care. Previous studies of incidence in obstetric ARF have analyzed the influence of demographic factors, severity of ARF, nature of diseases causing ARF, coexisting diseases, treatment received and complications. All Previous studies are from metropolitan cities of India. Hence cases of obstetric ARF were studied at tertiary health centre in rural area of Central Maharashtra region.*

Keywords: Acute Renal Failure, Obstetric ARF.

1. Introduction

Acute kidney injury (AKI), previously known as acute renal failure (ARF), is characterized by the sudden derangement of renal function resulting in the retention of nitrogenous waste products normally cleared by the kidneys¹.

Pregnancy-related acute kidney injury (PR-AKI) term is often used synonymously with Obstetric ARF. The diagnosis of obstetric ARF is based on the increase in serum creatinine from baseline value. The formula for estimating glomerular filtration rate (GFR) is not validated in obstetric population². As in the non-pregnant population, obstetric ARF can be of pre-renal, intrinsic renal or post-renal in origin. Major causes of pre-renal ARF include hyperemesis gravidarum and uterine haemorrhage (Ante-partum or Post-partum haemorrhage). Intrinsic renal etiologies include acute pyelonephritis, septic abortions and acute tubular necrosis (ATN)³. During the first trimester of pregnancy, ARF develops most often due to hyper-emesis gravidarum or septic abortion. In the third trimester, common causes of obstetric ARF are pre-eclampsia, HELLP syndrome, acute fatty liver of pregnancy (AFLP) and thrombotic microangiopathies^{2,4,11}.

The pattern and incidence of ARF of obstetric origin varies widely among developed and developing countries, different ethnic populations and socioeconomic groups. Liberal attitude towards legalized abortion in the developed countries have presumably led to marked reduction in incidence of ARF, however the incidence in the developing countries with poor socioeconomic conditions and limited medical facilities remains high. Thrombotic microangiopathies (TMAs) are common in the developed world while septic abortion and puerperal sepsis are more common in the developing world^{5,11}.

In India, a steady decline is observed in the incidence of obstetric ARF from 22% before year 1980 to less than 9% in the last decade, however the problem still exists⁶. N

Chaudhary et al report it to be 7% of all causes of ARF⁷. AIIMS study⁶ shows it to be 17.46%.

ARF in pregnancy has bimodal distribution with one peak in late first trimester (due to septic abortions) and another during the last trimester (due to Abruptio placenta, eclampsia, puerperal sepsis and post-partum haemorrhage)⁸

Study by Sharma AK et al showed puerperal sepsis as a major cause of obstetric ARF (43.90%)⁹. Study by Godara SM and Kute VB et al showed puerperal sepsis as a most common etiological factor for obstetric ARF. Prolonged oliguria or anuria was bad prognostic factor. Sepsis, thrombocytopenia, disseminated intra-vascular coagulation (DIC) and liver involvement were associated with increased mortality¹⁰.

| Causes | No. of patients (AIIMS Study ⁶) | No. of patients (K.S. Chugh Study ⁸) |
|-------------------------|---|--|
| Septic abortion | 43 | 198 |
| Eclampsia | 08 | 58 |
| Antepartum haemorrhage | 05 | 22 |
| Post partum haemorrhage | 07 | 47 |
| Puerperal sepsis | 09 | 51 |

Timely identification of "at-risk" patients of obstetric ARF and treatment of the underlying cause such as sepsis, pre-eclampsia, and thrombotic micro-angiopathies remains the gold standard care. Option of renal replacement therapy (RRT) such as modality, optimal prescription, and timing of initiation in obstetric ARF remain unclear⁵.

2. Observations

The present study comprises of 51 patients of obstetric ARF studied during the period of October 2014 to November 2015. All the previous studies are from different demographic regions. Hence cases of obstetric ARF were studied at Tertiary Health Centre in Central Maharashtra region in P.D.V.V.P.F's Medical College and Hospital,

Ahmednagar to study the incidence of various causes of obstetric ARF. A detailed history was taken followed by thorough physical examination, urine intake-output charting and relevant investigations were taken into account.

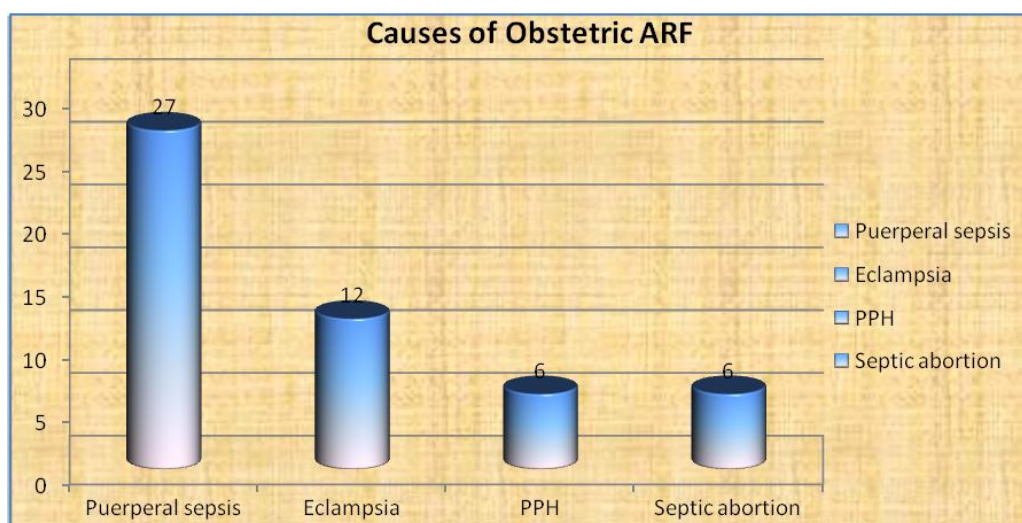
Patients with Chronic Kidney Disease (CKD), Obstructive nephropathy, Diabetic nephropathy and Hypertensive nephropathy were excluded from the study.

Total no. Of admissions in obstetric ward were 4286. Out of which 51 patients (1.18%) developed obstetric ARF. Age of the patients ranged from 19-38 years.

| Etiology | Survival | Mortality | Total Patients | Percentage Mortality |
|------------------|------------|------------|----------------|----------------------|
| Puerperal sepsis | 18(66.66%) | 9(33.33%) | 27(52.94%) | 33.33% |
| Eclampsia | 12(100%) | 0(0%) | 12(23.52%) | 0% |
| PPH | 3(50%) | 3(50%) | 6(11.76%) | 50% |
| Abortion | 6(100%) | 0(0%) | 6(11.76%) | 0% |
| Total | 39(76.47%) | 12(23.52%) | 51(100%) | 23.52% |

(Chi square =3.1207) p > 0.05 (non-significant)

Puerperal sepsis was the major cause of Obstetric AKI (52.94%). Among obstetric causes maximum mortality was seen in PPH (50%). But the difference in mortality among various causes of obstetric AKI was statistically non-significant. Majority of patients were managed by conservative care. Five patients (9.61%) required hemodialysis. Overall mortality in obstetric AKI was 23.52%.



3. Conclusion

Obstetric ARF is one of the common cause of ARF in developing countries and is associated with poor maternal and fetal outcome if not detected and treated in time. Puerperal sepsis remains the major cause of Obstetric ARF in developing countries like India. An understanding of the common etiologies of obstetric ARF is the key to the proper clinical management as well as prevention of adverse maternal and fetal mortality.

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