

OBSTETRICAL ACUTE RENAL FAILURE FROM FRONTIER PROVINCE: A 3 YEARS PROSPECTIVE STUDY

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ABSTRACT

Objective: To evaluate the etiology, complications, causes of death, fetal outcome, management strategies and prognosis of the patients with obstetrical acute renal failure.

Material and Methods: This is a prospective 3 years study at a tertiary care hospital of patients suffering from acute renal failure of obstetrical origin at Department of Nephrology, Lady Reading Hospital, Peshawar from 1998 to 2000. The patients were followed-up 1 year as an outpatient following hospital discharge.

Results: Acute Renal Failure (ARF) constitute 16-20% of our total admissions out of which obstetrical ARF amounts from 07-10%. Postpartum Hemorrhage (PPH) constituting 35%, septicemia 24%, combine Antepartum Hemorrhage (APH) PPH with eclampsia 20%, APH (pure) 08%, severe eclampsia 03%. The mean age was 29.6 years, which 55% multiparas and 45% grand multiparous. 25% of the patients had the major surgical procedures either caesarian section (C-sec) or hysterectomy. 06% had septic abortion. 62% have normal vaginal delivery. 62% required hemodialysis (HD), 14% were offered peritoneal dialysis (PD), 03% received both, 21% were managed conservatively. The overall mortality was 18%.

Conclusion: Obstetrical acute renal failure has high mortality. It's a common cause of morbidity and mortality. In addition to Acute Tubular Necrosis (ATN) as a leading cause of reversible ARF, cortical necrosis contribute significantly to the permanent loss kidney functions and adds to co-morbidity².

Key words: ARF, Obstetrical patients, Peritoneal dialysis, Haemodialysis.

INTRODUCTION

Overall survival rate of ARF still not exceed more than 50%⁴. However obstetrical acute renal failure in 3rd world countries like Pakistan present amore complex problem rather than ARIFE (Acute reversible intrinsic renal failure), acute renal failure constitutes a significant %age of our annual admissions.

Ignorance, poverty, delayed referral, grand multi-parity and lack of medical infrastructure are major contributory factors to our higher mortality and morbidity^{5,6}.

Higher incidence of cortical necrosis has been reported with pregnancy related acute renal failure. (23.8%)⁷. In our study out of 10 patients, who had kidney biopsy, 5 had cortical necrosis. This group of patients had 50% mortality i.e. half of those requiring kidney biopsy eventually died.

Here we present a 3 years prospective study of all obstetrical renal failure patients admitted to our department during 03 years duration.

Patients were referred either from A/E Department, Gynae Department or other DHQ hospitals. 51% of the patients were admitted as an emergency from the Casualty Department, where 26% were referred from other wards and 17% from Nephrology OPD. Patients were accepted from all the peripheral DHQ hospitals as well as neighboring countries Afghanistan (see Fig. 2).

Oliguria and Anuria were the main presenting symptoms, where as 30% presented with high grade fever. The patterns of presentation were closely related to mode of delivery, location of the patient as well as operating intervention. 40% of patients had a live baby to take home. However, the study shows the high fetal loss of 45% including 20% still births, which is rather disastrous result.

MATERIAL AND METHODS

The study was undertaken to evaluate how common is acute obstetrical renal failure in our Nephrological practice. What is the etiology and common cause of death, to analyze the complications and co-morbid conditions, also to look in to the survival of the patients with renal replacement therapy.

Exclusion Criteria

1. Known renal disease (renal insufficiency from any cause, GN etc).
2. History of hypertension, diabetes before gestation.
3. History of NSAID abuse or analgesic nephropathy.
4. Previous urological surgery.
5. History of renal stone.
6. History of reflux nephropathy.
7. Renal scaring shown on ultrasound.
8. Smaller size kidney for age and size.

DATA FROM THE DEPARTMENT OF NEPHROLOGY, PGMI, LADY READING HOSPITAL, PESHAWAR. TOTAL ADMISSIONS (1998-2000)

SESSION	ADMISSIONS
Year 1998	1985
• ARF Cases	361 (18.1%)
• Medical	217 (60.1%)
• Obstetrical	27 (07.4%)
• Surgical	117 (32.4%)
Year 1999	2018
• ARF Cases	322 (16.0%)
• Medical	200 (62.1%)
• Obstetrical	32 (09.9%)
• Surgical	90 (28.0%)
Year 2000	2266
• ARF Cases	453 (20.0%)
• Medical	247 (54.5%)
• Obstetrical	41 (09.0%)
• Surgical	117 (36.4%)

TABLE - 1

ARF SPECIFIC IN PREGNANCY	
A.	ARF early in Pregnancy
i.	Septic abortion
ii.	Hyperemesis gravidarum
B.	ARF late in Pregnancy
i.	Severe pre-eclampsia and eclampsia
ii.	Acute fatty liver in pregnancy
iii.	Abrupto placentae
iv.	Prolonged intrauterine fetal death
v.	Severe uterine hemorrhage
vi.	Amniotic fluid embolism
vii.	Obstruction by gravid uterus
viii.	Intra-amniotic saline administration
ix.	Late vomiting pregnancy
C.	Idiopathic postpartum ARF
ARF DUE TO FACTORS NOT SPECIFIC TO PREGNANCY	
A.	Prerenal azotemia
B.	Sepsis
i.	Acute polynephritis
ii.	Septicemia
C.	Renal calculi
D.	Postoperative ARF
ARF COINCIDENTAL TO PREGNANCY	
A.	Drug induced ARF
B.	Incompatible blood transfusion
C.	Acute glomerulonephritis
D.	Collagen disease
E.	Bacterial endocarditis
F.	Renal vein thrombosis

TABLE - 2

9. Any elevated urea, creatinine shown prior to gestation.

End Points

Patient discharged live from the hospital with good urinary output and being dialysis independent. Good urinary output (urinary volume between 800-1.2 litre with no evidence of fluid overload.

All patients with acute renal failure of obstetrical origin were included in the study. Problems specifically related to preg-

ARF as %age of Total Admission (1998-2000)

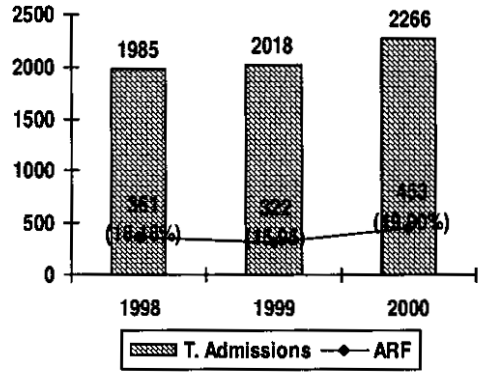


Fig. 1

nancy as cause of ARF were taken as etiology.

Each patient was fully examined including a detail history, physical examination, urinary output, BP etc. and a careful note was made of all physical signs.

Specific inquiry were made as to mode of delivery, need for blood transfusion, operating intervention, fetal outcome. Records were maintained as patient specific sheets and completed. There was no blinding of study. Method of renal replacement therapy and frequency of dialysis were recorded in separate sheets. All the patients

Area-wise distribution of patients (n = 100).

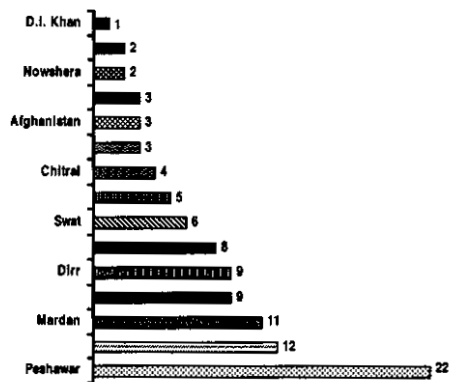


Fig. 2

REASONS FOR FEMORAL

- Severely acidotic patients
- Severe pulmonary edema
- Bleeding / coagulation abnormalities
- Failed subclavian
- Arterial puncture atsubclavian

TABLE - 3

had, on admission a baseline FBC, urea and creatinine, electrolytes, liver and bone profile, ultrasound abdomen and renal tract, hepatitis screening and coagulation profile.

For hemodialysis, acute vascular access was obtained either by subclavian or femoral route. Complications of HD/PD were recorded in a separate sheet and were not added to patient data. Discharge from hospital alive being dialysis independent and urinary output in non oliguric range were end points.

Patients still requiring dialysis and oliguric (urinary output less than 400ml) were biopsied by end of 4th week. Patients too ill to be a candidate for hemodialysis on account of poor hemodynamic status, coagulopathies, on ventilators were offered PD.

RESULTS

100 cases of obstetrics acute renal failure were analyzed over a 3 years period. This represents 07-10% of our acute obstet-

Etiology of Acute Obstetrical Renal Failure (n = 100)

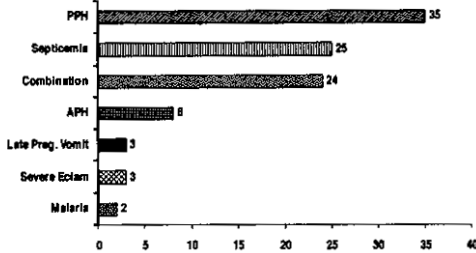


Fig. 3

Fetal outcome (n = 100)

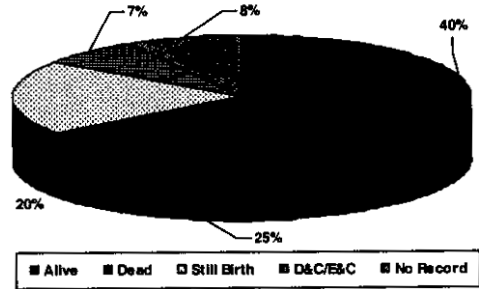


Fig. 4

rical renal failure cases. Overall ARF constitute 16-20% of our total annual admissions. The overall mortality was 18% with 82% patients going home being dialysis independent.

PPH represented the highest %age of the patients having obstetrical related etiology. This along with septicemia, APH, PPH and eclampsia combined constitute 79% of our total etiology (see Fig. 3).

Etiology of Acute Obstetrical Renal Failure (n = 100).

The mean age of the patient was 29.6 years, where the eldest was of 55 years of age. Our results shows 45% fetal loss including 20% still births. Whereas no record was available about 08% of the fetus. Overall

Mode of Renal Replacement Therapy (n = 100)

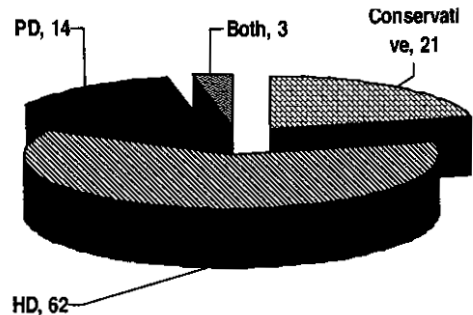


Fig. 5

Hemodialysis vs. Peritoneal dialysis Survival (p = <0.05)

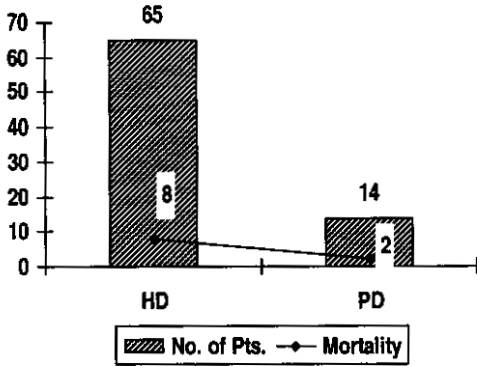


Fig. 6

40% of the patients were able to take live baby home (see Fig. 4).

62% of the cases required renal replacement therapy, whereas 21% were managed conservatively (see Fig. 5).

Kidney biopsy was performed only in 10 cases. The etiological diagnosis is depicted in Fig. 6.

49% Of the cases required dialysis for week only, whereas 15.38% needed dialysis of 05-06 weeks period. Duration of hemodialysis is shown in Fig. 7.

Highest mortality was seen in septicemia and patients with HELLP Syndrome⁹.

DISCUSSION

This is the 1st large scale study from our province to highlight nephrological related acute obstetrical complications.

A no. of conditions specific to pregnancy can cause acute renal failure:

The spectrum & pattern of obstetrical acute renal failure in our country and sub-continent differ widely from West^{1,8}. Where as septic abortion were a leading cause of ARF in 3rd world country it is for less common in our province accounting for only 06% for our ARF.

Histological Diagnosis (n = 10/100)

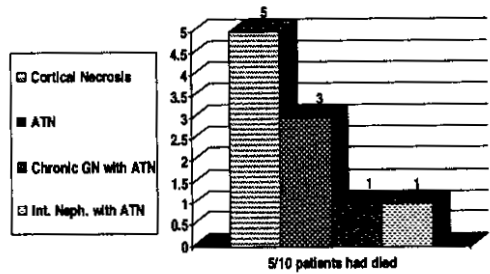


Fig. 7

PPH was leading cause of ARF in our study. Most of these patients were delivered at home, which assistance of traditional births attendant (TBA). Majority of these were grand-multiparous with low Hbs. The TBAs has no or little training in management of these cases and certainly there are no facilities to manage blood loss, get IV access etc. Not surprisingly 50% of our patients referred from periphery required blood transfusions. Varying from 1-6 points. This was over and above what they required in term of volume expansion at local hospital, dispensary. Severe eclampsia was not the leading cause of RF in our study. Perhaps very few of these patients survive to develop ARF and come to attention. The severe eclampsia patient seen had in variably HELLP syndromes with high mortality.

16% of our patients had hypertension and most it was related to oligo-anuria, fluid overload & PET^{19,20}. APH was the main indication for C section, whereas PPH was the leading precipitating factor for total

Duration of Hemodialysis (n = 65)

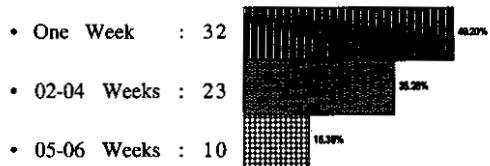


Fig. 8

Causes of Death (n = 18/100)

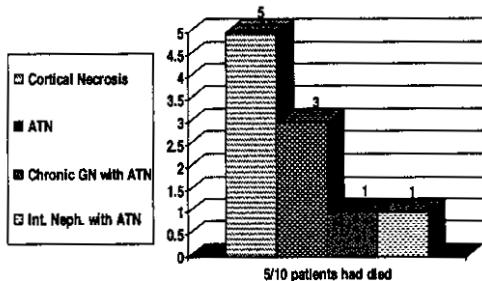


Fig. 9

abdominal Hysterectomy along with rupture of uterus. Our patients have high fetal losses (60%). Still births were seen in 20% where perinatal mortality was 25%, which is very high even when compared to continent of Africa⁹. A baby born to mother with impending acute renal failure, prolong labor, blood loss, low apgar score and total inability of TBAs to manage any this serious events, with lack of neonatal resuscitation facilities even at DHQ level explains these disasters figures.

HD was the main renal replacement therapy. It was quick highly effective in an anuric, azotemic and catabolic patients. Certainly patients offered hemodialysis had better survival compare to PD (see Fig. 10).

We had no accidents in obtaining acute vascular access by any route. Though sub-clavian route was preferred femoral route was used in a no. of cases.

10% of our patients required kidney biopsies. The need for kidney biopsy was bad prognostic sign with a mortality 50%^{2,16}. The histological pattern of biopsies is shown in Fig. 7.

Most of patients recovered within a week of hemodialysis. Only 35% required hemodialysis for 4 weeks.

Septicemia and HELLP syndrome was main cause of deaths in 2/3 our patients. Follow up at 1 year shown that 70% of our patients were alive at 1 year with 20%

seen with 2nd pregnancy and 10% ended in CRF.

CONCLUSION

Acute renal failure is fairly common condition. It represents 18.12% of our total admissions in 3 years period. Acute obstetrical renal failure represents 08.80% of our total ARF. Condition is very serious and carries a high mortality if not treated in time²². Data from our province (from 2 studies), i.e., Anjum et al¹³ and present study) shows 08-18% mortality. Septicemia²¹, eclampsia and HELLP syndrome^{14,17} remain the three important factors leading to delayed recovery and prolonged duration of dialysis. 08/12 patients who eventually succumbed to the illness in the ICU environment had MODS secondary to fore mentioned condition, i.e., septicemia and eclampsia, where as there is overall mortality of 1% as reported by Mattar F¹¹ in patient with severe eclampsia, we at Peshawar have shown for less performance. However, our figures are better than India where Sawhney HN et al¹² have shown a mortality of 28.9% in undelivered patients and a mortality of 37.7% in women received in grade for coma.

ICU facilities were limited to very few patients. Where as we feel any patient suffering from Obstetrical acute renal failure deserve ICU care.

It is equally important that up-to-date Nephrological services including in situ dialysis facilities, CRRT are available in ICU and high dependence areas. Public awareness campaign needs to be initiated at rural and urban levels. The electronic media must come forward to play its role in disseminating the knowledge about kidney diseases and its prevention. Population control does need more emphasis as multiparity lead to more complications. Adequate liaison among the Gynaecology / Obstetrics and Nephrology colleagues is equally important for

better outcome. Last but not the least, it is the responsibility of the government as Health and Education Provider to look into the Nation needs. Data and results from studies as ours, is to be taken into consideration while planning Health policies. Whereas this study had highlighted the higher mortality, fetal loss, etiology and complication of pregnancy related acute renal failure, in our province. This has opened a new area of improvement in all the parameters as outlined¹⁵. So, that mothers and babies, which are assets of our Nation, can be protected from these devastating complications. Need less to say that for stronger emphasis must be laid on a better antenatal, natal, postnatal services¹⁸.

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