Pregnancy-related acute renal failure in the southeast region of Turkey: analysis of 75 cases

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Summary

Objective: To study the clinical profile, management and outcome of the patients with pregnancy-related acute renal failure (PRARF). *Methods:* All patients with PRARF admitted between January 2006 and January 2009 were analyzed. *Results:* The total number of women with PRARF was 75. Age range of women with PRARF was 21 to 46 years and 36% of the cases of PRARF were seen in the postpartum period. PRARF was caused by sepsis in 14.6%, toxemias of pregnancy in 75.2%, and hemorrhage of pregnancy in 12%. Postabortal sepsis was the cause in 14.6%. Dialysis was needed in 33.3%. Maternal mortality rate was 10.6%. *Conclusions:* Pregnancy-related acute renal failure is a major health problem and carries very high mortality and morbidity. Poor healthcare facilities and lack of antenatal healthcare clinics are major identified causes

Key words:

İntroduction

Acute renal failure (ARF) may be defined as a sudden decrease in renal function 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 [BUN] and creatinine) in the body. In pregnancy it can occur during antenatal or postnatal periods. ARF is a rare but an important complication during pregnancy. There has been a marked decline in the incidence of pregnancy-related acute renal failure (PRARF) over the past 50 years in industrialized countries as a result of improved antenatal care and obstetric practices [1]. PRARF is commonly caused by septic abortion in early pregnancy and by toxemia of pregnancy, hemorrhage during pregnancy (antepartum and postpartum), and ischemic acute tubular necrosis in late pregnancy [2].

The purpose of this study was to highlight the magnitude of the problem leading to high mortality and morbidity. Pregnancy-related acute renal failure is a challenging health problem of women, especially in rural areas. Therefore effective measures are needed to prevent this preventable complication of pregnancy.

Materials and Methods

This study was conducted at the Department of Obstetrics and Nephrology in Dicle University, Diyarbakir, Turkey from January 2006 to January 2009. During this period 75 patients were evaluated for pregnancy-related acute renal failure. PRARF was diagnosed when there was a sudden oliguria (24-hour urine output < 400 ml) or anuria with serum creatinine elevated to > 1.5 mg%).

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Results

The total number of women with PRARF was 75. The age ranged between 21 and 46 years with a mean of 32.03 (± 5.07) years and mean gravidity was 4.6 (1 to 14). PRARF was seen in the postpartum period in 36% (27/75) of the cases, in the 2nd trimester in 13.33% (10/75), in the 3rd trimester in 32% (24/75) and in the postabortal period in 18.66 % (14/75). It was followed by normal spontaneous vaginal delivery in 22 cases (29.33%), cesarean section in 39 cases (52%) and abortus in 14 cases (18.66%). Hemorrhage as the etiology for ARF was present in 12% of the patients. Preeclampsia, eclampsia and HELLP syndrome accounted for 75.2% of patients with pregnancy-related ARF. Postabortal sepsis as a precipating event for ARF was present in 14.6% of the patients (Table 1).

Table 1. — *Various etiological factors for pregnancy-related acute renal failure*.

Etiological factor	No. of patients (total = 75)	Percentage
Preeclampsia	43	57.33
Eclapmsia	5	6.66
HELLP	7	9.33
Hemorrhage	9	12.00
Sepsis	11	14.66

Dialysis was needed in 25 or 33.33% of the patients; hemodialysis was given to 22 (29.33%), continuous venovenous hemodialysis to one patient (1.3%), and peritoneal dialysis to two (2.6%). Blood and blood sample transfusions were needed 41 (54.6%) of the patients.

The various abnormal laboratory findings are given in Table 2. Anemia was seen in 70.6% and thrombocytopenia in 57.3%. Electrolyte abnormalities were seen in 67.4% and they were hypernatremia in 12%, hyponatremia in 15.5%, hyperkalemia in 17.3% and hypokalemia in 10.6%. Mean creatinine level was 4.2 mg%, proteinuria was detected 53 (70.6%) of the patients.

Maternal mortality was 10.6% (8 patients). HELLP and eclampsia accounted for 50% (4 of the 8 patients). Sepsis was the cause of death in two patients (25%) and two patients (25%) died due to hemorrhage.

Table 2. — *Abnormal laboratory findings in pregnancy related acute renal failure (n = 75).*

Laboratory findings	Number of cases	Percent
Anemia	53	70.6
Thrombocytopenia	43	57.3
Hypernatremia	9	12
Hyponatremia	14	15.5
Hyperkalemia	13	17.3
Hypokalemia	8	10.6
Abnormal liver function tests	42	56
Proteinuri	53	70.6

Discussion

ARF is an infrequent but life-threatening complication of pregnancy. The declining trend of PRARF is attributed to the legalization of termination of pregnancies and to better antenatal and postnatal care [1, 3, 4].

The frequency distribution of PRARF is bimodal in relation to the period of gestation. The first peak is seen between seven and 16 weeks, being caused by septic abortion, while toxemia, hemorrhage and puerperal sepsis account for the second peak which is seen between 34 and 36 weeks [2, 3]. In our study, it was observed that a significant proportion of cases occur in the later part of pregnancy and in the puerperium.

Toxemia was the most common cause of PRARF (75.2%) in our study. The next, in order, were postabortal sepsis (14.6%) and hemorrhage of pregnancy (12%). In our study, preeclampsia/eclampsia was the cause of PRARF in 69.2% of cases, while it was reported to be around 50% of cases in some earlier studies [1, 2].

The legalization of abortion was followed by a substantial decrease in the percentage of septic abortion-related acute renal failure in several developing countries [5]. In addition, we have noted that the majority of pregnant women are multigravida. Therefore, the avoidance of an unwanted pregnancy and prevention of septic abortion are keys to eliminating ARF associated with septic abortion in early pregnancy. Aseptic management of labor and abortion would eliminate avoidable ARF. Prompt treatment of any hemorrhage during pregnancy and labor would also reduce ARF significantly.

The reported mortality rate of PRARF was up to 56% in developing countries, whereas it was less than 30% in developed countries [1, 2, 5]. In our study, it was 10.6% (8/75). Kumar et al. recently reported a maternal mortality rate of 24% [6]. This appears to be the result of aseptic delivery and early management of antepartum and postpartum hemorrhage.

Conclusion

ARF is a dangerous complication of pregnancy which carries very high mortality and morbidity which although high in the initial period, has decreased in recent years. This is associated with a declining trend in post-abortal ARF and a reduction in maternal mortality. These changing trends in obstetrical ARF are mainly due to decreases in the number of septic abortions, puerperal sepsis, the legalization of abortion, and improved care of obstetrical complications.

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