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**Early outcomes of pregnancy in patients with kidney proteinuric problems**

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**KEYWORDS**

Kidney involvement,  
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**A B S T R A C T**

Renal involvement is one of the serious complications of pregnancy and it can threaten seriously the mother's life and fetus outcome. The aim of this study was to evaluate short-term outcomes of pregnancy in patients with kidney disease. In a historical cohort study that performed in internal medicine department of Tabriz University of Medical Sciences on 98 pregnant mothers with abnormal proteinuria, short-term outcomes of pregnancy in patients with kidney disease evaluated. In this study, pregnancy outcome of 98 women with kidney disease evaluated that mean age of mothers was  $28.73 \pm 6.46$  year. Mean gestational age of studied mothers was  $33.72 \pm 3.58$  week. Mean of neonatal Apgar was  $8.22 \pm 1.66$ . History of HTN before pregnancy was found in 21(21.4%) of patients that 6 of them get preeclampsia. Preeclampsia was found in 35(35.7%) of women during pregnancy. HTN was found in 24(24.5%) of women during pregnancy that 16 of them get preeclampsia. In this study of 98 patients, 67 patients at ninth months, 17 patients in the eighth month, and 10 patients in seventh month were delivered. 3 patients in the third month and one patient in the fifth month were miscarriage. 6 of the infants died.

**Introduction**

Renal involvement in pregnancy is considered as a serious menace, and eventually it can seriously threaten the lives of mother and fetus, so nephrologists are recruited frequently for the treatment of kidney problems during pregnancy (1).

physiological changes of the kidney at the time of pregnancy can lead to diagnosis and specific resolution on kidney disease since the size of kidney increase approximately 1-1.5 cm at the time

of pregnancy, GFR level increase to about 200 CC/min leading to drop in Creatinine levels to lower than normal people (0.4 compared to 0.8), excretion of normal protein quantities increase from 150 mg in 24 hours to 200 mg in pregnant women. The incidence of respiratory alkalosis with an increase in blood pH and bicarbonate loss and reduction of blood pressure immediately after fertilization in spite of increased cardiac output and increasing flow of renal artery is probable (2).

HTN in pregnancy is one of the serious public health problems in the world and is a serious cause of mortality of mothers in developing countries that could be in the form of gestational HTN as a result of the gestational toxicity or pregnancy in women with HTN and might cause pregnancy poisoning (3-4).

Although in chronic kidney diseases the fertility rate decrease and possibility of reaching the fetus to the dogma dropped, in the event of pregnancy the possibility of worsening kidney function and the early need to dialysis and premature delivery and preeclampsia addition and the embryo need to ICU hospitalization and other fetal complications incremented (4).

The incidence of proteinuria in the pregnancy can be due to underlying disease such as previous existence of proteinuria in the field of glomerulonephritis, chronic kidney disease or its appearance during pregnancy as a consequent of glomerulonephritis, underlying disease flare or incidence, creation and exacerbation of reflux nephropathy, flare or incidence of Lupus or creation preeclampsia (5). Preeclampsia creates a complication in about 8% of the pregnancies (6).

According to the above and the importance of timely detection and treatment of kidney diseases in pregnancy and do the actions and decisions in this regard, particularly because of a lack of sufficient information regarding effects of kidney disease in pregnancy its outcome, this study was performed and with the aim of assessing the short-term consequences of pregnancy in patients with kidney disease.

### **Materials and methods**

In a historical cohort study in the Department of internal medicine in Tabriz University of medical sciences on 98 pregnant mothers with abnormal proteinuria and short-term consequences of pregnancy in patients with kidney disease was investigated.

98 pregnant mothers with abnormal proteinuria entered the study who were under the supervision of nephrologists became pregnant unwanted or with permission from nephrologists or who consult with the nephrologists on behalf of the women colleagues or women's sections because of proteinuria.

All causes of secondary proteinuria including Lupus took into consideration in terms of the amount of urine protein, serum Creatinine level, uric acid, hepatic enzymes, number of platelets and simple administrative check during a three-week period of visiting.

They went under examination in terms of edema, blood pressure, clinical symptoms of preeclampsia and medicinal treatment was done if necessity.

Patients were studied in matter of age of pregnancy termination and its effects and short-term consequences of

gestation; mother and fetus (fetal age and weight, Apgar score) and renal function. Demographic information including age, the number of pregnancy, history of kidney disease in patient and its family, history of hypertension in a patient and his family, history of pregnancy poisoning in patient investigated. Visiting patients was performed at the time of the referral and monthly from the fourth months. The full reference and time trials for evaluating all the causes of protein disposal including Lupus and the following experiments was the next track.

### **Ethical considerations**

All data are confidential and gathering information was with consent while the files of patients won't be damaged.

### **Result and Discussion**

In this study, pregnancy outcomes were investigated in 98 women with renal disease and the following results were obtained:

The mean age of mothers was  $28.73 \pm 6.46$  years (Figure 1). The mean gestational age of mothers was  $3.58 \pm 33.72$  weeks (Figure 2). The average number of pregnancies in mothers studied in this article was  $0.81 \pm 1.58$ . Considering the 98 cases, 67 patients had delivery in the 9th month, 17 patients at 8th month and 10 patients at 7th month of pregnancy. The abortion occurred in 3 cases at the 3th month of pregnancy and in one case at the 5th month of pregnancy. The average of Apgar score in the newborns, dead infants and surviving neonates was  $8.22 \pm 1.66$ ,  $4.16 \pm 3.18$  and  $8.51 \pm 0.96$  respectively ( $P=0.038$ ), (Figure 3).

There was a history of hypertension before pregnancy in 21 cases (21.4%) while the preeclampsia was just observed in 6 cases

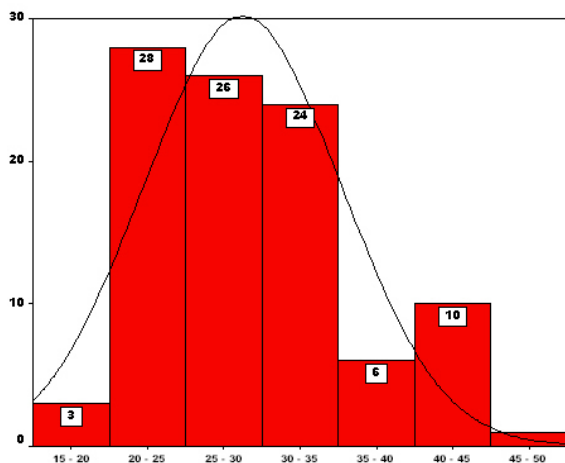
(28.57%). the preeclampsia was found in 35 women studied in this research during the pregnancy (35.7%), the HTN was present in 16 out of 24 cases in their recent pregnancy. There was hypertension in 24 cases (24.5%) while 16 out of these cases (66.6%) were diagnosed with preeclampsia during pregnancy. The six newborns have died in this research.

Renal involvement in pregnancy can cause serious problems for both the mother and fetus and the mortality and high morbidity is inevitable without timely treatment and early intervention. In a study conducted by Morikawa and colleagues (2007) in the department of gynecologic in Hokkaido University at Japan, after considering the pregnancy outcome in non-hypertensive patients with proteinuria, they expressed that the non-hypertensive women with new proteinuria could more progress to have the preeclampsia compared to the cases with pregnancy hypertension. In the absence of hypertension, the preeclampsia had been appeared in 77% of proteinuric patients at less than 32 weeks gestation and 38% of patients at more than 32 weeks gestation (7). In a study conducted by Murakami et al (2000), in Obstetric Department of Tsukuba University in Japan, after investigating the underlying renal disease in the women with pregnancy proteinuria or severe preeclampsia, they found that the underlying renal disease is more common in the proteinuric women with preeclampsia at less than 30 weeks gestation (8). In a study conducted by Barton et al (2001) at the Lovinytoun University of Kentucky at America, on the patients with pre-pregnancy hypertension, they discussed that the average weight of newborn with preeclampsia was much less than other infants (9). In a study conducted by Murakami et al (2000), in Obstetric Department of Tsukuba University in Japan, on the women with pregnancy

proteinuria and preeclampsia, they found that the early pregnancy proteinuria is common in the patients with underlying renal disease and the severe preeclampsia associated with proteinuria is the best predisposing factors for underlying renal disease at less than 30 week gestation (8). In our present research, the preeclampsia was observed in 35 cases (35.7%) which had a higher incidence compared to the normal pregnancies during the pregnancy.

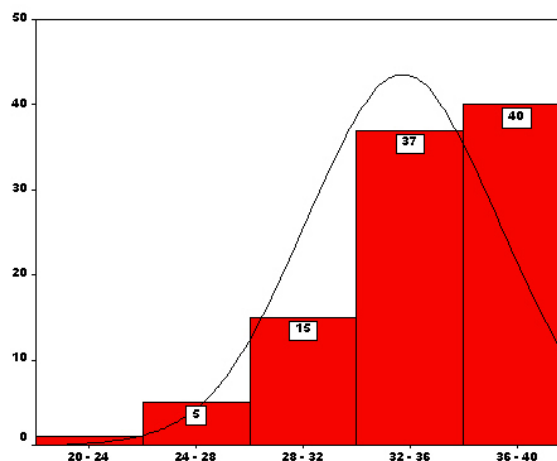
In a study conducted by Murakami et al, in Obstetric Department of Hokkaido University on the outcome of pregnancy in patients with isolated proteinuria, they expressed that the pregnant women with isolated proteinuria could more progress to have preeclampsia compared to the women with isolated hypertension during the pregnancy (10).

**Figure.I** Age distribution of patients

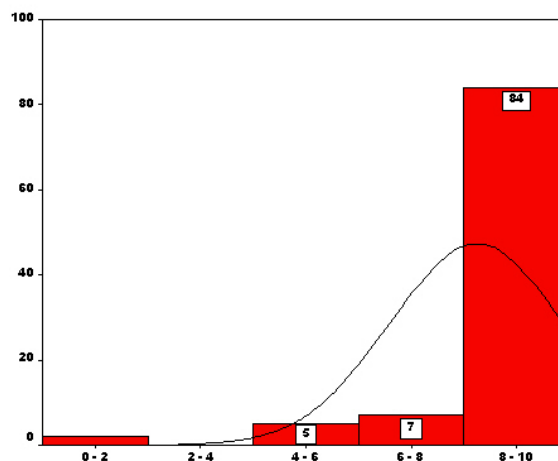


In a study conducted by Combs et al, in Obstetric Department of Ohio University on the pregnant proteinuric women, they found that the rate of preeclampsia was 7% in women with pregnancy proteinuria of less than 190 mg, 31% with proteinuria of 190-499 mg, and 38% with proteinuria of 500 mg and more(11).

**Figure.II** Gestational age distribution of patients



**Figure.III** Neonate Apgar distribution



In our study the proteinuria average of the nine months was  $417.22 \pm 240.76$ ,  $1704.31 \pm 756.59$ ,  $1623.85 \pm 767.49$ ,  $1770.54 \pm 757.14$ ,  $1754.55 \pm 759.97$ ,  $2086.43 \pm 3442.41$ ,  $2174.51 \pm 879.22$ ,  $1221.29 \pm 845.74$  and  $2294.01 \pm 2051.41$ , respectively. The proteinuria was above 500 mg at the most periods of pregnancy in the women studied in this research. As the results of the above study, the 37.5%

incidence of preeclampsia was found in the pregnant women with proteinuria (above 500 mg) which was similar to the above results. In a study conducted by Liun et al (2000), in Obstetric Department of Chang Gung University in Taiwan, they stated that the proteinuria has an essential role in the development of pregnancy hypertension into the maternal preeclampsia (12). In a study conducted by Piccoli et al (2010) at the University of Turin in Italy on pregnancy outcomes in women with CKD, they stated that proteinuria and hypertension are significantly associated with pregnancy outcomes in these patients and the need for CS and NICU is significantly more evident in these cases compared to the normal cases (13).

In a study conducted by Shahbazian in the Internal Medicine Department of Ahvaz University in 2011, after examining the correlation of preeclampsia in women with hypertension value and proteinuria during 5 years after pregnancy, they stated that a history of preeclampsia could lead to the increased risk for the hypertension and microalbuminuria in these patients (14). In our study, the proteinuria value was in the range of 417- 2294 mg during pregnancy which was the same as the above results.

## **Conclusion**

In this study, the pregnancy outcomes were investigated in the 98 women with renal disease and the average of Apgar score was  $8.22 \pm 1.66$  in the newborns. There was a history of pre-pregnancy hypertension in 21 cases (21.4%) while the preeclampsia was just observed in 6 cases. the preeclampsia was found in 35 women studied in this research during the pregnancy (35.7%). There was hypertension in 24 cases (24.5%) while 16 out of these cases were diagnosed with preeclampsia during pregnancy.

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