

# Neonatal and Maternal Outcomes in Pregnant Women with Rheumatoid Arthritis

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## ABSTRACT

**Background:** Rheumatoid arthritis is an autoimmune and inflammatory disease, mainly attacks the joints, usually many joints at once, and organs such as the lungs, heart, and eyes. The course of rheumatoid arthritis often changes during pregnancy.

**Objective:** The aim of the study was to assess whether pregnant women with rheumatoid arthritis and her baby are at high risk for adverse outcomes.

**Methods:** This a case-control study was conducted at the Duhok Obstetrics and Gynecology Teaching Hospital and Kurdistan Private Hospital in Iraqi Kurdistan between March 2016 and November 2020. The study included seventy-two pregnant women, they were divided into two groups; study group or (Rheumatoid arthritis group) and control group or (Non-Rheumatoid arthritis group). Both groups were compared regarding a baseline characteristics and maternal with neonatal outcomes. The data were statistically analyzed using a software package, current versions IBM (SPSS) Statistic.

**Results:** During the study period, from March 2016 and November 2020, Thirty-two pregnant women had RA were compared with the control group included 40 pregnant women who had not the disease group. There was significant difference between both groups regarding the female age. Pregnant women who had RA had lower parity and a higher number of pregnancy loss as well as more likely to smoke. The RA group was highly significant had a history of a previous cesarean delivery, and history of co-morbidities. Neonates of mothers who had RA commonly had small for gestational age and preterm babies.

**Conclusion:** Pregnant women with RA are associated with a higher risk of adverse maternal and neonatal outcomes, and she regarded as a high-risk pregnancy.

**Keywords:** Rheumatoid Arthritis (RA); Maternal outcomes; Preeclampsia; Preterm birth

## INTRODUCTION

Rheumatoid Arthritis (RA) affects more commonly women of childbearing age [1]. Generally disease activity improves in the first trimester and flares during the postpartum period, usually within the first three months. Low parity has been seen in a woman with RA because of toxicity of medication use during the pregnancy, and sub-fertility related to disease activity [2,3]. Pregnancy outcomes in well-controlled disease are comparable to

those in the general population. While Women who have a higher level of disease activity and who take glucocorticoids are at risk for preterm delivery and small for gestational age baby [4,5]. Women with RA should consult with their rheumatologist and obstetrician to discuss management prior to conception, medication choices are decided not only by disease severity but also by toxic effects on the fetus [6,7]. Methotrexate should be stopped three months prior to conception and patients should postpone pregnancy until their disease is under good control on

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medications compatible with pregnancy. Patients should start folic acid supplementation prior to pregnancy and medications used such as hydroxychloroquine, sulfasalazine and Glucocorticoids should be maintained at the lowest dose possible. In women who are breastfeeding, NSAIDs can be used but aspirin should be avoided.

## METHODS

### Design and setting

The case study was conducted at the Duhok Obstetrics and Gynecology Teaching Hospital and Kurdistan Private Hospital in Iraqi Kurdistan between March 2016 and November 2020. This study was approved by the Committee of Scientific research unit of Duhok Obstetrics and Gynecology Teaching Hospital. The study included seventy-two pregnant women, they were divided into two groups; study group or (Rheumatoid arthritis group) included a pregnant woman who had RA and control group or (Non-Rheumatoid arthritis group) included a pregnant woman who had not the disease. The inclusion criteria were, all pregnant women with documented to have RA and diagnosed by a rheumatologist or internist, multiple gestations were excluded from the study. After complete history, clinical examination, and investigations, written informed consent was taken in both the groups. Baseline characteristics for both groups were taken, including maternal age, parity, gravidity, previous cesarean delivery, previous history of pregnancy loss, history of smoking, and history of co-morbidities, such as hypertension, cardiac disease, diabetes mellitus, and thyroid disease. Clinical outcomes examined were maternal and neonatal outcomes maternal outcomes such as (preeclampsia, gestational diabetes, preterm birth and mode of delivery postpartum hemorrhage including. Neonatal outcomes were recorded as (congenital anomalies, small for gestational age baby, and preterm baby). Both groups were compared with respect to baseline characteristics, associations between these outcomes in pregnant women with and without the disease.

### Statistical analysis

The data were statistically analyzed using a software package, current versions IBM (SPSS) Statistic, descriptive statistics for nominal variables were expressed as number and percentage (%), whereas quantitative variables were expressed as mean ± standard deviation. Student's t-test was applied to difference of mean of quantitative variables. The chi-square distribution test was used to compare categorical data. For interpretation of results, p value <0.05 was considered significant.

## RESULTS

During the study period, from March 2016 and November 2020, Thirty-two pregnant women had RA were compared with the control group included 40 pregnant women who had not the disease.

### Baseline characteristics of patients

The baseline characteristics of these patients are summarized in Table 1. The mean age of pregnant woman who had RA was 26.3 ± 2.3, while in the control group was 23.7 ± 3.3. There was a highly statistically significant difference between both groups regarding the female age as pregnant women with the RA were older than those control group. Pregnant women who had RA had lower parity than control group (p=0.032) which was statistically significant, also a higher number of pregnancy loss that was highly statistically significant (p<0.001). The RA group was significantly more likely to smoke (p=0.020), also the RA group was highly significant had a history of a previous cesarean delivery, and history of co-morbidities, such as hypertension, diabetes mellitus, and thyroid disease.

Patient characteristics	Rheumatoid arthritis group (N=32)	Non-rheumatoid arthritis group (N=40)	p-Value
Maternal age (years)	26.3 ± 2.3	23.7 ± 3.3	<0.001
Parity	2.31 ± 1.33	3.35 ± 2.42	0.032
Abortion	3.3 ± 1.15	2.14 ± 0.81	<0.001
Smoking	9(28.12%)	3(7.5%)	0.02
Previous cesarean section	22(68.75%)	8(20%)	<0.001
Hypertension	15(46.87%)	3(7.5%)	<0.001
Diabetes mellitus	13(40.62%)	1(2.5%)	<0.001
Thyroid disease	8(25%)	1(2.5%)	<0.001

Quantitative variables presented as mean ± SD, nominal variables as number (percent), p<0.05=Significant, p<0.001=highly significant, p>0.05=Not significant

**Table 1:** Baseline characteristics in pregnant women who had RA compared with pregnant women without RA.

### Maternal outcomes

The maternal outcomes of pregnant women who had RA compared with pregnant women without the disease are summarized in Table 2. Preeclampsia highly significant affected more pregnant women with RA (p<0.001) and cesarean delivery was more in RA group than the control group (p<0.001), also preterm birth was highly significant common in the study group than controls. Gestational diabetes was more common among RA group than the control group. No any other significant differences reported about maternal complications.

Maternal outcomes	Rheumatoid arthritis group (N=32)	Non-rheumatoid arthritis Group (N=40)	p-value
Preeclampsia	15 (46.87%)	4(10%)	<0.001
Gestational diabetes	13(40.62%)	3(7.5%)	<0.001
Preterm birth	18(56.25 %)	4(10%)	<0.001
Mode of delivery	25(78.12%)	9(22.5%)	<0.001

Data were presented as number (percent), p<0.05=Significant, p<0.001=Highly significant, p>0.05= Not significant

**Table 2:** Maternal outcomes in pregnant women who had RA compared with pregnant women without RA.

### Neonatal outcomes

Neonates of mothers who had RA were highly significant had small for gestational age and preterm babies. In comparison with the control group only two neonatal congenital anomalies were detected in the study group, both were cardiac anomalies and this is not statistically significant (p=0.432) as summarized in Table 3.

Neonatal outcomes	Rheumatoid arthritis group (N=32)	Non-rheumatoid arthritis group (N=40)	p-value
Small gestational age	18(56.25%)	6(15%)	<0.001
Preterm babies	15(46.87%)	5(12.5%)	<0.001
Congenital anomalies	2(6.25 %)	1(2.5%)	0.432

Data were presented as number (percent), p<0.05=Significant, p<0.001=Highly significant, p>0.05= Not significant

**Table 3:** Neonatal outcome in pregnant women who had RA compared with pregnant women without RA.

## DISCUSSION

There are no specific guidelines for obstetric monitoring in a woman with RA and monitoring not beyond what is performed for usual obstetric care [8]. In term of baseline characteristics, one study reported that maternal age in women with RA was higher compared to women without the disease [9]. In our data also showed that the maternal age was higher among the pregnant women with RA compared to the control group, differences in age could be due to reduced fecundity, a longer time to pregnancy, and preconception treatment to control the disease activity [10-12]. In our study women with RA revealed to

have a low parity compared to controls, similar data was seen in two studies, because RA was affecting family planning decisions, inability to care for their baby, effects of medications on the neonate and higher rates of infertility [13,14].

In our study pregnancy loss was higher in the RA group than the control group especially for those who had an unplanned pregnancy in a period of active disease and on embryo-toxic medication. These data are similar to the two studies [15,16]. Other data reported no significant rates of pregnancy loss among women with RA [17,18]. Several studies have shown that a woman with RA was more smoker than the control group [19]. In the present study reported similar findings. Our data indicate that women with RA were more likely to deliver by cesarean section this in agreement with previous studies probably due to higher rates of labor induction because of iatrogenic preterm deliveries as RA associated with a higher incidence of hypertensive disorders and small gestational age [20]. In contrast, others reported a similar incidence of cesarean delivery between both groups [21,22].

In this study, demonstrated that higher prevalence of pre-existing co-morbidities among women with RA, such as hypertension, diabetes mellitus, and thyroid disease. This agreement with other studies [23,24]. Regarding maternal outcomes among women with RA, in our study data revealed more preeclampsia was seen among women with RA than the control group. Some studies have reported similar [25,26]. While others have not been shown [27,28]. In our study gestational diabetes mellitus was higher among women with RA compared to control group. Similar data was reported in several studies, probably due to steroid use to control the disease [20,29]. In our study reported that preterm birth was more common among women with RA, this in agreement with The majority of [18,27,28] but in contrast with one study [30].

We found in our study that women with RA had a higher incidence of cesarean delivery than controls, this in agreement with several studies [28,31]. While one study did not find any increase in cesarean delivery [32]. No any other significant adverse maternal outcomes in the postpartum period among women with RA were reported in our study. Regarding neonatal outcomes, in our study showed that babies of women with RA were more born preterm and small for gestational age similar findings were reported in two studies [20,26]. In our study no statistically significant risk of congenital anomalies in women with RA was reported only there were 2 cases, this in agreement with two other studies [25,32] while in contrast with one study [22]. This study had two limitations that must be considered. First, the sample size was insufficient. Second, we had no information regarding medication use both preconception and during pregnancy.

## CONCLUSION

Pregnant women with RA are associated with a higher risk of adverse maternal and neonatal outcomes, although a woman with RA can carry out successful pregnancies but she needs close monitoring during preconception counseling, during

pregnancy and postpartum, as she regarded as a high-risk pregnancy.

## DECLARATIONS

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### Authors' contributions

'Not applicable' for that section.

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### Availability of data and material

Not applicable for that section, ethics approval and consent to participate. The ethical approval from the local ethics and scientific committee was obtained. The written informed consent of all the participants was obtained.

### Consent for publication

Not applicable for that section.

### Competing interests

There are no conflicts of interests to declare.

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