

A Comparative Study of Pregnancy Outcomes in Patients with RA

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Abstract: Background: Rheumatoid arthritis (RA) is an autoimmune disease characterized by erosive and persistent synovitis, systemic involvement in some cases, and the presence of certain autoantibodies. The highest frequency of the disease is indicated in the female sex (2:1) and in ages over 35 years. **Objective:** This paper aims to find the impact of rheumatoid arthritis on pregnancy.

Material and Method: Demographic information and data were collected by relying on a cross-sectional study. Eighty pregnant women were included. The samples in this study were divided into two groups (44 RA patients with ages ranging from 30-35 years) and (36 control groups with an average age between 30-35 years). The study was approved by the ethics committee, and all participants signed the informed consent. The study period was a full year, from 13-9-2020 till 12-10-2021. **Results:** Table 1 presents demographic and disease-related data. As for Figures 1, 2, and 3 showed a comparison of outcomes between patients and control with rheumatoid arthritis at antepartum, intrapartum, and postpartum periods. Women with RA were with high disease activity and have a significantly increased risk of multiple adverse birth outcomes, including premature birth, congenital malformations of the newborn, low birth weight, small birth volume, neonatal mortality, caesarean delivery, and sepsis pregnancy.

Keywords: C.S, RA, postpartum, malformations, pregnancy, outcomes.

INTRODUCTION

Rheumatoid arthritis (RA) is an autoimmune disease characterized by erosive and persistent synovitis, systemic involvement in some cases, and the presence of certain autoantibodies. It affects 0.5-1% of the world's population and appears in 5 to 50 cases per 100,000 population each year [Blencowe, H. *et al.*, 2012] [ACOG, 2002], and its prevalence varies in different geographical areas. The highest frequency of the disease is indicated in the female sex (2:1) and in ages over 35 years [Aletaha, D. *et al.*, 2005] [Eudy, A.M. *et al.*, 2018].

Its causes are unknown, and there is evidence of the complex inter relationship between hormonal and environmental factors, which have been shown to be starting points for its onset and genetic susceptibility of patients [Lin, H.C. *et al.*, 2010] [Brouwer, J. *et al.*, 2015] [Reed, S.D. *et al.*, 2006].

Sixty percent of the risk is attributed to genetic factors determined by the presence of certain alleles of the MHC. Activation and persistence of the inflammatory cascade, production of multiple cytokines, and damage to articular cartilage and subchondral bone characterize the pathophysiology [Nørgaard, M. *et al.*, 2010].

A systematic literature review was conducted in search of information on the diagnosis, prognosis, and treatment of rheumatoid arthritis in pregnancy. The research was conducted in MedLine and

Scopus, and the results showed that 40% of women experienced moderate or severe seizures at about 12 and 26 weeks after delivery. [A.H.C.R.Q, 2017] [ACOG, 2002] [Aletaha, D. *et al.*, 2005]

Some data suggest that the improvement of RA activity during pregnancy depends on HLA variance between mother and foetus, and the greater the variance, the greater the potential for disease recovery [Eudy, A.M. *et al.*, 2018].

On the other hand, breastfeeding appears to favor the onset of flare-ups of RA, and the majority of women with RA experience flare-ups during the postpartum period, generally in the first trimester [Lin, H.C. *et al.*, 2010]. The cause of this behavior is unknown, but it may be related to the inflammatory effect of prolactin [Brouwer, J. *et al.*, 2015].

MATERIALS AND METHODS

Patient Sample

Information and demographic data of patients were collected from several different hospitals, and in this study, 80 pregnant women were included. The samples in this study were divided into two groups (44 patients with RA with ages ranging from 30-35 years) and (36 control groups with an average age between 30-35 years).

Study Design

In this study, 80 pregnant women with a mean age of 30.8 ± 2.2 years were included; they suffer from rheumatoid arthritis. The effects of clinical variables associated with RA on pregnancy outcomes were evaluated.

The exclusion criteria were patients over 35 years of age who suffer from fatal comorbidities and the patient's primary information, which included (age, height, weight, and body mass index). Expectant mothers were diagnosed and classified into three groups before birth, intrapartum, and after birth. The primary measures obtained were recorded (pre-eclampsia, gestational diabetes, in addition to gestational hypertension, and placental abruption),

and the results related to bleeding were recorded after birth.

Study Period

Approved by the local ethics research committees of the Iraqi Ministry of Health and written informed consent was obtained from all the patients and controls. Patient demographic information and data were collected over a full year from 13-9-2020 till 12-10-2021.

Aim of the Study

This paper aims to make a cross-sectional study to find pregnancy outcomes in patients with RA.

RESULTS

Table 1: Demographic results of the study

Variable	Patient, N=44	Control, N=36	P-value
Age	30.5±1.12	30.1±0.9	0.88
Body mass index	30.1±3.5	29.6±3.1	0.31
Co-morbidities			
Diabetes	15	12	
Hypertension	10	8	0.06
Obesity	9	7	
other	10	9	
Smoking			
Yes	8	1	0.001
No	36	35	
Median household income			
Low	6	5	
Medium	30	20	<0.05
High	8	11	

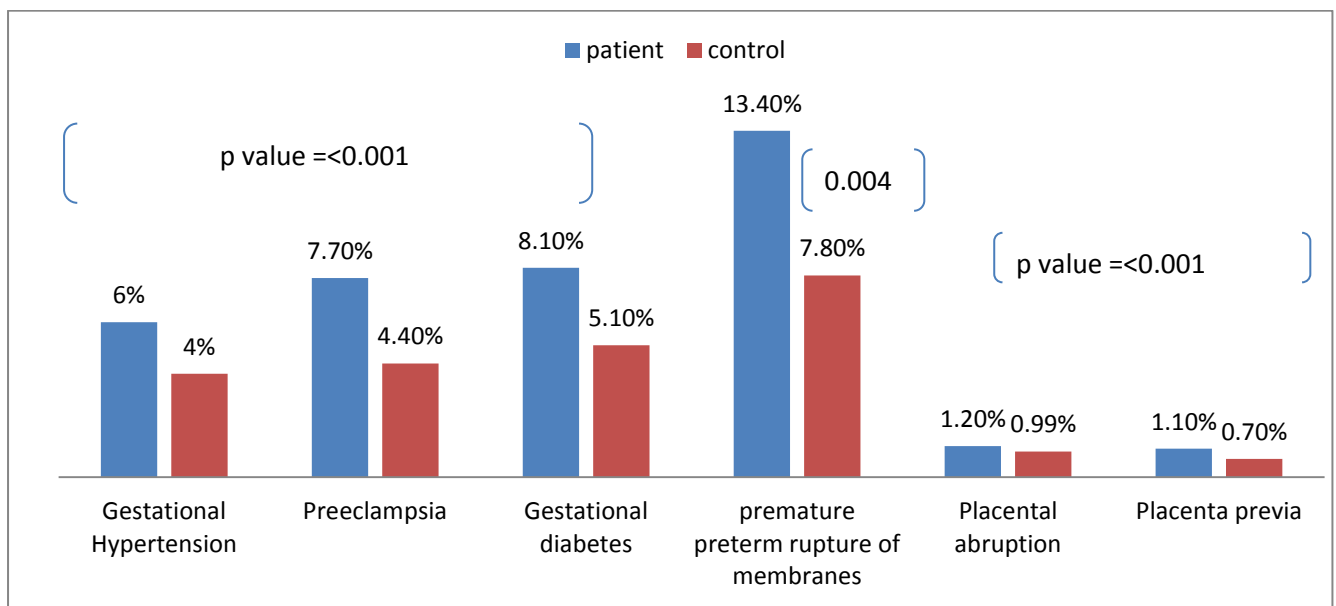


Figure 1: Comparison of antepartum outcomes between rheumatoid arthritis patients and control

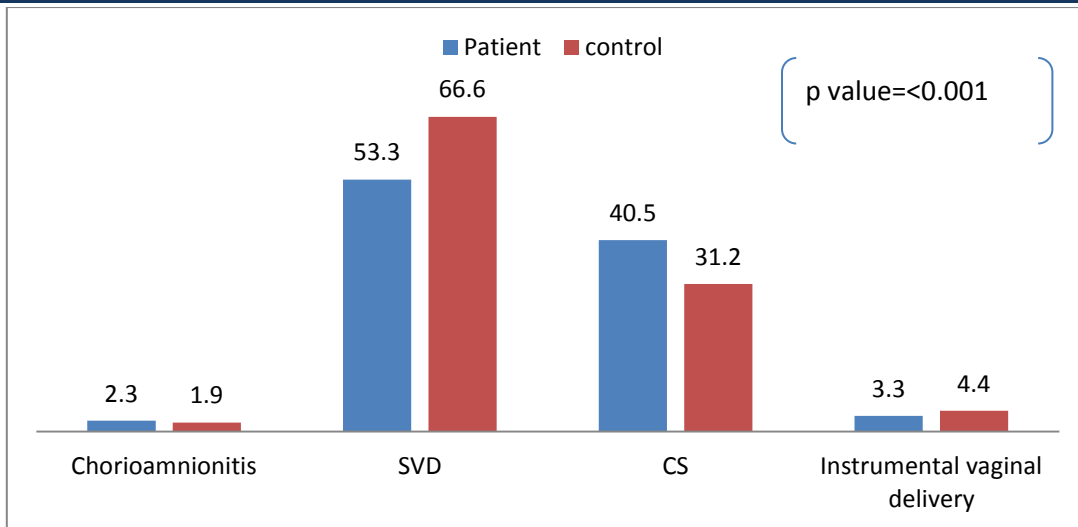


Figure 2: Intrapartum outcomes of the patient between rheumatoid arthritis patients and control

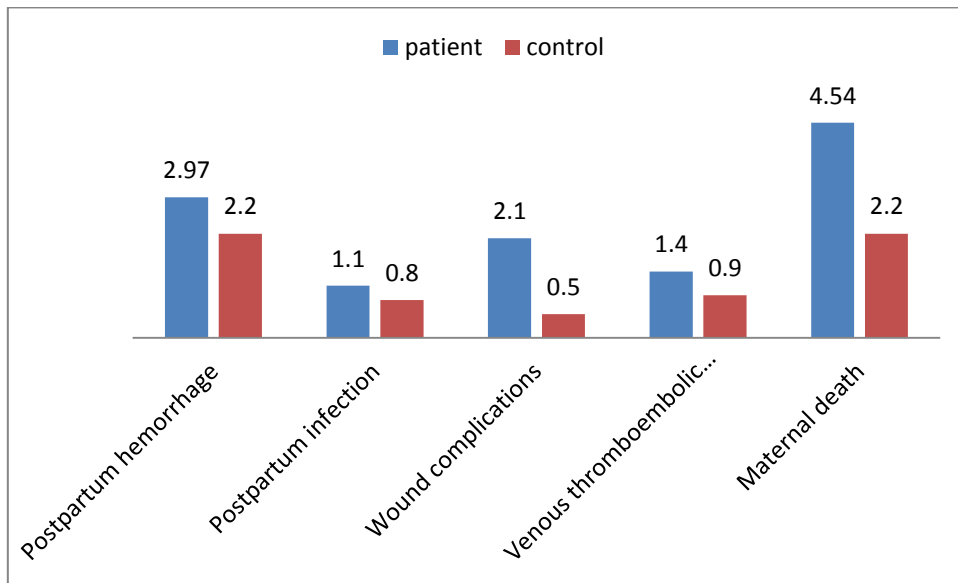


Figure 3: Final postpartum outcomes of patients

Table 2: Logistic regression of risk factor analysis

Variable	CI-95%	Risk factor	P-value
Pre-eclampsia/eclampsia	2.2-3.9	2.7	0.001
Premature preterm rupture of membranes	1.4-1.8	1.66	0.08
Caesarean section	1.6-2.2	1.9	0.032
Spontaneous vaginal delivery	1.88-3.1	2.44	<0.05
Placental abruption	2.5-3.4	3.1	<0.001
Preterm births	1.89-3.5	2.6	<0.001
Smoking	2.55-4.12	3.4	<0.001

DISCUSSION

In this study, 80 pregnant women from different hospitals were collected, and the results of the analysis of patients were relied on the spss IBM soft program.

The study showed that the sample was divided into two groups (44 patients with RA) and (a control

group of 36 patients), and it was noted that the body mass index in the group of patients compared to the control group and the most frequent comorbidities in this study were diabetes and arterial hypertension obesity.

In the initial stages, symptoms can be manifested by fatigue, loss of appetite, and general malaise.

Symptoms of rheumatoid arthritis may improve during pregnancy. Approximately 70% of women with rheumatoid arthritis experience an improvement in symptoms that begins in the second trimester and extends within six weeks after delivery, but the most noticeable effect is seen in the third trimester.

It has been observed that most pregnant women with rheumatoid arthritis have low disease activity during pregnancy and may be cured by the third trimester, high blood pressure or preeclampsia, low birth weight babies, and increased possibility of cesarean delivery.

Rheumatoid arthritis may cause babies to have low birth weight. Also, about 3% to 5% of newborn babies of mothers with severe rheumatoid arthritis may have birth defects. This is caused by some antirheumatic drugs that may spoil the foetus formation.

A protective effect of pregnancy has been suggested on the development of rheumatoid arthritis, and previous related studies have shown a higher risk of developing RA among unborn patients. Oral contraceptive use also appears to protect against the development of rheumatoid arthritis with an additional effect on pregnancy [Reed, S.D. et al., 2006]. As a result, unborn patients without a history of oral contraceptive use have a four times higher risk, expressed as an odds ratio, of developing RA than those who have had at least one pregnancy and a history of contraceptive use.

Pregnant mothers with rheumatoid arthritis are at greater risk of pre-eclampsia, caesarean section and preterm delivery. A Swedish study of pregnant women with juvenile idiopathic arthritis (JIA) had a higher risk of maternal and infant complications compared to a control group [Wolfberg, A.J. et al., 2004].

The immune system ameliorates disease activity in rheumatoid arthritis, but these data have not been fully reconfirmed in subsequent studies [de Man, Y.A. et al., 2007].

The 2006 Tregs study found elevated levels of rheumatoid arthritis in pregnant women with rheumatoid arthritis, which was inversely associated with disease activity in the third trimester and after delivery [De Man, Y.A. et al., 2010].

The low level of Estrogen, which occurs during pregnancy, appears to play a role in improving the

disease. Some studies support a well-accepted role in the assessment of disease activity due to its feasibility, accessibility, and cost-effectiveness, and it allows imaging of multiple joints simultaneously [Reed, S.D. et al., 2006][Lin, H.C. et al., 2010] [De Man, Y.A. et al., 2009].

CONCLUSIONS

The study found that women with high disease activity at the beginning of pregnancy had significantly higher rates of pre-term infants of gestational age compared to women with low disease activity.

Disease severity is associated with the risk of adverse pregnancy outcomes, so effective control of disease activity during pregnancy is essential to ensure optimal health of the mother and foetus.

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