Journal of Population Therapeutics & Clinical Pharmacology

RESEARCH ARTICLE
DOI: 10.53555/jptcp.v30i18.3519

PREGNANCY OUTCOMES IN WOMEN WITH RHEUMATIC DISEASES; A RETROSPECTIVE STUDY CONDUCTED IN DUBAI HOSPITAL

Uma Vasanth[1*], Tazeen Makhdoom[2], Nighat Fatima[3], Seema Waheed[4], Filsan Bashir[5], Lama Khalid[6]

[12,3,4,5,6]Department of Obstetrics and Gynecology, Dubai Hospital, Dubai, United Arab Emirates

[*]**Corresponding Author**: Uma Vasanth
Email: drumavasanth@gmail.com

Abstract

Background: This research aimed to examine the characteristics of antenatal complications and neonatal comorbidities related to pregnant women with rheumatic disease (RD).

Methods: The current research recruited 185 pregnant women with RD from a broad cohort, considering age, ethnicity/nationality, and prior pregnancies. We gathered and analyzed information on gestational age, mode of delivery, prenatal problems, and neonatal comorbidities.

Results: Most women (118; 63.8%) gave birth after 37 weeks of pregnancy, with (90; 48.6%) having a cesarean procedure and (95; 51.4%) are with vaginal delivery. Diabetes 34 (18.4%), hypertension (18; 9.7%), anemia (47; 25.4%), and postpartum hemorrhage (11.5%) were most common among the antenatal problems. In our study, 40 out of 185 women (21.6%) had anti-phospholipid antibodies, while 68 women (36.75%) had anti-Ro and anti-LA antibodies.14 patients had delivery before 32 weeks; 8 among them had antiphospholipid antibodies, which is statistically significant.(.P= 0.001). Neonatal comorbidities included jaundice (15; 8.1%), premature delivery (11; 5.9%), and admission to the newborn intensive care unit (68; 36.8%). Pregnancy-related disease flare-ups were uncommon (5; 2.7%).

Conclusion: Comprehensive prenatal care, close monitoring, and multidisciplinary management are crucial for optimizing maternal and neonatal outcomes. When treating pregnant individuals, it is important to find a balance between managing their illness and ensuring the safety of any medications used. This requires a personalized approach to treatment. The impact of Research and Development (RD) on maternal and neonatal health outcomes requires further investigation with larger sample sizes

Keywords: rheumatic disease, pregnancy, antenatal complications, neonatal comorbidities, gestational age, mode of delivery.

Introduction:

Autoimmune illnesses known as rheumatic diseases are characterized by tissue damage and are brought on by an immune response against one's cells, tissues, or organs. [1,] This includes a variety of illnesses that affect not only the musculoskeletal system but also other organs or systems. [2] Some of these conditions include Systemic Lupus Erythematosus (SLE), Anti Phospholipid antibody syndrome (APLA), Rheumatoid Arthritis, Sjogren syndrome, Seronegative arthritis, and psoriatic arthritis. Women of reproductive age are more prone to develop them. Pregnancies with rheumatic

disorders are considered high-risk pregnancies due to the potential risk of maternal and newborn complications, disease flare-ups, and drug teratogenicity. [3,4] Despite the increased risk of rheumatic disorders during pregnancy, a positive outcome is generally feasible with effective multi-disciplinary management.

The prevalence of rheumatic illnesses among women has been steadily increasing in the United Arab Emirates (UAE) in recent years, following the global trend (5). Rheumatic illnesses affect 0.1% to 1.5% of the general population in the United Arab Emirates, with women being more susceptible than men to develop these problems. Dubai is a prominent regional hub for treating rheumatic illnesses due to its diversified population and state-of-the-art healthcare infrastructure (6). Although rheumatic illnesses are on the rise, no research specifically examines pregnancy outcomes in women in Dubai who have these symptoms.

In an attempt to fill these knowledge gaps, this retrospective observational study will look back over five years (2018–2022) at a tertiary hospital in Dubai (Dubai hospital) and analyze the pregnancy outcomes of women with rheumatic illnesses. By conducting a retrospective study of a large dataset of patient medical records, we want to analyze maternal and fetal outcomes, investigate the impact of different rheumatic disorders on pregnancy, and identify potential risk factors or protective variables impacting these outcomes.

This research is significant because it may deepen our knowledge of rheumatic diseases in pregnancy, which would be beneficial to both patients and medical professionals. The findings of this study could help enhance management strategies and pre-conception counseling techniques.

Methods and Materials:

A retrospective cross-sectional study was conducted at Dubai Hospital regarding the pregnancy outcomes of women with Rheumatic diseases. The study included patients who were booked and delivered with us within the period from January 1, 2018, to December 31, 2022., a total of 5 years. We have a combined Rheumatology Antenatal clinic which is a multi-specialist clinic in our hospital, it was established in 2015. All patients who have rheumatic diseases are referred to the clinic and followed up throughout their pregnancy.

185 women were booked and followed up in our combined Rheumatology antenatal clinic during the study period. We excluded the patients who defaulted during the follow-up. The primary objective of our study was to know about maternal and neonatal complications of disease. The secondary objective was to study disease flare and mode of delivery.

For this study, multiple data were collected to provide a comprehensive analysis. Maternal demographics were recorded, including information such as age, parity, nationality, previous recurrent miscarriages, nature of the disease and the duration, type of medication, and whether APLA and anti-Ro and anti-LA antibodies were present. Maternal outcomes like miscarriage, termination of pregnancy, intrauterine death, diabetes, hypertension, anemia, Antepartum hemorrhage, premature rupture of membranes, thromboembolism, disease flare, gestational age during delivery, mode of delivery, and postpartum complications were studied. Neonatal outcomes were birth weight, need for admission to the neonatal unit, jaundice, hypoglycemia, sepsis, congenital heart block, and fetal anomalies.

Ethical approval for the study was obtained from the Dubai Scientific Research Ethics Committee (DSREC-02/2023-09). Strict standards were put in place to guarantee patient privacy and data security during the research. The collected data was organized and tabulated in Microsoft Excel 2016 (Microsoft Office 2016 package), and statistical analysis was done using IBM SPSS Statistics for Windows, Version 20.0 (IBM Corp., Armonk, New York, United States). The data was analyzed using appropriate statistical tools and represented by tables and figures. Descriptive statistics, such as frequencies and percentages, were used to describe the characteristics, prenatal problems, and neonatal comorbidities of the study population. Continuous variables like birth weight were summarized using the mean and standard deviation. A P-value of less than 0.05 was considered statistically significant.

Results:

During the 5-year study period, we had a total of 185 patients with Rheumatic diseases. Out of 185 women, 118 (63.8%) were UAE nationals The rest of the individuals were expatriates.

Figure 1:

Among 185 patients, 164 (88.6%) were multipara and 21 (11.4%) were nulliparous.

33 patients (17.8%) had previous recurrent miscarriages; among them, 14 patients (42%) had Antiphospholipid antibodies.

Figure 2:

Antenatal Complications:

This study evaluated the antenatal complications commonly associated with RD in pregnant women.

Figure 3

Figure 4:

68 newborns (36.8%) were admitted to the neonatal intensive care unit (NICU), compared to 117 babies (63.2%) who remained normal. Prematurity, the existence of comorbidities, and the babies' general health state may all have an impact on the requirement for NICU hospitalization as shown in Table 1.

Table 1:

Discussion

The study explored pregnant women with rheumatic diseases in our combined rheumatology clinic. By examining these factors, we can gain insights into the demographic distribution and reproductive health status of pregnant women in Dubai.

Two-third of our pregnant patients ended in successful delivery without significant maternal and fetal complications, and maternal disease flare happened in 2.7 percent only. Our results reveal that maternal and fetal morbidity is significantly reduced in patients with RD when they are managed by a multidisciplinary team with regular follow-up and careful monitoring.

In terms of age distribution, our study categorized pregnant women into five groups, with the lower age estimate being 20 years and the upper age limit being above 40 years. It is important to consider the impact of maternal age on pregnancy as advanced maternal age has been associated with an increased risk of certain complications such as Miscarriages, gestational diabetes, preeclampsia, and chromosomal abnormalities in offspring [7,8].

Based on the severity of the condition, gestational age, and possible side effects associated with each drug, medication selection, and dose modifications are often modified [9]. A common drug in our research population, hydroxychloroquine(given to 21.6%), has been proven to have a good safety profile during pregnancy and is often suggested for the treatment of autoimmune illnesses [10,11]. Prednisolone was given to 14 women (7.6%), Sulfasalazine was used by 8 women (4.3%), and Azathioprine was used by 7 women (3.8%). Aspirin along with Clexane (20 women, 10.8%), Hydroxychloroquine along with prednisolone (26 women, 14.1%), and Hydroxychloroquine along with azathioprine (13 women, 7%) are some examples of medication combinations that were prescribed to pregnant patients

In our study, anti-Ro and anti-LA antibodies were seen in 68 women (36.75%), and anti-phospholipid antibodies were seen in 40 women (21.6%. Among women with APLA, 9 had miscarriages, 5 had venous thromboembolism, 3 had severe preeclampsia, 2 babies had fetal growth restriction, and 1 baby had congenital heart block. According to Alijotas-Reig et al. (2020), APLA is an autoimmune condition that is characterized by the development of certain antibodies that may cause pregnancy difficulties such as recurrent miscarriages, intrauterine growth restriction, and placental abruption. [12,13].

We have detected a total of 3 neonates who have been affected with congenital heart block. It has been discovered that two of these neonates, which account for 2.9% of the total, were born to women who tested positive for anti-Ro and anti-LA antibodies. In a study conducted in Turkey by Davutoğlu EA et al, 13.9% of women had anti-Ro or anti-La antibodies, and none of them had

congenital heart block. [14] According to Brucato et al. (2018), autoimmune diseases such as Sjogren's syndrome and systemic lupus erythematosus (SLE) are linked to anti-RO/LA antibodies. Neonatal lupus, a disorder characterized by skin rash, congenital heart block, and other potential indications, may be more likely to occur in neonates born to RD-affected mothers if anti-RO/LA antibodies are present. [15] The discovery of anti-RO/LA comorbidity in newborns emphasizes the need for careful monitoring and effective treatment to reduce any possible negative consequences.

Anemia is the most prevalent antenatal complication among our patients, affecting 47 individuals, and accounting for 25.4% of the cases. Diabetes, on the other hand, affects 34 patients, which is equivalent to 18.4% of the cases. This high rate can be attributed to the increased prevalence of diabetes in our population and might be due to the side effects of medication like prednisolone. In our study, 18 patients (9.7%) were found to have hypertension. In a study conducted in Turkey, pre-eclampsia was seen in 7.4%. [14]. In our study disease flare-up was found in 5 patients (2.7%) only and study conducted by Sugawara E et al in Japan, disease flare was seen in 18%. [16]

In our research, rate of PTB(pre-term birth) was 26% exceeding PTB risk in the general population, which is similar to a study conducted in Sweden and Denmark by Hellgren K et al [17] . In our study, most preterm births occur between 32 and 37 weeks of gestation with favorable outcomes due to excellent neonatal care. There are many studies that report a high rate of preterm birth as a serious complication in patients with Rheumatic diseases. The frequency of this complication in studies conducted by Limba et al., Smyth et al., and Park et al. and Megan et al. were 43%,39%, 25.5% and 23.7% respectively [18]. In this group, preterm birth is a serious problem that is influenced by several variables including disease activity, autoantibodies and maternal comorbidities. Maintaining disease remission, prudent drug management, specialist prenatal care, thromboprophylaxis when needed, lifestyle and health management and patient education are the keyways to reduce this risk.

PPROM is considered as the primary cause for preterm birth in the general population. 14.5%(7 patients) of PTB is due to preterm premature rupture of membranes(PPROM). Hence, it is very important to identify pregnant women who are at higher risk of infection, have a previous preterm birth, or have a history of cervical incompetence, and treat them promptly with antibiotics if infection is confirmed to prevent the PTB and its consequences.

14 patients had delivery before 32 weeks and 10 had delivery before 28 weeks. 8 among 14 patients had antiphospholipid antibodies, which is statistically significant [P=0.001]. Early delivery happened due to pre-eclampsia and fetal growth restriction therefore disease evaluation and BP monitoring are extremely important. Most of the women who developed venous thromboembolism had anti-phospholipid antibodies, which is statistically significant.

In terms of mode of delivery, 95 women (51.4%) had a vaginal delivery, while 90 women (48.6%) had cesarean sections. The most common indication for a cesarean section was a previous cesarean section (38. 8%).Second most common indication was pre-eclampsia (11%). We had six patients who underwent termination of pregnancy because they were on teratogenic drugs like Methotrexate and Leflunomide.

9.2% (17 patients) had postpartum complications and prolonged hospital stay. Among them, 6 patients (3.24%) had a postpartum hemorrhage, 9 of them (4.86%) experienced wound infections and hematoma while 2 had deep venous thrombosis despite on clexane. Low immunity can account for 4.86% of wound infections. In addition, there were two cases of unexplained intrauterine deaths; both patients tested negative for anti-PHI antibodies. Zamani et al's study in Iran reveals a significantly higher stillbirth rate compared to current data.[18]

Mean birth weight of babies born in our study was 2687gm. Proper prenatal care ensured that 55.7% of the total babies had no other health conditions. However, a staggering 68% of the babies required medical attention and were admitted to the neonatal intensive care unit (NICU). The most frequent reasons for admission were premature birth, low birth weight, jaundice, and hypoglycemia. It is essential to remember that our research offers a snapshot of the traits and neonatal comorbidities in a particular cohort of RD-affected mothers. The results may not apply to other groups or cover the

entire range of potential outcomes. A deeper knowledge of the traits and neonatal outcomes in this demographic requires more study with large sample numbers and varied populations.
The study's merits are found in the large amount of data it collected from a significant cohort of 185 pregnant women who had rheumatic disorders; this data provided insightful information on the pregnancy outcomes of these women. Our study is limited due to its small sample size and retrospective nature. Some patients with RD were excluded due to incomplete data or lost in follow up. Patients who visited the combined Rheumatology Antenatal clinic were included in the research, which might lead to selection bias, as we missed some patients with miscarriages who were not referred to this clinic. Also amount of information is limited in medical records. Because just one tertiary hospital in Dubai served as the study's site, it's possible that the results cannot be applied to a larger or more varied population.

Conclusion

In conclusion, our research examined the traits, prenatal difficulties and neonatal comorbidities in women who were pregnant and had RD. Managing women with RD throughout pregnancy and postpartum period can be difficult for both obstetricians and Rheumatologists. A remission period of atleast 6 months prior to conception increases the likelihood of a successful pregnancy while decreasing the disease flares during pregnancy. As a result, discussions about pregnancy should begin prior to conception, including risk stratification and pregnancy planning. Rheumatologists and obstetricians must work together to address RD and its comorbid pregnancy problems. Women with RD needs frequent and regular antenatal visits based on clinical situation, early screening for pre-eclampsia and FGR by doppler studies and its prevention by aspirin, thromboprophylaxis, regular assessment for renal disease and close fetal monitoring to prevent intra uterine death. Individualized treatment regimens that take illness prevention and drug safety into account are crucial. Despite the limits of our research, it offers important insights into this group. Future studies using bigger cohorts are required to fully comprehend how RD affects maternal and neonatal health outcomes.

Conflicts of interest

The author declares no conflict of interest in this study.

Limitations of study

Our study is limited Due to its small sample size and retrospective nature. Also amount of information is limited in medical records

Authors' Contribution and Acknowledgements

Author 1 data collection, data consolidation, manuscript writing, revision, and correspondence,
Author 2 conceptualization, manuscript writing, drafting, and revision,
Author 3 data analysis and manuscript writing,
Author 4&5 data collection, Author 6 manuscript revision.
We acknowledge Dr. Sahil Navlani for helping us in preparing the data collection tool.

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