

## New-onset systemic lupus erythematosus in a pregnant woman: A case report

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### ABSTRACT

**Background:** Systemic lupus erythematosus (SLE) is a multi-systemic inflammatory disease that mainly affects women of childbearing age. Development of SLE during pregnancy increases the risk of some maternal and fetal complications. We herein present a pregnant woman with new-onset SLE during pregnancy.

**Case description:** A 30-year-old pregnant woman with a gestational age of 30 weeks and twin pregnancy was referred to a hospital because of bradycardia and arrhythmia of fetuses during routine pregnancy checkups. The patient was later diagnosed with SLE and received hydroxychloroquine and dexamethasone. During the course of treatment, the patient developed erythematosus skin lesions and was hospitalized for further evaluations. Various consultations were made. Given the overall conditions of the mother and fetuses, caesarean section was performed at week 34 of pregnancy. Finally, the patient was discharged with good general condition after one month of hospitalization.

**Conclusion:** Active SLE during pregnancy is associated with an increased risk of maternal and fetal complications. It is essential to consider the impact of pregnancy on the disease, the impact of the disease on fetal health and the safety of medications used during pregnancy and lactation. For improved fetal and maternal outcomes, a multidisciplinary approach comprising of gynecology, neonatology and internal medicine should be taken when treating pregnant women with SLE.

**Keywords:** Systemic lupus erythematosus; Pregnancy

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## INTRODUCTION

Systemic lupus erythematosus (SLE) is a multi-systemic inflammatory disease that affects one in every 1,000 people (1). This is a disease of unknown etiology during which autoantibodies are produced, causing inflammatory damage in various organs including kidneys, central nervous system, etc. (2). A set of genetic, environmental and hormonal factors seem to be involved in the disease. In general, the prevalence of SLE is much higher in women, particularly during pregnancy, than in men. The onset of the disease is usually in the third or fourth decade of life (3). In recent decades, improvements in survival and quality of life of patients with SLE have led to an increase in the number of pregnancies during the course of the disease. Developing SLE during pregnancy increases the risk of some maternal and fetal complications (4). In addition to increased rate of recurrent miscarriage and intrauterine fetal demise (IUFD), SLE during pregnancy may lead to preterm labor, intrauterine growth restriction and prelabor rupture of membranes. Preeclampsia also appears to be one of the most common midwifery complications of women with SLE (5). On the other hand, safety of the drugs used for treatment of these patients is questionable. Diagnostic criteria for SLE during pregnancy are not different from those for non-pregnant women (2). Ideally, the disease should be inactive 12-18 months or at least six months before pregnancy, which is accompanied with the best prognosis for both mother and fetus (6). Careful follow-up of pregnant women with SLE, management of complications and preventing administration of teratogenic drugs is essential.

Pregnancy is still a challenge for women with SLE. Concurrent management by

gynecologists and rheumatologists could help improve pregnancy outcome. Pregnancy should be pre-planned and accompanied with special care and careful monitoring for women with lupus (7). Herein, we present a pregnant woman with new-onset SLE during pregnancy to provide a review of the most recent evaluation and management techniques for controlling the disease during pregnancy.

## CASE PRESENTATION

A 30-year-old pregnant woman (G5,P3,L1,D2,Ab1) with gestational age of 30 weeks and twin pregnancy was referred to a hospital because of bradycardia and arrhythmia of fetuses during a routine pregnancy checkup one month ago. Complete heart block was confirmed via fetal echocardiography by a pediatric cardiologist. In later follow ups, SLE was confirmed by positive anti-RO and anti-nuclear antibody tests.

The patient was treated with hydroxychloroquine and dexamethasone for one month after the initial diagnosis of SLE and developed erythema and urticaria-like skin lesions approximately five days prior to admission, first in the upper limbs and then generalized to the trunk and lower extremities. The lesions were not itchy. After referral to a rheumatologist, the patient was hospitalized in the high risk pregnancy unit for suspected drug reaction. The patient had a previous history of IUFD and miscarriage, which was not investigated further to determine the etiology (Table 1). Moreover, the patient had no family history of SLE.

**Table 1. Records of previous pregnancies and childbirths**

Gravida	Pregnancy outcome	Delivery method	Gender	Time	Gestational age at birth
G1	Live	Normal vaginal delivery	Female	10 years ago	Term
G2	Death	C-section	Male	8 years ago	8 months
G3	Abortion	Dilation and curettage	Male	6 years ago	4 months
G4	Death	C-section	Female	2 years ago	8 months

At birth, vital signs were controlled and normal. The patient's systolic and diastolic blood pressure was 110 and 60 mmHg, respectively. Except for generalized maculopapular erythematous lesions, physical examination was normal and there was no sign of erythema, effusion or tenderness in the joints. The skin lesions were itchless, without scaling or palm/leg involvement. There was no sign of vaginal bleeding and uterine contractility but the fetus was bradycardic. In addition to SLE

medication, the patient was receiving insulin due to gestational diabetes mellitus. The patient's medications included hydroxychloroquine (200 mg daily), calcium-D-glucaratedaily (daily), aspirin (80 mg daily), dexamethasone (2 mg B.D.), enoxaparin ampoule (4,000 units qhs), ferrous sulfate and folic acid. Results of daily paraclinical tests including complete blood count and liver and renal function tests were normal (Table 2).

<b>Complete blood count</b>	White blood cell: $8.9 \times 10^3/\mu\text{l}$ , Hemoglobin: 11.7 g/dl, Hematocrit: 33.3%, Platelet: $235 \times 10^3/\mu\text{l}$
<b>Liver function</b>	Aspartate aminotransferase: 14 U/l, Alanine transaminase: 14 U/l, Alkaline phosphatase: 191 U/l, Lactate dehydrogenase: 253 U/l, Total bilirubin: 1.3 mg/dl, Direct bilirubin: 0.4 mg/dl
<b>Kidney function</b>	Urea: 9 mg/dl, Creatinine: 0.8 mg/dl, Uric acid: 4.1 mg/dl
<b>Electrolytes</b>	Sodium: 142 mEq/l, Potassium: 3.8 mEq/l
<b>Inflammatory markers</b>	Erythrocyte sedimentation rate: 86 mm/h, RDW-CV: 16.3
<b>24-hour urine collection</b>	Urine volume: 1600 ml, Urine protein: 110 mg/24 hrs, Urine creatinine: 1232 mg/24 hrs

**Table 2. Results of the paraclinical tests**

Various consultations were requested for the patient. Perinatology consultation revealed no evidence of hydrops and pericardial effusion in the fetus and no need for betamethasone administration because of the dexamethasone treatment. Sonography and fetal echocardiography were performed. Fetal heart rate was measured for both fetuses every 6 hours. The hemodynamic and anatomical

function of the twin on the right side were normal. The twin on the other side had sinus bradycardia due to the systemic disease of the mother; however, the pregnancy was continued due to the normal hemodynamic and cardiac function of the fetus. Cardiology consultation was requested for the mother and fetuses and the results of echocardiographic evaluation of the mother

were as follows: mild tricuspid regurgitation, normal right ventricle function, normal left ventricle size and function, ejection fraction 60% and pulmonary artery pressure 20 mmHg. However, both fetuses were bradycardic. Hemodynamic function of the heart was acceptable and there was no atrioventricular block in either case. Pericardial effusion was not evident. Fetal heart rate was abnormal (right twin: 81, left twin: 56). Moreover, the patient's blood glucose and insulin administration were adjusted.

The skin lesions (erythematous plaques) formed throughout the body could be either due to active SLE or an adverse drug reaction to hydroxychloroquine. Ethacridine lactate solution and betamethasone topical were prescribed and hydroxychloroquine was discontinued. A skin biopsy was performed for the patient and the results indicated acute pustular eczema. During the course of treatment, the skin lesions improved significantly.

Laboratory and paraclinical examinations were performed frequently during the hospitalization period. The nonstress test was performed daily for both fetuses. Biophysical profile was performed twice weekly. Uteroplacental Doppler sonography was normal. Due to the patient's conditions, previous history of C-section and reduction of amniotic fluid around the smaller fetus, the patient went under C-section at week 34 of pregnancy and two male babies with Apgar score of 8 were born. Prednisolone was administered after caesarean delivery. Finally, the patient was discharged with good general condition after one month of hospitalization.

## DISCUSSION

We reported a rare case of SLE during a twin pregnancy which was accompanied with fetal complications and complete heart block. According to studies, 90% of SLE cases are women aged 37 to 50 years (8). However, the age at onset in Iranian women is reported to be 21.5 years (9). Clinical and laboratory findings, course of the disease and prognosis

vary from patient to patient (8). Common symptoms of SLE include fatigue, fever, skin lesions and renal involvement (7). In our case, the disease first presented with arrhythmia in the fetuses and later with skin manifestations. Despite advances made in the management of patients with SLE, the disease is still associated with a high risk of perinatal morbidity and mortality (10). In a study on 396 pregnant patients with SLE, 30% of the patients experience a flare-up 18% of whom were affected by lupus nephritis (11). In another study on 51 patients with new-onset SLE during pregnancy, 90% of pregnancies were successful and 11 patients developed nephritis (12). Maternal renal disease, especially active lupus nephritis, renal dysfunction, serum creatinine  $> 2$  mg/dL, nephrotic syndrome, antiphospholipid syndrome and hypertension at the beginning of pregnancy are poor prognostic indicators for both mother and fetus. Patients with lupus nephritis, especially those with hypertension and antiphospholipid syndrome, are at risk of developing preeclampsia during pregnancy (6). A study has claimed that lupus nephritis is a risk factor for maternal outcomes such as flare-up, hypertension and anemia but has no significant relationship with adverse fetal outcomes (13). In our case, renal function test was normal and there was no evidence of renal involvement.

In SLE patients, renal function should be monitored by testing urinary protein excretion, urinary sediment analysis (hematuria, urinary cast), serum creatinine levels and glomerular filtration rate (14). Developing SLE during pregnancy considerably increases the risk of spontaneous abortion, IUFD, growth retardation and preterm delivery (1). Our case had a previous history of IUFD and spontaneous abortion, which had not been investigated.

Pregnant women with SLE should follow protocols of high risk pregnancies. Biometric findings and Doppler ultrasound in the third trimester and distinction between early and late IUGR will contribute to better decision making about delivery time in order to reduce the risk of perinatal morbidity and mortality

(15). Indications of fetal echocardiography include fetal arrhythmia/dysrhythmia, myocarditis and positive maternal anti-RO/SSA or anti-LA/SSB. Some studies also recommend hydroxychloroquine administration for women with SLE before and during pregnancy in order to control the disease and prevent flare-ups during pregnancy (16). Hydroxychloroquine may also reduce the risk of congenital heart block in fetuses exposed to maternal anti-Ro/SSA antibodies (17). In our case, after diagnosis of SLE, hydroxychloroquine therapy was initiated but later discontinued due to the patient's skin manifestations and the likelihood of an adverse drug reaction. Some studies suggest that the risk–benefit ratio of oral glucocorticoids, azathioprine, cyclosporine and tacrolimus is acceptable enough in controlling SLE in pregnancy (18). In moderate to severe cases, high-dose glucocorticoids (including intravenous pulse), intravenous immunoglobulin and plasmapheresis should be considered (19). In our case, oral and intravenous glucocorticoids were administered during the course of treatment. As recommended for the general population, calcium, vitamin D and folic acid supplements should be given to patients with SLE and antiphospholipid antibody syndrome, especially to those with low level of vitamin D in the first trimester of pregnancy and glucocorticoid and heparin users (6). Considering the conditions of pregnancy and long-term consumption of glucocorticoids and heparin, daily calcium supplementation was prescribed for our case to prevent the harmful effects of the medications on bone mass.

## CONCLUSION

Systemic lupus erythematosus mainly affects women of childbearing age. Many factors may affect the pregnancy outcome and fetal complications of the disease. It is essential to consider the impact of pregnancy on the disease, effects of the disease on fetal health as well as the safety of medications used during pregnancy and lactation. Physicians should be aware of the physiological changes

in pregnancy that mimic symptoms of SLE. For improved fetal and maternal outcomes, a multidisciplinary approach comprising of gynecology, neonatology and internal medicine should be taken when treating pregnant women with SLE.

## DECLARATIONS

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### *Ethics approvals and consent to participate:*

Oral consent was obtained from the subject and she was assured that her personal information will remain confidential.

### *Conflict of interest*

The authors declare that there is no conflict of interest regarding the publication of this article.

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