

# Outcome of Pregnancy in Patients with Systemic Lupus Erythematosus

Erica Kwan Yue<sup>1</sup>, Coriejati Rita<sup>2</sup>, Laniyati Hamijoyo<sup>3</sup>

<sup>1</sup> Faculty of Medicine, Universitas Padjadjaran;

<sup>2</sup> Department of Clinical Pathology, Universitas Padjadjaran/Dr. Hasan Sadikin General Hospital;

<sup>3</sup> Division of Rheumatology Department of Internal Medicine Faculty of Medicine, Universitas Padjadjaran/Dr. Hasan Sadikin General Hospital

Correspondence: Erica Kwan Yue Bandung-Sumedang KM.21, Jatinangor, Sumedang  
E-mail: ericakwankwan@gmail.com

## Abstract

**Background:** Systemic lupus erythematosus (SLE) is an autoimmune disease which involves many different organ systems and immunological abnormalities. SLE mainly affects females in their reproductive age. This study aimed to describe the fetal outcome, neonatal complications, maternal outcome, and obstetrics complication in patients diagnosed with SLE, in order to help the physicians to reduce the fetal loss, improve maternal morbidity, and reduce neonatal or maternal deaths.

**Method:** This research was conducted using descriptive quantitative design. Data were obtained from direct interview noted in a report form and medical records. Subjects were SLE patients who came to Rheumatology Outpatient clinic, Dr. Hasan Sadikin General Hospital, Bandung from September 2016 to November 2016; and fulfilled the inclusion and exclusion criteria. The minimal required sample was 96 subjects.

**Results:** Due to time limitation, only 53 pregnancies from 40 females were managed to be recorded. The median age when being diagnosis of the subjects was 24 (14 - 41) years old. The fetal outcomes showed 64.2% live births, 18.9% spontaneous abortions, 9.4% intrauterine death, 1.8% intrauterine growth retardation, and 9.1% neonatal deaths. Neonatal complications included premature delivery, low birth weight, and growth retardation. Maternal complications during pregnancy included rash, pregnancy-induced hypertension, arthritis, anemia, and thrombocytopenia. Furthermore, obstetric complications included 13.2% pre-eclampsia, 13.2% placenta previa, and 1.8% stroke. There were 2 cases (3.8%) of maternal death happened during the delivery.

**Conclusion:** The most frequent maternal complications during pregnancy were arthritis and rash. Pre-eclampsia and placenta previa were the most frequent obstetric complications which experienced by the pregnant SLE patients. Exclude the live births, the most frequent fetal outcome was spontaneous abortion. The most frequent neonatal complications were preterm delivery and low birth weight.

**Keywords:** pregnancy, systemic lupus erythematosus, fetal outcomes, maternal outcomes

## Introduction

Systemic lupus erythematosus (SLE) is a systemic autoimmune disease which characterized by heterogeneous, multi organ system involvement, and the production of the arrays of autoantibodies.<sup>1</sup> A 9:1 female-to-male ratio has been reported with peak age of onset between 15 and 40 years old.<sup>2</sup> The disease is dominantly affected women in their reproductive years.<sup>3</sup> However, women with SLE have the same fertility as the healthy women with the same age.<sup>4</sup> In the past, women with SLE were advised not to get pregnant due to poor fetal and maternal outcomes and also due to high tendency of flare-up.<sup>5</sup>

The relationship of SLE with pregnancy is complex. Female SLE patients would suffer from dilemma of their desire to get pregnant and the difficulties of managing lupus during pregnancy. Study reported women with active lupus at the onset or in the early stages of pregnancy have high rate of pregnancy loss.<sup>6</sup> Moreover, there is an increased risk of spontaneous abortions, premature births, intrauterine growth retardation and stillbirth in overall SLE pregnancy.<sup>7</sup> Therefore, the outcome of pregnancy become a major concern in most SLE patients.<sup>8</sup>

The maternal complications faced by the SLE patients during pregnancy include hypertension, lupus flare, lupus nephritis, arthritis, pre-eclampsia, and more severe complications such as eclampsia, HELLP (hemolysis, elevated liver enzymes, low platelets) syndrome, stroke, and maternal death.<sup>9</sup> Neonates from an SLE mother has higher risk to develop neonatal lupus erythematosus (NLE) that could result in cardiac, dermatologic, hepatic disorders, and hematologic abnormalities.<sup>10</sup> Congenital heart block is also one of the major complications which is occurred in 2% of neonates from SLE mother. Congenital heart block is an irreversible condition which causes the scarring of the cardiac tissue and eventually affects the functionality of the heart.<sup>11</sup>

There is no data about the outcome of pregnancy in patients with SLE in Indonesia and in Dr. Hasan Sadikin Hospital. The objective of our research was to describe the fetal and maternal outcome and complications in pregnancy with SLE in order

to help the physicians to reduce the maternal morbidity or mortality and fetal loss.

### Method

This research was conducted using descriptive quantitative design. Data was collected from medical records and noted in a report form. Subjects were female SLE patients visited Outpatient Rheumatology clinic of Dr. Hasan Sadikin Hospital between September 2016 to November 2016. An ethical clearance letter was obtained from the Ethical Clearance Committee of Faculty of Medicine Universitas Padjadjaran before the study proceeded.

The minimum required sample for this study were 96 cases. The inclusion criteria was female SLE patients who had at least one pregnancy at or after she was diagnosed as SLE. SLE was diagnosed with America College of Rheumatology Criteria 2010.<sup>12</sup> Patients who were unwilling to follow the study or do not remember the history of their pregnancy were excluded from the study. After the selection, subjects were required to sign an informed consent form regarding the objectives and procedure of the test.

The report form comprised of the questions about the basic information, gestation history, fetal and maternal outcome, and lastly, neonatal and obstetrics complications of the subjects. Data were analyzed descriptively using Microsoft Excel 2012.

### Results

We only gathered 53 pregnancies cases from 40 female SLE patients were due to time limitation. The characteristics of subjects were presented in Table 1.

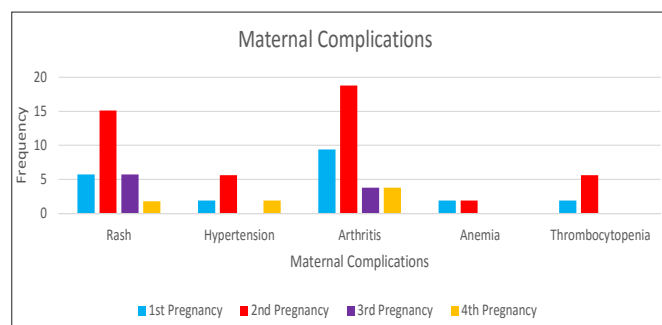
**Table 1.** Characteristics of the subjects.

Characteristics	Result
Age of Diagnosis (years)	24 (14-41)*
Present Age (years)	31.5 (24-47)*
Duration of the disease (years)	6.5 (0-17)*

\*not normally distributed data, data presented in median (range)

Table 1 above shows the median age when diagnosis made was 24 years old, demonstrating that SLE mainly affects female in their reproductive years.

**Chart 1.** Maternal Complications of SLE patients.



The results of maternal complications occurred during pregnancy are shown in Chart 1. Arthritis presented to be the highest frequency of maternal complication and followed by rash. Most patients experienced complications during their 2<sup>nd</sup> pregnancy.

**Table 2.** Obstetrics Complication and Maternal Outcome of SLE patients.

Obstetric Complication, N=40	Result, N (%)
Maternal mortality	2 (3.8%)
Stroke	1 (1.8%)
Pre-eclampsia	7 (13.2%)
Placenta previa	7 (13.2%)

According to Table 2, 13.2% of the pregnant SLE patients experienced pre-eclampsia and placenta previa during birth. Maternal mortality presented with 2 cases.

**Table 3.** Fetal outcomes in SLE pregnancy.

Fetal outcome, N=53 cases	Result, N (%)
Live born	34 (64.2%)
Spontaneous abortion	10 (18.9%)
Intrauterine death	5 (9.4%)
IUGR*	1 (1.8%)
Neonatal mortality	3 (5.7%)

\*IUGR= Intrauterine Growth Retardation

Table 3 recorded the results of fetal outcome and neonatal complications of our study. Based on the table, out of the 53 pregnancies had more than half live births. However, there are still highlight cases of abortion in 18.9%.

**Table 4.** Neonatal Complications.

Neonatal complication, N=34 cases	Result, N (%)
Preterm Delivery	10 (29.4%)
Low Birth Weight	14 (41.2%)
Growth retardation	1 (2.9%)
Neonatal Lupus	0
Congenital Heart Block	0

Table 4 shows that the most frequent neonatal complications were preterm delivery and low birth weight.

### Discussion

Based on our results, arthritis (35.8%) presented to be the most common flares during the subjects' pregnancy period, following by rashes (28.3%). Same amount of subjects experienced pre-eclampsia (13.2%) and placenta previa (13.25) when they were giving birth. Overall, the fetal outcome came out well with 34 (64.2%) live births, despite there was 10 (18.9%) cases of spontaneous abortions. The most frequent neonatal complications were preterm delivery (29.4%) and

low birth weight (41.2%). Growth retardation was rare, only occurred in one live-birth and there was no Neonatal Lupus Erythematosus (NLE) and Congenital Heart Block (CHB) were recorded. Although pregnancy is not contraindicated for patients with SLE, significant fetal, neonatal and maternal risks still exist.<sup>13</sup>

In the past, pregnancy of lupus patients had high risks of complication due to the high flare-up rate especially during the late pregnancy or postpartum period. It was also concordance with the increased incidences of fetal loss, spontaneous abortions, preterm delivery and intrauterine death.<sup>5,14</sup> 26 patients Our study and several recent studies had shown an increase morbidity rate in pregnancies of lupus patients compared to healthy women.

A study was conducted by Hee WC in Mackay Memorial Hospital, Taipei, Taiwan with 24 pregnancies in 17 female SLE patients between January 2000 and February 2005,<sup>5</sup> revealed 22 (91.6%) live-birth pregnancies, eight (33.3%) preterm delivery,<sup>5</sup> two (8.3%) pregnancies were terminated due to loss of fetal heartbeat, three (13.6%) of the neonates had IUGR, and one (4.5%) had stillbirth.<sup>5</sup> Pre-eclampsia occurred in three (13.6%) subjects. <sup>5</sup> There is no symptom indicating disease flare-up throughout the pregnancy period, such as malar rash, alopecia, and arthritis.<sup>5</sup>

A prospective study conducted by Aly Eman in the high-risk pregnancy unit in Department of Obstetrics and Gynecology, Cairo University Hospitals, Egypt included 84 SLE patients for the total 91 pregnancies from October 2010 to January 2015,<sup>15</sup> showed complications such as arthritis were experienced by 84 (92%) patients, hypertension in 36 (39%) patients; hematological abnormalities (anemia and thrombocytopenia) were presented in 39 (42%) patients;<sup>15</sup> spontaneous abortion occurred in 14 patients (15%), 7 (8%) pregnancies had IUFD, 3 (3%) cases of neonatal death and 77 (76%) live births neonates; <sup>15</sup> Twenty-nine (32%) pregnancies had IUGR, 12 (13%) was recorded with preterm deliveries, 12 (13%) experienced pre-eclampsia during pregnancy and 20 (22%) neonates presented with low birth weight. <sup>15</sup>

There was another study conducted by Dey ID at the Korle-bu Teaching Hospital in 2013 in Ghana, West Africa showed that out of 7 pregnancies, there were 4 cases of full term birth and 3 cases were loss births during 16, 24 and 32 weeks of pregnancy.<sup>16</sup> Meanwhile, six of these patients complained of arthritis, three had hypertension, four had rash. But no maternal death were reported. <sup>16</sup> Many doctors in Ghana did not have experience managing pregnant SLE patients. Thus, most pregnancies were not planned with the physicians.<sup>16</sup> However, these cases provide valuable evidence that normal pregnancy is possible within SLE patients, even in poor resource settings.<sup>16</sup>

Upon the results, SLE remained stable in most patients during their pregnancy. Most women were able to carry out their pregnancy to term with a mild lupus activity.<sup>5</sup> Hence, mothers with active SLE would achieve a higher chance to deliver successful pregnancies if they got optimal care from

obstetricians and physicians.<sup>5,17</sup>

Every woman with SLE who would like to get pregnant should consult and make plan with their respective physicians in order to decrease the risk of fetal and maternal complications. Patients are suggested to conceive only when the disease is inactive or has been stable for 6 months on appropriate medications.<sup>16</sup> Pre-pregnancy counseling and multidisciplinary management can crucially improve the maternal and fetal outcome in lupus pregnancies.<sup>16</sup> Throughout the gestational period, patients should cooperate with the physicians for detailed monitoring and antenatal care. Furthermore, some people experienced exacerbations of the disease in the postpartum period. Mother with SLE after pregnancy should be giving a great care and undergo respective management as to decrease or prevent any flares.

Limitation of this study is the time to conduct the research, due to that we only managed to get 53 samples out of 96 minimal required samples. The data only based on the interview, pediatrician and obstetrician were not involved to validate. Furthermore, our results were limited by the incomplete medical record about the manifestations during delivery such as laboratory results.

## Conclusion

In conclusion, the most frequent maternal complications during pregnancy were arthritis and rash. Pre-eclampsia and placenta previa were the most frequent obstetric complications which experienced by the pregnant SLE patients. Apart from live birth, the most frequent fetal outcome was spontaneous abortion. The most frequent neonatal complications were preterm delivery and low birth weight.

## Reference

1. Yazdany J, Dall'era M. Definition and classification of lupus and lupus-related disorder. In: Wallace DJ, Hahn BH, editors. *Dubois' lupus erythematosus and related syndromes*, 8<sup>th</sup> ed. Philadelphia: Saunders Elsevier;2012;(1):1–6.
2. Masi AT, Kaslow RA. Sex effects in systemic lupus erythematosus: a clue to pathogenesis. *Arthritis Rheum.* 1978;21(4):480–484
3. Witter FR. Management of the high-risk lupus pregnant patient. *Rheum Dis Clin North Ame.*2007;33(2):253–65.
4. Øtensen M. New insights into sexual functioning and fertility in rheumatic diseases. *Best Pract Res Clin Rheumatol.*2004;18(2):219–32.
5. Wong CH, Chen TL, Lee CS, Lin CJ, Chen CP. Outcome of pregnancy in patients with systemic lupus erythematosus. *Taiwan J Obstet Gynecol.* 2006;45(2):120-123
6. Michael LD, Ware B. Reproductive and hormonal aspects of systemic autoimmune diseases. In: Doria A, Pauletto P, editors. *Handbook of systemic autoimmune diseases*, 2<sup>nd</sup> ed. Philadelphia: Saunders Elsevier;2006;4:1–183.
7. Kumar A. Indian Guidelines on the Management of Sle. *J Indian Rheumatol Assoc.* 2002;10: 80–96.
8. Cervera R, Font J, Carmona F, Balasch J. Pregnancy in Systemic Lupus Erythematosus. *Postgrad Med J.* 2005;77:118–23.
9. Smyth A, Oliveira GHM, Lahr BD, et al. A systematic review and meta-analysis of pregnancy outcomes in patients with systemic lupus erythematosus and lupus nephritis. *Clin J Am Soc Nephrol.* 2010;5(11): 2060–8.

10. Kalim H. Low Birth Weight and Maternal and Neonatal Deaths are Complications of Systemic Lupus Erythematosus in Pregnant Pristine Induced Lupus Mice. *Arch Rheumatol*. 2015;30(4):85–91.
11. Huang JB, Jian L. Molecular Mechanisms of Congenital Heart Disease. In: Rao PS, editors. *Congenital Heart Disease-Selected Aspects*, 1<sup>st</sup> ed. China: Intech; 2009(5): 121–40
12. Hochberg MC. Updating the American College of Rheumatology revised criteria for the classification of systemic lupus erythematosus. *Arthritis Rheum*. 1997;40(9):1725.
13. Gimovsky ML, Montoro M, Paul RHM. Pregnancy outcome in women with Systemic Lupus Erythematosus. *Obstet Gynecol*. 1984; 63(5): 686–692
14. Georgiou PE, Politi EN, Katsimbri P, Sakka V, Drosos AA. Outcome of lupus pregnancy: a controlled study. *Rheumatology (Oxford)*. 2000;39(9): 1014–9.
15. Hussein AEA, Mohamed RR, Nabil MA. Pregnancy outcome in patients with systemic lupus erythematosus: A single center study in the High Risk Pregnancy unit. *Middle East Fertil Soc J*; 2016;21(3): 168–74.
16. Dzifa DI, Jerry C, Harriet K, Michael MK. Outcome of pregnancy in patients with systemic lupus erythematosus at Korle-bu Teaching Hospital. *Ghana Med J*. 2016;50(2):6.
17. Kiss E, Bhattoa HP, Bettembuk P, Balogh A SG. Pregnancy in women with systemic lupus erythematosus. *Eur J Obs Gynecol Reprod Biol*. 2002;101:129–34.