

Complications of Pregnancy in Systemic Lupus Erythematosus Patients

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Abstract

Background: Systemic lupus erythematosus (SLE) represents one of the most significant diseases in all of medicine, predominantly targeting young women in their childbearing years. The adverse perinatal outcomes resulting from SLE are believed to occur as a consequence of immunological alterations in the placenta. Preterm birth is the most common obstetric complication in women with SLE.

Aim of Study: To detect maternal and fetal outcomes in pregnancies complicated with systemic lupus erythematosus.

Patients and Methods: This study was carried out on 56 pregnant patients known as systemic lupus erythematosus coming for antenatal care in the period from June 2015 till June 2016 at high risk department of Kasr El-Eini Hospital, Cairo University. We recorded both maternal and neonatal outcomes for these patients.

Results: Abortion was found in 10.7% of cases, preterm labor in 41.1%, fetal growth restriction in 21.4%, low birth weight (less than 2.5kg) in 28.5% and 3 neonates were admitted to neonatal ICU. There was no maternal mortality. There were 3 cases (5.4%) with postpartum flare as (nephritis) all of them had consumed C3 and C4.

Conclusion: Pregnancy in systemic lupus erythematosus patients represents a challenge to ensure safety of both mother and fetus as it carries a high risk for both of them.

Key Words: Systemic lupus erythematosus – Intrauterine growth restriction – Abortion – Preterm labor.

Introduction

SYSTEMIC lupus erythematosus (SLE) is a chronic systemic autoimmune disease of variable severity and course. Clinical heterogeneity, unpredictable course and flares are characteristics of the disease [1].

SLE represents one of the most significant diseases in all of medicine, predominantly targeting

young women in their childbearing years with the potential to cause significant physical disfigurement, morbidity and occasionally mortality [2].

It is recognized that pregnancy may exacerbate SLE, and SLE may increase the pregnancy complications, including spontaneous abortion, premature delivery, intrauterine growth restriction (IUGR), and preeclampsia [3].

The adverse perinatal outcomes resulting from SLE are believed to occur as a consequence of immunological alterations in the placenta. The histology of the placenta frequently reveals vascular abnormalities in the utero-placenta or alterations in coagulation [4].

Preterm birth is the most common obstetric complication in women with SLE. Rates of preterm birth from 15 to 50 percent are reported, with increased incidence in women with lupus nephritis or high disease activity [5].

About 10 to 30 percent of pregnancies in women with SLE are complicated by fetal growth restriction and small-for-gestational-age babies compared with about 10 percent of pregnancies in the general obstetric population [5].

Risk factors for intrauterine growth restriction in lupus pregnancies include hypertension, active lupus (particularly lupus nephritis) and the presence of antiphospholipid antibodies [6].

Frequencies of spontaneous abortions and stillbirths are increased in women with lupus, with the stillbirth rate nearly 5 times greater than for non-lupus pregnancies [7].

Neonatal lupus erythematosus (NLE) is a rare syndrome characterized by fetal and neonatal congenital heart block that may also occur with suba-

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cute lupus erythematosus skin lesions, thrombocytopenia, anemia, hepatitis, glomerulonephritis, and neurologic involvement [8].

Neonatal lupus erythematosus occurs via placental passage of maternal anti-Ro/SSA and anti-La/SSB antibodies which bind to fetal tissue and cause either congenital heart block (CHB) or non-cardiac neonatal lupus. Although anti-Ro/SSA and anti-La/SSB antibodies have been determined to cause CHB, they do not affect other pregnancy outcomes [9].

The effects of pregnancy on lupus are controversial, and the reports of lupus flares during pregnancy are conflicting. There are studies that show an increase in lupus flares during pregnancy and others that show no increase in flares [10].

Lupus can flare during any trimester, as well as in the postpartum period.

The risk of lupus flare is drastically increased if the woman has had active lupus in the 6 months prior to pregnancy [11].

Most flares involve minor organ manifestations (e.g., musculoskeletal, cutaneous) and are easily treated with low dose corticosteroids. However, some centers report major organ manifestations with renal flares occurring in 43% [10].

The aim of this study is to detect maternal and fetal outcomes in pregnancies complicated with systemic lupus erythematosus.

Patients and Methods

This was a prospective study carried out on 56 pregnant patients previously diagnosed as systemic lupus erythematosus coming for antenatal care collected during the period from June 2015 to June 2016.

During their regular antenatal care visits all patients were monitored by a team consists of obstetricians, chemical pathologists, rheumatologists and neonatologists at delivery.

Patients included in the study were pregnant women at any gestational age ranging from 19 to 38 years, diagnosed as systemic lupus erythematosus and on remission during the whole pregnancy.

Exclusion criteria:

- Pregnant women with other medical disorders (e.g.: diabetes mellitus, cardiac, pregnancy induced hypertension).
- The presence of fetal congenital anomalies.

- Intrauterine fetal death.
- Twin pregnancy.

During antenatal care visits patients were subjected to:

- 1- Detailed history taking especially obstetric history, last menstrual period for calculation of gestational age, postpartum complications in previous pregnancies, history of lupus flare and timing of it.
- 2- Routine antenatal investigations include: Complete blood picture, random blood sugar, complete urine analysis, kidney function (urea, creatinine), liver function (SGOT, SGPT).
- 3- Immunological tests include: Lupus anticoagulant, anticardiolipin antibodies, anti Ro and anti La antibodies and C3 and C4.
- 4- Frequent U/S and Doppler scanning throughout the whole pregnancy till delivery include:
 - Fetal biometry for assessment of gestational age, and the presence of IUGR (IUGR is below 5th percentile).
 - Assessment of amniotic fluid.
 - Doppler study: Umbilical artery Doppler, to measure the mean systolic/diastolic ratio (S/D), resistance index (RI) and pulsatility index (PI).
- 5- Birth weight (low birth weight (LBW) is less than 2.5kg at birth).

Every pregnant patient was subjected to detailed ultrasound every month till seventh month then every 2 weeks till ninth month then weekly till delivery.

Statistical methods:

Data were statistically described in terms of mean \pm standard deviation (\pm SD), median and range, or frequencies (number of cases) and percentages when appropriate.

Comparison of numerical variables between the study groups was done using Student's *t*-test for independent samples in comparing normally distributed data and Mann Whitney U test for independent samples in comparing non-normal data.

For comparing categorical data, Chi-square (χ^2) test was performed. Exact test was used instead when the expected frequency is less than 5.

p-values less than 0.05 was considered statistically significant. All statistical calculations were done using computer program SPSS (Statistical

Package for the Social Science; SPSS Inc., Chicago, IL, USA) release 15 for Microsoft Windows (2006).

Results

It was a prospective study conducted at the department of high risk pregnancy of Kasr El-Eini Hospital, Cairo University during the period from June 2015 to June 2016.

It included 56 pregnant patients with systemic lupus erythematosus coming for antenatal care.

Table (1): Description of study group (No of cases: 56).

	Range	Mean	±Standard deviation
Age (years)	(19-38)	25.59	±4.459
Parity	(0-2)	0.66	±0.815
Abortions (No.)	(0-6)	1.00	±1.427
Gestational age (wks)	(9-39)	33.59	±7.019

Analysis of the study group:

There were 17 cases (30.4%) delivered vaginally while 33 cases (58.9%) had Cesarean sections and 6 cases (10.7%) had abortions.

Cesarean sections mainly were due to obstetrical causes (previous cesarean section, cephalopelvic disproportion, preterm delivery).

Table (2): Laboratory characteristics of the study group (No of cases: 56).

	No. of pregnant patients	Percentage
Lupus anticoagulant (LAC) Positive/Negative	41/15	73.2
Anticardiolipin IgG Positive/Negative	17/39	30.4
Anticardiolipin IgM Positive/Negative	7/49	12.5
C3,C4 Consumed / Normal	7/49	12.5

Table (3): Maternal and fetal outcomes detected among the study group (No of cases: 56).

	No. of pregnant patients	Percentage
Abortions	6	10.7
IUGR	12	21.4
Live births	50	89.3
IUFD	0	0
Full term deliveries	27	48.2
Preterm deliveries	23	41.1
Low birth weight	16	28.5
Neonatal ICU	3	5.4
Postpartum flare	3	5.4

Among preterm deliveries 7 cases were electively terminated between 34 and 36 weeks of gestation (5 cases had oligohydramnios and 2 cases had deteriorating Doppler indices).

This study recorded no neonatal cases with congenital heart block. Also there was no maternal mortality recorded.

Table (4): Effect of C3, C4 on lupus flare (No of cases: 56).

	C3,C4 consumed	C3,C4 normal	Total No.	p-value
Flare	3 (5.4%)	0	3	0.430
No flare	4 (7.1%)	49 (87.5%)	53	
Total no. of patients	7	49	56	

The study showed there were 3 cases (5.4%) with postpartum flare as (nephritis) all of them had consumed C3 and C4.

Discussion

Systemic lupus erythematosus has a striking female predominance, with adjusted prevalence rates worldwide approach or even exceeding 50-100 per 100 000 adults [1].

Systemic lupus erythematosus affects predominantly women during their reproductive years. Therefore, pregnancy in these patients is usually possible. However, pregnancy in established lupus may alter the course of the disease and, conversely, lupus may affect the natural course of pregnancy [13].

Adverse fetal outcomes in these women include pregnancy loss, intrauterine growth restriction, prematurity, and, occasionally neonatal lupus [13].

Several risk factors for poor pregnancy outcomes have been identified including hypertension, antiphospholipid syndrome (APS), lupus activity, grade of proteinuria, a previous adverse pregnancy outcome, and renal involvement [14].

Frequent complications in a cohort of 13,555 women with SLE during pregnancy were recorded as follow: Preterm labor in 20.8%, fetal growth restriction in 5.6% and maternal morbidity-mortality rate was 325/100.000 [15].

Several studies showed that pregnancy increased the incidence of SLE flares with rates up to 35% [16], while others reported no difference [17].

It has been reported in various studies that SLE flares might occur in any trimester or during the

post-partum period. Usually the severity of the flare is mild, with arthritis, constitutional and cutaneous manifestations being the most common. However, more serious problems affecting the kidneys and central nervous system have been reported [18].

The EUROAPS registry reported on the obstetrical results of 247 women recently. Prematurity was the most common finding (47%), followed by stillbirth and fetal loss (22.5%), miscarriage (16%), fetal growth restriction (14%) [19].

In another study Imbasciati and associates (2009) described outcomes in 113 pregnancies. After excluding 9 miscarriages, of the 104 remaining pregnancies, a third were delivered preterm, a third of infants weighed <2500gm, and the perinatal mortality rate was 6 [16].

The current study reported the most common complication was premature delivery in 23 cases (41.1 %) followed by low birth weight in 16 cases (28.5%), intrauterine growth restriction in 12 cases (21.4%) and 6 cases of abortion (10.7%).

Premature deliveries were due to oligohydramnios or deteriorating Doppler indices.

In our study there were 3 cases (5.4%) with postpartum flare as (nephritis) but with no maternal mortality.

There were no cases of intrauterine fetal death or neonatal death or congenital heart block; however 3 cases were admitted to neonatal ICU.

Conclusion:

Pregnancy in systemic lupus erythematosus patients represents a challenge to ensure safety of both mother and fetus as it carries a high risk for both of them.

So it needs more frequent antenatal care visits and frequent monitoring.

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مضاعفات الحمل لدى مرضى الذئبة الحمراء

يمثل مرض الذئبة الحمراء أحد أهم الأمراض في الطب ويستهدف النساء خلال سنوات الإنجاب. ويعتقد أن النتائج السلبية المصاحبة لمرض الذئبة الحمراء قد تحدث نتيجة التغيرات المناعية في المشيمة. ومن المسلم به أن الحمل قد يؤدي إلى تفكّم الذئبة الحمراء، والذئبة الحمراء قد تزيد من مضاعفات الحمل، بما في ذلك الإجهاض التلقائي أو الولادة المبكرة، نقص وزن الطفل عند الولادة، وتسمم الحمل.

أن الهدف من هذه الدراسة هو الكشف عن المضاعفات المصاحبة للحمل والتي قد تصيب الأم أو الجنين في مرضى الذئبة الحمراء. أجريت هذه الدراسة على ٥٦ مريضة حامل تعاني من الذئبة الحمراء قادمة للحصول على الرعاية الصحية أثناء الحمل بقسم الحمل الحرج كلية طب القصر العيني في الفترة من يونيو ٢٠١٥ وحتى يونيو ٢٠١٦.

نتائج الدراسة: أسفرت معظم الحالات عن ولادة لأطفال حية (٥٠ حالة بنسبة ٨٩٪) و٦ حالات أصيبت بالإجهاض بنسبة (١٠.٧٪). لا توجد حالات وفاة للجنين داخل الرحم أو حالات وفيات للأمهات.

خضعت ٢٣ حالة للولادة المبكرة بنسبة ٤١.١٪ أنهت ٧ حالات الحمل اختيارياً بين ٣٤-٣٦ أسبوع من الحمل وذلك أما نتيجة نقص السائل الأمنيوسي أو نتيجة تدهور مؤشرات الدوبلر الخاصة بالجنين.

سجلت الدراسة الحالية الإجهاض في ١٠.٧٪ من الحالات ونقص نمو الجنين في ٢١.٤٪ والولادة المبكرة في ٤١.١٪. وجد نقص مستوى C3 و C4 في ٧ حالات بنسبة ١٢.٥٪ وقد عانت ٢ حالات منهم من حدوث إلتهاب حاد للكلى ما بعد الولادة.