Biological and Clinical Sciences Research Journal
eISSN: 2708-2261; pISSN: 2958-4728
www.bcsrj.com
DOI: https://doi.org/10.54112/bcsrj.v2024i1.1166
*Biol. Clin. Sci. Res. J., Volume, **2024**: 1166*
Original Research Article

MATERNAL AND FETAL OUTCOME OF PREGNANCY IN SLE: A SINGLE CENTER SURVEY FROM PAKISTAN

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(Received, 04th August 2024, Revised 25th September 2024, Published 29th September 2024)

Abstract: *Systemic Lupus Erythematosus (SLE) is an autoimmune disease with multifactorial origins, affecting multiple organ systems. Pregnancy in women with SLE is associated with a higher risk of complications and adverse outcomes. This study aimed to evaluate maternal and fetal outcomes in pregnant patients with SLE.* ***Objective:*** *To analyse the maternal and fetal pregnancy outcomes in patients with SLE.* ***Methods:*** *This cross-sectional study was conducted over six months, from Jan 2024 to July 2024, after approval from the institutional ethical review board. Sixty-six pregnant women with SLE were enrolled based on specific inclusion and exclusion criteria. Detailed medical histories were collected, and patients were followed throughout pregnancy for maternal and fetal outcomes. Data was analyzed using SPSS version 26.0.* ***Results:*** *The mean age of the participants was 35.11 ± 7.27 years. Maternal complications included SLE flare in 47 (71.2%) patients, onset of disease during pregnancy in 4 (6.1%) patients, and normal pregnancy in only 15 (22.7%) cases. Fetal outcomes revealed intrauterine growth retardation (IUGR) in 12 (18.2%) cases and intrauterine death in 5 (7.6%) cases.* ***Conclusion:*** *Pregnancy in women with SLE is associated with significant maternal and fetal complications. The high prevalence of adverse outcomes underscores the need for careful monitoring and specialised care during pregnancy to improve prognoses.*

Keywords: Systemic Lupus Erythematosus Pregnancy Complications autoimmune Diseases Fetal Growth Retardation Pregnancy Outcome

Introduction

Systemic Lupus Erythematosus (SLE) is a multifactorial disease of autoimmune origin affecting multiple body systems (1). SLE is more common in females, and patients are more affected in pregnancy, so most of the time, primary diagnosis of the disease is made during pregnancy (2). SLE patients are more likely to have complications during pregnancy than normal individuals (3). Disease activity of the disease is measured by various tools, with the SLE Disease Activity Index (SLEDAI) being considered one of the most reliable and feasible tools (4).

In a recent study, high disease activity before and during pregnancy was considered to be associated with adverse outcomes in mothers (5). A population-based survey also confirmed adverse neonatal as well as maternal outcomes with SLE (6). There are reportedly increased fetal complications with pregnancy in SLE. A large meta-analysis of 54 studies proved a higher neonatal death with SLE, and death was reported up to 50% with a wide range of differences in various studies (7). However, these complications have also been associated with maternal disease activity. Increased disease activity affects maternal and fetal outcomes negatively (8). A multicenter large study in the USA proved higher complications in mother and fetus with higher disease activity and glucocorticoids used posing a challenge for Treatment in pregnancy (9). Increased thromboembolic complications have also been associated with SLE (10).

Besides this evidence, introducing novel agents, a better understanding of the disease, availability of advanced, well-equipped services, and awareness about prenatal care have led to better pregnancy outcomes (7). However, the need to identify high-risk individuals for obstetric complications and treat them in time is still needed, especially in underdeveloped areas.

In our search for a literature review, the primary deficit in understanding pregnancy complications with SLE was the scarcity of data. Not a single large study from Pakistan was found. We aimed to analyse both the maternal and fetal outcomes in SLE mothers.

Methodology

This was a single-centre cross-sectional survey conducted after obtaining permission from the ethical board of the institution. All the pregnant patients, either already diagnosed with SLE or during the first trimester of pregnancy, were included in the study. SLE pregnancies terminated by spontaneous abortion before SLE diagnosis were excluded from the study. Patients with coagulopathy or those overlying other autoimmune disease spectrums were also excluded. We included 66 patients per inclusion

[Citation Munir, S., Mushtaq, S., Amin, J., Siddique, S., Jamil, S., Awais, M.A. (2024). Maternal and fetal outcome of pregnancy in sle: a single center survey from pakistan. *Biol. Clin. Sci. Res. J.*, **2024***: 1081*. doi: https://doi.org/10.54112/bcsrj.v2024i1.1166]

and exclusion criteria through consecutive convenient sampling.

All the patients were assessed clinically for disease severity using SLEDAI 200. They were defined to have a flare or normal disease activity during pregnancy at regular follow-up after 1 to 2 months. Patient compliance and follow-up were recorded. Patients were examined and followed up by a consultant gynaecologist and a rheumatologist. A detailed history of previous pregnancies, miscarriages, etc, was taken. Maternal outcomes and newly diagnosed cases were defined as a flare or regular disease activity. Fetal outcome (intrauterine growth retardation, intrauterine death, Neonatal Death) was recorded at each follow-up and was monitored with ultrasound, CTG and anomaly scan. All this data was recorded on a pre-defined Performa and was analysed using SPSS 26.00.

Results

We included 66 patients with a mean age of 35.11±7.27, with a minimum of 21 years and a maximum of 54 years. Among clinical features, Malar Rash, Discoid Rash and Generalized body rash were present in 29 (43.9%), 20 (30.3%) and 3 (4.5%) patients, respectively. 34 (51.5%) patients had oral ulcers while arthritis. was present in 26(39.4%) patients.

In past Gynecological history, 49 (74.2%) patients had miscarriages, and 61 (92.4%) patients had a history of pregnancy. Among maternal outcomes of the pregnancy, 63 (95.5%) patients were delivered to the hospital. Only 3 (4.5%) were delivered at home. The primary maternal outcome was a SLE flare, observed in 47 (71.2%) patients. 4(6.1%) Patients had onset of disease and primary diagnosis during pregnancy, whereas only 15 (22.7%) patients had normal pregnancy with no acute symptoms. 71.2% (47) patients had regular follow up during pregnancy and 66.7% (44) after pregnancy. Compliance with treatment before and after pregnancy was 78.8% and 69.7%, respectively. The primary outcome of maternal pregnancy is shown in Figure 1.

In the context of the fetal outcome, Intrauterine growth retardation (IUGR) was present in 12 (18.2%), and 5 (7.6%) had intrauterine death. 49 (74.2%) fetuses were delivered, and 2 of them had neonatal death. Only 4.5% (3) of fetuses were diagnosed with an abnormal anomaly scan.

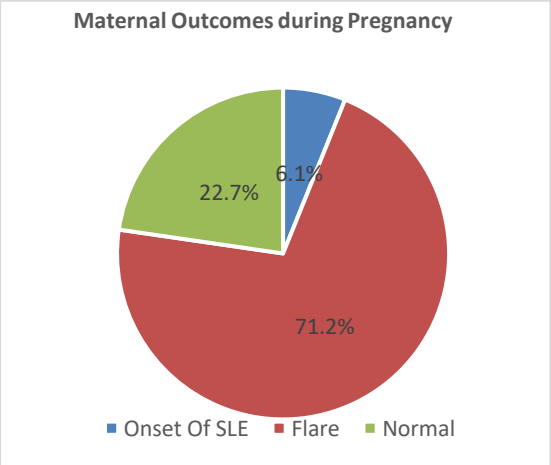

Figure 1: Maternal Outcome

Table 1: Clinical Features of SLE Mothers

Variables		Frequency	%
Malar Rash	Yes	29	43.9%
	No	37	56.1.3%
Discoid Rash	Yes	20	30.3%
	No	46	69.7%
Generalised Body Rash	Yes	3	4.5%
	No	63	95.6%
Raynaud's Phenomenon	Yes	20	30.3%
	No	46	69.7%
Arthritis	Yes	26	39.4%
	No	40	60.6%
Oral Ulcers	Yes	34	51.5%
	No	32	48.5%

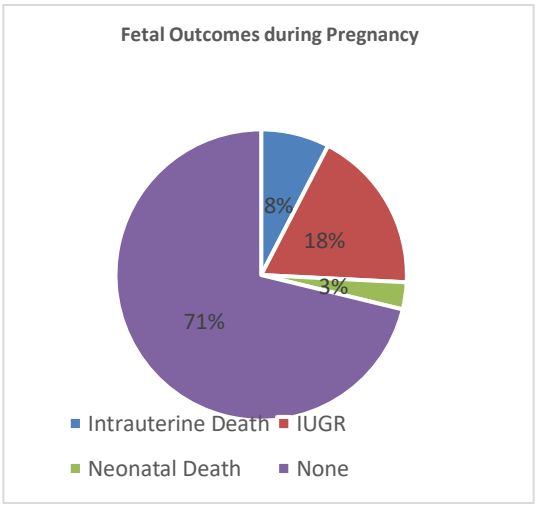

Figure 2: Fetal Outcome in SLE Mothers

Table 2: Maternal Outcome of SLE and Clinical History

Variables		Frequency	Percentages
History Of Miscarriages	Yes	49	74.2%
	No	17	25.8%
History Of Previous Pregnancy	Yes	61	92.4%
	No	5	7.6%
Maternal Outcome	Flare	47	71.2%
	Onset	4	6.1%
	Normal Disease Activity	15	22.7%
Mode Of Deliver	C-Section	19	28.8%
	SVD	47	71.2%

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Place Of Delivery	Hospital	63	95.5%
	Home	3	4.5%
Follow-up during Pregnancy	Yes	47	71.2%
	No	19	28.8%
Follow-up after Pregnancy	Yes	44	66.7%
	No	22	33.3%
Compliance during Pregnancy	Yes	52	78.8%
	No	14	21.2%
Compliance after Pregnancy	Yes	46	69.7%
	No	20	30.3%

Discussion

Pregnancy itself is a massive burden to the body, leading to various physiological changes in the body. SLE pregnancy has been considered high risk due to a more significant number of complications. This has higher mortality and morbidity. The management of disease activity, along with avoiding complications, is crucial and challenging. This requires a well-equipped multi-disciplinary team with good compliance and education of the patient. A recent literature review and EULAR recommendations have also reported an increasing improvement in the outcome of pregnancy with SLE in the last decade. (11, 12) We also conducted a cohort study using a multidisciplinary approach.

In our study, 79% of patients had experienced miscarriages, and only 22.7% had controlled disease activity during pregnancy. The rest of the patients (77.3%) experienced a flare. This higher percentage of miscarriages can be better related to higher disease activity and poor control. A large trial in Europe has reported much lower percentages than our study. (9) This might be due to our population's lack of education and awareness. Comparable results have also been reported in the literature where the majority of the mothers experienced flare during pregnancy (6, 13)

As far as fetal outcome was concerned, 8 % of the patients had intrauterine death, whereas 3% died after birth, amounting to a total mortality of 11 %. This is a higher percentage than that of recent studies. LUMINA and PROMISE study reported a percentage of 4.9% and 5% fetal death in the SLE population. (9, 14) This difference in adverse outcomes is much higher for IUGR. We reported 18% IUGR, whereas a recent extensive cohort analysis reported 9%. (14) This considerable difference might be due to maternal nutritional deficiencies due to economic constraints in a third-world country. With the advancement in treatment, a reversal of the results has occurred. A favourable outcome with SLE compared to an average population was achieved. (15, 16) This is in contrast to our results. This possibly can be explained by average compliance and patient follow-up even after a higher disease activity and flare in our cohort. 67% of patients had good follow-up during pregnancy, whereas compliance was present in 78.8% of the patients during pregnancy.

With this evidence, it is evident that disease control with a low score for disease activity before and during pregnancy, planned pregnancy, frequent neonatal visits, screening with fetal echo, anomaly scan and education regarding management is essential for favourable pregnancy outcomes in SLE patients.

There are a few limitations to our study. It was a single-centre study with a limited sample size. Anti-bodies of SLE, previous complications of SLE, prophylactic use of the drugs to avoid complications and side effects of the drugs being used were not taken into consideration. All these factors contribute to the outcome of pregnancy. So, a vast multicenter trial involving people of different ethnicities with reduced biases and confounders is recommended.

Conclusion

Pregnancy in SLE has both maternal and fetal complications. It leads to adverse outcomes. Better compliance and follow-up with an excellent multi-disciplinary team are recommended for better outcomes.

Declarations

Data Availability statement
All data generated or analysed during the study are included in the manuscript.

Ethics approval and consent to participate
Approved by the department concerned. (IRBEC-NHSUW-23/22)

Consent for publication
Approved

Funding
Not applicable

Conflict of interest

The authors declared the absence of a conflict of interest.

Author Contribution

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Coordination of collaborative efforts.
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Conception of Study, Development of Research Methodology Design, Study Design, Review of manuscript, and final approval.
JAVERIA AMIN (Assistant Professor)
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Manuscript drafting.
SAMIA JAMIL (Senior Registrar)
Data entry and data analysis, as well as drafting the article.
MUHAMMAD ARSLAAN AWAIS (Medical Officer)
Data acquisition and analysis.
Coordination of collaborative efforts.

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