CLINICAL AND LABORATORY FEATURES OF SYSTEMIC LUPUS ERYTHEMATOSUS IN WOMEN OF REPRODUCTIVE AGE: IMPLICATIONS FOR PREGNANCY OUTCOMES

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***Abstract**: Systemic lupus erythematosus (SLE) is a chronic autoimmune condition that mostly affects women of reproductive age. SLE poses significant challenges during pregnancy due to its relapsing course and potential involvement of vital organs such as the kidneys, increasing the risk of complications for both the mother and the fetus. Careful disease control and laboratory monitoring are essential to improve outcomes. The aim of this study was to evaluate the clinical and laboratory characteristics of SLE patients of reproductive age and analyze their implications for pregnancy planning and maternal–fetal outcomes. This study was conducted using medical records of 54 patients with a mean age of 35.2 ± 8.9 years who were diagnosed with SLE according to the 2019 American College of Rheumatology criteria. Patients were treated at the Tashkent State Medical University Multidisciplinary Clinic between October 2024 and February 2025. To determine disease activity and organ involvement, hematological, inflammatory, renal, and immunological laboratory parameters were examined. The majority of patients were of reproductive age. Laboratory findings frequently demonstrated hematological abnormalities, elevated inflammatory markers, and varying degrees of renal involvement. Increased risk factors for pregnancy complications, such as hypertension and proteinuria, were associated with markers of active disease. SLE in women of reproductive age requires strict laboratory monitoring and disease control, particularly prior to conception. The presence of immunological markers such as anti-dsDNA and antiphospholipid antibodies suggested a higher risk for adverse pregnancy outcomes. Early detection of immunological risk factors and*

active disease can improve pregnancy outcomes and reduce maternal and fetal complications.

Аннотация: *Системная красная волчанка (СКВ) — это хроническое аутоиммунное заболевание, которое преимущественно поражает женщин репродуктивного возраста. СКВ представляет значительные трудности во время беременности из-за рецидивирующего течения и возможного поражения жизненно важных органов, таких как почки, что повышает риск осложнений как для матери, так и для плода. Тщательный контроль заболевания и лабораторный мониторинг имеют важное значение для улучшения исходов беременности. Целью данного исследования было оценить клинические и лабораторные характеристики пациенток с СКВ репродуктивного возраста и проанализировать их значение для планирования беременности и материнско-плодовых исходов. Данное было проведено на основе анализа медицинских карт 54 пациенток со средним возрастом 35,2 ± 8,9 лет, у которых диагноз СКВ был установлен в соответствии с классификационными критериями Американского колледжа ревматологии (ACR) 2019 года. Пациентки проходили лечение в многопрофильной клинике Ташкентский государственный медицинский университет в период с октября 2024 года по февраль 2025 года. Для определения активности заболевания и поражения органов были изучены гематологические, воспалительные, почечные и иммунологические лабораторные показатели. Лабораторные результаты часто демонстрировали гематологические нарушения, повышение воспалительных маркеров и различные степени поражения почек. Повышенные факторы риска осложнений беременности, такие как артериальная гипертензия и протеинурия, были связаны с признаками активного заболевания. СКВ у женщин репродуктивного возраста требует строгого лабораторного мониторинга и контроля активности заболевания, особенно до наступления беременности. Наличие иммунологических маркеров, таких как антитела к двуспиральной ДНК (anti-dsDNA) и*

антифосфолипидные антитела, указывает на более высокий риск неблагоприятных исходов беременности. Ранняя диагностика иммунологических факторов риска и активного заболевания может способствовать улучшению исходов беременности и снижению материнских и плодовых осложнений.

Annotatsiya: *Tizimli qizil yuguruk (SLE) — bu asosan reproduktiv yoshdagi ayollarda uchraydigan surunkali autoimmun kasallikdir. Kasallikning qaytalanuvchi kechishi va buyraklar kabi hayotiy muhim a'zolarning zararlanishi mumkinligi sababli SLE homiladorlik davrida sezilarli qiyinchiliklar tug'diradi hamda ona va homila uchun asoratlar xavfini oshiradi. Shuning uchun kasallikni qat'iy nazorat qilish va laborator monitoring homiladorlik natijalarini yaxshilashda muhim ahamiyatga ega. Ushbu tadqiqotning maqsadi reproduktiv yoshdagi SLE bilan kasallangan bemorlarning klinik va laborator xususiyatlarini baholash hamda ularning homiladorlikni rejalashtirish va ona–homila natijalariga ta'sirini tahlil qilishdan iborat edi. Tadqiqot o'rtacha yoshi 35,2 ± 8,9 yil bo'lgan 54 nafar bemorning tibbiy hujjatlari tahlil qilindi. SLE tashxisi 2019 yilgi Amerika Revmatalogiya Kolleji (ACR) tasnif mezonlariga muvofiq qo'yilgan. Bemorlar 2024 yil oktyabr oyidan 2025 yil fevral oyigacha Toshkent Tibbiyot Davlat tibbiyot Universiteti ko'p tarmoqli klinikasida davolangan. Kasallik faolligi va a'zolar zararlanishini aniqlash maqsadida gematologik, yallig'lanish, buyrak va immunologik laborator ko'rsatkichlar o'rganildi. Laborator natijalar ko'pincha gematologik buzilishlar, yallig'lanish markerlarining oshishi hamda buyrak zararlanishining turli darajalarini ko'rsatdi. Arterial gipertenziya va proteinuriya kabi homiladorlik asoratlari uchun xavf omillari kasallik faolligi markerlari bilan bog'liq ekanligi aniqlandi. Reproduktiv yoshdagi ayollarda SLE homiladorlikdan oldin ayniqsa qat'iy laborator nazorat va kasallik faolligini boshqarishni talab qiladi. Anti-dsDNA va antifosfolipid antitanalari kabi immunologik markerlarning mavjudligi homiladorlikning noxush natijalari xavfi yuqoriligini ko'rsatadi. Immunologik xavf omillari va kasallik faolligini erta aniqlash homiladorlik*

natijalarini yaxshilash hamda ona va homilada asoratlar rivojlanishini kamaytirishga yordam beradi.

***Keywords**: Systemic Lupus Erythematosus; pregnancy; reproductive age; disease activity; lupus nephritis; antiphospholipid antibodies; preeclampsia; hydroxychloroquine; laboratory markers; maternal–fetaloutcomes.*

Introduction:

Systemic lupus erythematosus (SLE) is a chronic multisystem autoimmune disease marked by immune dysregulation, the production of pathogenic autoantibodies, and the deposition of immune complexes that damage tissues. The disease predominantly affects women of reproductive age. Because of its relapsing–remitting course and potential involvement of vital organs such as the kidneys, the cardiovascular system, and the central nervous system, SLE remains a major clinical challenge worldwide. The relevance of SLE is particularly high in women planning pregnancy. Active disease at conception has been associated with an increased risk of maternal flares, lupus nephritis exacerbation, preeclampsia, preterm birth, intrauterine growth restriction, and fetal loss. Furthermore, the presence of antiphospholipid antibodies and anti-Ro/SSA or anti-La/SSB antibodies increases the risk of thrombosis, obstetric complications, and neonatal lupus, including congenital heart block. Disease activity, complement levels, and specific immunological markers are strong predictors of adverse pregnancy outcomes, as demonstrated by the PROMISSE study and other large cohort studies. Furthermore, continuation of hydroxychloroquine during pregnancy has been shown to reduce flare rates and the risk of preeclampsia. Despite significant advances in understanding SLE management during pregnancy, several issues remain insufficiently explored. In particular, there is limited regional data evaluating laboratory activity markers in women of reproductive age and their potential implications for pregnancy outcomes and planning. Most studies are based on large international cohorts, while data from Central Asian populations remain limited. In addition, real-world clinical observations made in multidisciplinary settings may

provide additional information regarding disease monitoring and risk stratification. Therefore, the aim of this study was to evaluate the clinical and laboratory characteristics of women of reproductive age diagnosed with SLE and to analyze the relevance of disease activity markers for pregnancy planning and potential maternal–fetal outcomes.

Methods and Materials Setting and Study Design. This observational study was conducted at the Tashkent State Medical University Multidisciplinary Clinic. The study was based on the analysis of medical records of patients diagnosed with Systemic Lupus Erythematosus (SLE) between October 2024 and February 2025. The study population of this study included 54 patients diagnosed with SLE who were of reproductive age. The mean age of the patients was 35.2 ± 8.9 years. The diagnosis was established according to the revised 2019 classification criteria of the American College of Rheumatology (ACR).

Inclusion Criteria:

-A confirmed diagnosis of SLE based on the ACR 2019 criteria

- Age between 18 and 50 years

- Availability of complete medical records and laboratory data

- Female patients of reproductive age

Exclusion Criteria

- Patients with incomplete laboratory results

- Individuals with overlapping autoimmune diseases

- Patients with severe chronic comorbid conditions that could significantly influence laboratory parameters.

Data were collected from patient medical records and laboratory reports. The following parameters were evaluated:

• Hematological markers: hemoglobin level, leukocyte count, platelet count, erythrocyte sedimentation rate (ESR)

• Inflammatory markers: C-reactive protein (CRP)

• Renal function markers: serum creatinine, urinalysis (proteinuria), estimated glomerular filtration rate (eGFR)

• Immunological markers: anti-dsDNA antibodies, complement levels (C3, C4), and antiphospholipid antibodies

Disease activity was assessed using clinical manifestations and laboratory indicators documented in the medical records. Particular attention was given to markers associated with an increased risk of pregnancy complications, including proteinuria, hypertension, hypocomplementemia, and the presence of antiphospholipid antibodies. Statistical analysis was performed using standard descriptive statistical methods. Continuous variables were expressed as mean ± standard deviation (SD), while categorical variables were presented as frequencies and percentages. Associations between laboratory activity markers and potential pregnancy-related risk factors were evaluated using appropriate comparative statistical tests. A p-value of <0.05 was considered statistically significant.

Results

In this study, we analyzed the clinical and laboratory characteristics of women diagnosed with Systemic Lupus Erythematosus (SLE). Laboratory findings demonstrated frequent hematological abnormalities, elevated inflammatory markers, and evidence of renal involvement in a subset of patients. Immunological markers such as anti-dsDNA antibodies, decreased complement levels, and antiphospholipid antibodies were also observed in several cases, suggesting active immune-mediated processes. Our findings are consistent with previously published international data showing that active disease markers, such as hypocomplementemia and anti-dsDNA positivity, are associated with higher disease activity and an increased risk of adverse pregnancy outcomes. Large cohort studies, including the PROMISSE study, have demonstrated that elevated disease activity before and during pregnancy increases the risk of complications such as preeclampsia, preterm birth, and fetal loss. Similarly, thrombotic events and obstetric complications have been strongly linked to the presence of antiphospholipid antibodies. The predominance of renal and

immunological abnormalities in our study may be explained by the underlying pathophysiology of SLE, which involves immune complex deposition and complement activation, particularly affecting the kidneys. The laboratory abnormalities observed in our cohort indicate that a proportion of patients may have increased pregnancy-related risks if conception occurs during active disease. Proteinuria and elevated creatinine levels reflect possible lupus nephritis, which is known to significantly worsen maternal and fetal prognosis during pregnancy. Furthermore, hematological changes such as anemia and thrombocytopenia may result from immune-mediated destruction of blood cells, a common feature of active SLE. However, several limitations must be acknowledged. First, the study was retrospective and based solely on medical record analysis, which may limit the completeness and accuracy of the data. Second, the sample size was relatively small and derived from a single center, which may reduce the generalizability of the findings to broader populations. Third, pregnancy outcomes were not directly evaluated but rather inferred from laboratory risk markers. Prospective multicenter studies with larger cohorts and direct follow-up of pregnant patients are needed to better clarify the relationship between laboratory activity markers and actual maternal–fetal outcomes. Despite these limitations, our study highlights the importance of strict laboratory monitoring and disease control in women with SLE who are planning pregnancy. It also provides valuable regional data.

Conclusion

This study confirms that Systemic Lupus Erythematosus predominantly affects women of reproductive age and remains a clinically significant condition due to its potential impact on pregnancy outcomes. Laboratory abnormalities such as hypocomplementemia, anti-dsDNA positivity, and the presence of antiphospholipid antibodies may indicate increased disease activity and a higher risk of pregnancy complications.

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