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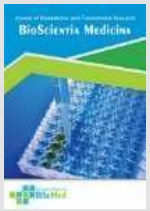

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Premature Rupture of Membranes in a Pregnant Patient with Systemic Lupus Erythematosus and Lupus Carditis: A Case Report

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A B S T R A C T

Background: Systemic lupus erythematosus (SLE) is a multisystem autoimmune disease associated with significant maternal and fetal risks, especially during pregnancy. Lupus carditis and premature rupture of membranes (PROM) pose additional challenges in managing such pregnancies**. Case presentation:** A 21-year-old woman with a history of SLE and lupus carditis presented at 34 weeks gestation with premature rupture of membranes. Her medical history was notable for regular follow-up and treatment for SLE manifestations, including mucocutaneous involvement and microcytic hypochromic anemia. Physical examination revealed characteristic signs of SLE, and echocardiography confirmed dilated cardiomyopathy. Following a multidisciplinary approach, a cesarean section was performed, resulting in the successful delivery of a healthy neonate**. Conclusion:** This case highlights the importance of a coordinated multidisciplinary approach in managing complex pregnancies involving SLE, lupus carditis, and PROM. Early diagnosis, close monitoring, and timely intervention are crucial for optimizing maternal and fetal outcomes in such cases**.**

1. Introduction

Systemic lupus erythematosus (SLE), a chronic and multisystem autoimmune disorder characterized by diverse clinical manifestations, poses a significant challenge to the health and well-being of women of reproductive age. The complexities of SLE are amplified during pregnancy, as the intricate interplay between maternal immune dysregulation, hormonal fluctuations, and fetal development creates a unique pathophysiological landscape fraught with risks. The potential for disease flares, adverse pregnancy outcomes, and fetal complications necessitates a nuanced understanding of the disease trajectory and a comprehensive management approach to ensure optimal maternal and fetal outcomes. The impact of SLE on pregnancy is multifactorial and varies depending on disease activity, organ involvement, and pre-existing comorbidities. Pregnancy can exacerbate SLE symptoms due to increased immune activation and hormonal changes, leading to flares that may

require adjustments in medication regimens. Conversely, pregnancy can also induce remission in some women with SLE, highlighting the complex and unpredictable nature of the disease course. Maternal complications associated with SLE in pregnancy include preeclampsia, preterm birth, fetal growth restriction, and placental insufficiency. These complications can arise from immune-mediated mechanisms, such as placental inflammation, antibody-mediated damage, and complement activation. In addition, underlying renal or cardiovascular involvement can further increase the risk of maternal morbidity and mortality. Fetal complications in pregnant women with SLE include congenital heart block, neonatal lupus, and intrauterine growth restriction. Congenital heart block, a serious cardiac conduction abnormality, is primarily associated with the transplacental passage of maternal anti-Ro/SSA and anti-La/SSB antibodies. Neonatal lupus, a transient condition characterized by cutaneous and hematologic manifestations, can also occur due to maternal autoantibody transfer.[1-3]

Lupus carditis, a cardiac manifestation of SLE, encompasses a wide spectrum of inflammatory and structural abnormalities affecting the pericardium, myocardium, endocardium, and coronary arteries. The prevalence of lupus carditis varies across studies, ranging from 17% to 50%, depending on the diagnostic criteria and patient population. During pregnancy, lupus carditis poses a significant challenge due to the increased hemodynamic demands on the cardiovascular system. Pregnancy-induced physiological changes, such as increased blood volume, cardiac output, and heart rate, can exacerbate pre-existing cardiac dysfunction and trigger new-onset cardiac manifestations. Additionally, the risk of thromboembolic events is elevated in pregnant women with SLE, especially those with antiphospholipid antibodies, further complicating the management of lupus carditis. The diagnosis of lupus carditis in pregnancy relies on a combination of clinical, laboratory, and imaging findings. Echocardiography plays a pivotal role in assessing cardiac structure and function, and identifying pericardial effusions, valvular abnormalities, and myocardial dysfunction. Cardiac magnetic resonance imaging (MRI) can provide additional insights into myocardial inflammation and fibrosis, but its use is often limited in pregnancy due to safety concerns.[4,5]

Premature rupture of membranes (PROM), defined as the rupture of fetal membranes before the onset of labor, is a significant complication of pregnancy associated with an increased risk of preterm birth, neonatal morbidity, and mortality. PROM can occur at any gestational age but is most common in the preterm period. The etiology of PROM is multifactorial, with contributions from infection, inflammation, cervical insufficiency, and mechanical factors. In women with SLE, the risk of PROM is elevated due to underlying immune dysregulation, placental inflammation, and vascular dysfunction. Studies have shown that women with SLE have a higher risk of both term and preterm PROM compared to the general population. The management of PROM in pregnant women with SLE requires a multidisciplinary approach, balancing the need to prolong gestation for fetal maturation with the risk of infection and other complications. The decision to deliver depends on gestational age, fetal lung maturity, presence of infection, and maternal well-being. The management of pregnant women with SLE, particularly those with additional complications like lupus carditis and PROM, requires a coordinated and comprehensive approach involving a multidisciplinary team of specialists. This team typically includes obstetricians, rheumatologists, cardiologists, neonatologists, and other healthcare professionals as needed. The goals of management are to control SLE disease activity and prevent flares, optimize cardiac function and prevent complications, prolong gestation to optimize fetal lung maturity, prevent and treat infection, and ensure a safe delivery for both mother and child.[6-8] This case report aims to serve as a valuable resource for clinicians, researchers, and policymakers involved in the care of pregnant women with SLE. By sharing this case and its management,

we hope to enhance our understanding of this complex condition and improve the lives of women and their babies affected by SLE.

2. Case Presentation

Mrs. VA, a 21-year-old primigravida residing in Sungai Menang, Ogan Komering Ilir, presented to the emergency department of Dr. Mohammad Hoesin General Hospital Palembang on January 1st, 2023. Her chief complaint was the leakage of clear, odorless fluid per vagina for the past 15 hours. This event, unaccompanied by contractions or abdominal pain, raised immediate concerns for premature rupture of membranes (PROM). A detailed medical history revealed a significant background of systemic lupus erythematosus (SLE). Diagnosed in November 2021, her SLE had manifested diverse clinical features, including lupus carditis, mucocutaneous involvement (malar rash and discoid lesions), and microcytic hypochromic anemia. Notably, she had been under regular follow-up at the rheumatology clinic and was adherent to her prescribed medications, including hydroxychloroquine (200mg daily), prednisone (recently tapered to 5mg daily due to pregnancy), and folic acid (1mg daily). No history of recent flares or exacerbations was reported, and her SLE had been considered well-controlled.

A comprehensive physical examination was conducted to assess Mrs. VA's overall health status and identify any signs suggestive of SLE activity or complications related to PROM. General examination revealed a blood pressure of 120/80 mmHg, a heart rate of 90 beats per minute, a respiratory rate of 18 breaths per minute, and a temperature of 37.0°C. These vital signs were within normal limits for a pregnant woman at 34 weeks gestation. Specific examination findings offered valuable insights into the patient's underlying conditions. A facial examination revealed the characteristic "moon face" associated with corticosteroid use. Cardiovascular examination was unremarkable, with normal heart sounds and no murmurs, despite her history of lupus carditis. Respiratory examination revealed clear lung fields bilaterally. Abdominal examination was notable for a uterine fundal height of 25 cm, consistent with 34 weeks gestation. The fetus was palpable in a cephalic presentation, and fetal heart tones were auscultated at a rate of 145 beats per minute, indicative of fetal well-being. There were no signs of abdominal tenderness or rigidity. An obstetric examination, performed with a sterile speculum, revealed pooling of clear fluid in the posterior fornix of the vagina. A nitrazine test, performed on a sample of the fluid, yielded a positive result, confirming the presence of amniotic fluid and corroborating the diagnosis of PROM. Digital examination of the cervix indicated minimal dilation (1 cm) and effacement (50%), further supporting the absence of active labor.

A series of laboratory investigations were conducted to assess Mrs. VA's hematologic, biochemical, and immunologic parameters (Table 1). A complete blood count (CBC) revealed mild anemia (hemoglobin 9.2 g/dL) with microcytic hypochromic indices, consistent with her known diagnosis of iron deficiency anemia. Renal and liver function tests were within normal limits, indicating no significant organ dysfunction. The coagulation profile was also normal, excluding any coagulopathy. Inflammatory markers, C-reactive protein (CRP), and erythrocyte sedimentation rate (ESR) were slightly elevated, suggesting a mild inflammatory state, possibly related to SLE or the physiological stress of PROM. Antinuclear antibody (ANA) titer was positive at 1:320, and anti-double-stranded DNA (anti-dsDNA) antibody levels were elevated at 556.40 IU/mL, further supporting the diagnosis of SLE and indicating moderate disease activity. Echocardiography, performed in November 2022, revealed dilated cardiomyopathy with a reduced ejection fraction of 39%, moderate mitral regurgitation and tricuspid regurgitation, a small pericardial effusion, and pulmonary hypertension. This imaging study was crucial in confirming the diagnosis of lupus carditis and assessing the severity of cardiac involvement. A fetal ultrasound, performed at the time of admission, estimated the fetal weight to be 1860 grams,

consistent with 34 weeks gestation. Amniotic fluid volume was within normal limits, and placental morphology was unremarkable. No obvious fetal anomalies were detected. Based on the comprehensive clinical evaluation, laboratory investigations, and imaging studies, a definitive diagnosis was established systemic lupus erythematosus (SLE) with moderate disease activity, manifesting as Lupus carditis (dilated cardiomyopathy) and Mucocutaneous involvement (malar rash, discoid lesions); Microcytic Hypochromic Anemia (likely secondary to iron deficiency) and G2P1A0 34 weeks pregnant with premature rupture of membranes (PROM), live single fetus in cephalic presentation.

Table 1. Laboratory and imaging findings.

Parameter	**Findings**	**Reference range**
Laboratory tests		
Complete blood count		
Hemoglobin (g/dL)	9.2	11.0-15.0
Hematocrit (%)	28	33-44
MCV (fL)	84.1	80-100
MCH (pg)	26	27-31
MCHC (g/dL)	30	32-36
Platelets (x10^9/L)	250	150-400
WBC count (x10^9/L)	8	4.5-11.0
Inflammatory markers		
C-reactive protein (mg/L)	1.2	< 1.0
Erythrocyte sedimentation rate (mm/hr)	25	< 20
SLE-specific tests		
Antinuclear antibody (ANA) titer	1:320 (positive)	< 1:80 (negative)
Anti-dsDNA antibody (IU/mL)	556.40 (positive)	< 30 (negative)
Imaging studies		
Electrocardiogram (ECG)	Normal sinus rhythm	
Echocardiography	Dilated Cardiomyopathy, MR/TR Moderate, Small Pericardial Effusion, pulmonary hypertension, reduced ejection fraction (39%)	

A multidisciplinary team comprising obstetricians, rheumatologists, cardiologists, and neonatologists convened to formulate a comprehensive management plan for Mrs. VA. Given her complex medical history and the risks associated with preterm birth, the team adopted a proactive approach to optimize maternal and fetal outcomes. Obstetric Management: Betamethasone 12 mg intramuscular (IM) was administered in two doses 24 hours apart to promote fetal lung maturation, crucial for reducing the risk of respiratory distress syndrome in the preterm neonate; Ampicillin 2 grams IV every 6 hours and erythromycin 250 mg IV every 6 hours were initiated for 48 hours as prophylaxis against chorioamnionitis and neonatal sepsis, a common complication of PROM; Although Mrs. VA did not have contractions at presentation, nifedipine 10 mg oral every 8 hours was started as a tocolytic agent to delay delivery and allow further fetal lung maturation; Continuous electronic fetal heart rate monitoring was initiated to assess fetal well-being

and detect early signs of distress. Regular biophysical profiles (BPPs) were performed to evaluate fetal movements, breathing, tone, amniotic fluid volume, and heart rate reactivity; Vital signs (blood pressure, heart rate, respiratory rate, temperature) were monitored closely every 4 hours. Strict input/output monitoring was maintained to assess fluid balance. Laboratory parameters (CBC, renal function, liver function, CRP) were monitored daily. Rheumatologic Management: Given the risk of SLE flare in the setting of PROM, disease activity was assessed regularly using the SLE Disease Activity Index (SLEDAI) and clinical judgment; Hydroxychloroquine 200 mg daily was continued as it is safe in pregnancy and helps to control SLE activity; Prednisone 5 mg daily was continued, with close monitoring of blood glucose levels due to the risk of gestational diabetes. Cardiology Management: Regular echocardiography was performed to monitor cardiac function, particularly left ventricular ejection fraction (LVEF), and assess for any signs of worsening cardiac function or new-onset arrhythmias; The patient's cardiac medications (if any) were adjusted as needed to maintain hemodynamic stability and prevent complications like congestive heart failure. The multidisciplinary team met regularly to discuss the patient's progress, review laboratory results, and make collaborative decisions regarding further management. Given the high risk of preterm labor, fetal distress, and maternal complications in the setting of SLE, lupus carditis, and PROM, the team decided to proceed with an elective cesarean section at 34 weeks gestation. Under general anesthesia, a lower-segment cesarean section was performed. A live male neonate weighing 1860 grams was delivered with Apgar scores of 8 and 9 at 1 and 5 minutes, respectively. The baby was admitted to the neonatal intensive care unit (NICU) for monitoring and supportive care. Mrs. VA recovered well from surgery without complications. Her postoperative pain was managed with intravenous and oral analgesics. She was started on subcutaneous low molecular-weight heparin for thromboprophylaxis. On postoperative day 2, she was transitioned to oral medications, including hydroxychloroquine 200 mg daily, prednisone 5 mg daily, and ferrous sulfate 325 mg twice daily for her anemia. She was also started on physiotherapy for early mobilization. Mrs. VA was discharged home on postoperative day 5 with instructions for close follow-up with rheumatology, cardiology, and obstetrics for ongoing management of her SLE, cardiac condition, and postpartum care.

3. Discussion

The successful management of Mrs. VA's intricate case serves as a paradigm for navigating the complexities inherent in caring for pregnant women with systemic lupus erythematosus (SLE), especially when compounded by lupus carditis and premature rupture of membranes (PROM). This discussion delves into the multi-faceted challenges, evidence-based interventions, ethical considerations, and future directions in managing this high-risk clinical scenario. Pregnancy in the context of SLE presents a unique set of challenges due to the intricate interplay between maternal immune dysregulation, hormonal fluctuations, and fetal development. The potential for disease flares, adverse pregnancy outcomes, and fetal complications necessitates a nuanced understanding of the disease trajectory and a comprehensive management approach. Pregnancy can trigger or exacerbate SLE flares due to increased immune activation and hormonal changes. Flares can affect various organ systems, including the kidneys, skin, joints, and central nervous system. Prompt recognition and management of flares are essential to minimize maternal morbidity and ensure fetal well-being. Pregnant women with SLE are at increased risk for adverse pregnancy outcomes, including preeclampsia, preterm birth, fetal growth restriction, and placental insufficiency. These complications can arise from immune-mediated mechanisms, such as placental inflammation, antibody-mediated damage, and complement activation. Underlying renal or cardiovascular involvement further amplifies the risk of maternal morbidity and mortality.[9,10]

Fetal complications in SLE pregnancies include congenital heart block, neonatal lupus, and intrauterine growth restriction. Congenital heart block, a severe cardiac conduction abnormality, is primarily associated with the transplacental passage of maternal anti-Ro/SSA and anti-La/SSB antibodies. Neonatal lupus, a transient condition characterized by cutaneous and hematologic manifestations, can also occur due to maternal autoantibody transfer. The coexistence of lupus carditis and PROM introduces additional layers of complexity. Lupus carditis, encompassing various cardiac manifestations of SLE, can compromise cardiac function and increase the risk of arrhythmias, heart failure, and thromboembolic events during pregnancy. The increased hemodynamic demands of pregnancy can exacerbate pre-existing cardiac dysfunction, necessitating careful monitoring and optimization of therapy. PROM, especially in the preterm period, is a well-documented complication in women with SLE. The underlying mechanisms likely involve immune dysregulation, placental inflammation, and vascular dysfunction. PROM increases the risk of preterm birth, which in turn, is associated with a range of neonatal complications, including respiratory distress syndrome, intraventricular hemorrhage, necrotizing enterocolitis, and sepsis. The intricate interplay of these factors underscores the importance of a multidisciplinary approach in managing pregnant women with SLE, lupus carditis, and PROM. This approach involves close collaboration among obstetricians, rheumatologists, cardiologists, neonatologists, and other healthcare professionals to ensure comprehensive and individualized care.[11,12]

The management of SLE, lupus carditis, and PROM in pregnancy is guided by evidence-based interventions and recommendations from various professional organizations. The European League Against Rheumatism (EULAR) and the American College of Rheumatology (ACR) have published guidelines emphasizing preconception counseling, close monitoring of disease activity, and appropriate medication adjustments. Hydroxychloroquine: This antimalarial drug with immunomodulatory properties is considered safe and effective in pregnancy. It is often continued or initiated during pregnancy to control SLE activity, reduce the risk of flares, and improve maternal and fetal outcomes. Corticosteroids: Prednisone and other corticosteroids are used to manage active disease flares or specific organ manifestations. However, their use in pregnancy should be judicious, considering potential adverse effects on the mother (gestational diabetes, hypertension) and the fetus (growth restriction, adrenal suppression). Other Immunosuppressants: In severe cases, other immunosuppressants like azathioprine or mycophenolate mofetil may be considered, but their use requires careful weighing of risks and benefits due to potential teratogenicity.[12,13]

Cardiac management in pregnancy complicated by SLE and lupus carditis: Echocardiography stands as the cornerstone of cardiac assessment in pregnant women with SLE and lupus carditis. This non-invasive imaging modality provides a real-time visualization of cardiac structures and function, enabling clinicians to assess the extent of cardiac involvement, monitor disease progression, and guide therapeutic decisions. In Mrs. VA's case, serial echocardiography played a pivotal role in evaluating her cardiac status throughout her pregnancy and postpartum period. The initial echocardiogram, performed before conception, revealed dilated cardiomyopathy with a reduced ejection fraction (EF) of 45%. This finding confirmed the diagnosis of lupus carditis and established a baseline for future assessments. During pregnancy, echocardiography was performed at regular intervals to monitor changes in cardiac function. Left ventricular ejection fraction (LVEF), a measure of the heart's pumping efficiency, was assessed to gauge the severity of left ventricular dysfunction. A decline in LVEF could indicate worsening cardiac function and necessitate adjustments in medication or other interventions. Left ventricular (LV) and right ventricular (RV) dimensions were measured to assess chamber enlargement, which can occur in response to increased hemodynamic

demands during pregnancy. Significant dilation could indicate worsening cardiac function and increased risk of complications. Assessment of valvular function, particularly mitral and tricuspid regurgitation, was essential to detect any new or worsening valvular abnormalities. Valvular regurgitation can lead to volume overload and further compromise cardiac function. The presence and size of pericardial effusion, a collection of fluid around the heart, were monitored. While a small effusion was noted in Mrs. VA's initial echocardiogram, an increase in size could indicate active pericarditis and necessitate additional treatment. PAP was assessed to gauge the severity of pulmonary hypertension, a common complication of lupus carditis. Elevated PAP can lead to right ventricular dysfunction and increased risk of heart failure. Serial echocardiography allowed for early detection of any deterioration in cardiac function, prompting timely interventions to prevent complications. In Mrs. VA's case, the echocardiograms remained relatively stable throughout her pregnancy, with no significant changes in LVEF or chamber dimensions. However, the presence of moderate mitral and tricuspid regurgitation, as well as pulmonary hypertension, necessitated close monitoring and optimization of therapy. Medication optimization is a cornerstone of managing lupus carditis in pregnancy. The goal is to control disease activity, maintain cardiac function, and prevent complications while minimizing the risk of adverse effects on the fetus. In Mrs. VA's case, hydroxychloroquine was continued throughout pregnancy due to its established safety and efficacy in controlling SLE activity. Prednisone, a corticosteroid, was also continued at a low dose to suppress inflammation and prevent flares. However, the dose was carefully titrated to minimize the risk of gestational diabetes and other potential adverse effects. The use of other medications, such as ACE inhibitors and ARBs, was contraindicated due to their known teratogenic effects. These medications can cause fetal renal abnormalities, growth restriction, and other complications. Beta-blockers and diuretics were considered for potential use in managing hypertension or heart failure, but their use was approached cautiously due to potential adverse effects on fetal growth and development.[14-16]

Premature rupture of membranes (PROM) is a significant obstetric complication defined as the rupture of the amniotic sac and leakage of amniotic fluid before the onset of labor. This event, while relatively common in the general population, poses unique challenges in the context of systemic lupus erythematosus (SLE), a chronic autoimmune disease known to affect multiple organ systems. The increased risk of PROM in women with SLE necessitates a thorough understanding of its pathophysiology, diagnostic modalities, management strategies, and potential complications to ensure optimal maternal and fetal outcomes. SLE is characterized by a dysregulated immune response, with the production of autoantibodies that target various tissues, including the placenta and fetal membranes. These autoantibodies can trigger inflammatory processes within the amniotic cavity, leading to weakening and rupture of the membranes. Chronic inflammation is a hallmark of SLE, and this inflammatory milieu can extend to the placenta. Placental inflammation can disrupt the normal integrity of the fetal membranes, making them more susceptible to rupture. SLE can affect the vascular endothelium, leading to impaired blood flow and microvascular damage. This can compromise the integrity of the fetal membranes, increasing their vulnerability to rupture. Although not specific to SLE, infection is a well-established risk factor for PROM. Women with SLE may be more susceptible to infections due to immunosuppression from medications or the underlying disease process. The management of PROM in pregnant women with SLE is a complex and individualized process that requires a multidisciplinary approach. The goals of management are to: Prevent Infection: The risk of infection increases significantly after PROM, as the protective barrier of the amniotic sac is lost. Prophylactic antibiotics are administered to prevent chorioamnionitis and neonatal sepsis; Promote Fetal Lung Maturity: The administration of antenatal

corticosteroids is crucial to accelerate fetal lung maturation and reduce the risk of respiratory distress syndrome in preterm neonates; Delay Delivery (if Possible): If the pregnancy is preterm and there are no signs of infection or fetal distress, efforts are made to delay delivery to allow for further fetal maturation. This may involve bed rest, close monitoring of maternal and fetal well-being, and the use of tocolytics (medications to suppress contractions); Optimize Maternal Health: Managing underlying SLE activity is crucial to prevent maternal complications. This may involve adjusting medications, monitoring for flares, and addressing any organ involvement; Timely Delivery: The decision to deliver is based on various factors, including gestational age, fetal lung maturity, presence of infection, and maternal well-being. Delivery may be indicated if there are signs of infection, fetal distress, or worsening maternal condition.[17-19]

The decision to proceed with an elective cesarean section at 34 weeks gestation was a carefully considered one. Given the high risk of preterm labor, fetal distress, and maternal complications associated with SLE, lupus carditis, and PROM, the multidisciplinary team believed that early delivery would be in the best interest of both mother and child. The timing of delivery was chosen to balance the risks of prematurity with the potential benefits of further fetal maturation. At 34 weeks, the fetus had a good chance of survival with minimal long-term complications. Prolonging gestation further would increase the risk of infection and other complications, potentially compromising both maternal and fetal health. The decision to perform a cesarean section was based on several factors, including the patient's history of lupus carditis, which could increase the risk of cardiac decompensation during labor, and the need for close fetal monitoring, which is more feasible during a cesarean section. The patient and her family were fully informed of the risks and benefits of both vaginal and cesarean delivery, and they ultimately decided to proceed with the cesarean section. Following the successful delivery of a healthy male neonate, Mrs. VA's postpartum care focused on monitoring for complications related to SLE, lupus carditis, and the cesarean section. Her pain was managed with appropriate analgesia, and she was started on prophylactic anticoagulation to prevent thromboembolic events. Her SLE medications were adjusted as needed to ensure disease control, and her cardiac function was monitored closely with echocardiography. The neonate was admitted to the neonatal intensive care unit (NICU) for monitoring and supportive care. She received supplemental oxygen and intravenous fluids, and her respiratory status was closely monitored. She was also evaluated for signs of neonatal lupus, although none were identified.[15,17]

Patient education and shared decision-making are fundamental aspects of managing pregnant women with SLE, lupus carditis, and PROM. In Mrs. VA's case, the multidisciplinary team provided comprehensive information about her diagnosis, the potential risks and benefits of various interventions, and the expected outcomes. This empowered her to actively participate in the decision-making process and make informed choices about her care. The team also provided emotional support and counseling to help Mrs. VA cope with the stress and anxiety of her situation. The patient's active involvement in her care and the strong therapeutic alliance she developed with the healthcare providers were instrumental in achieving a successful outcome. The management of pregnant women with SLE, lupus carditis, and PROM raises ethical considerations related to balancing maternal and fetal well-being. The potential risks to both the mother and the fetus must be weighed carefully, and decisions should be made in consultation with the patient and her family. Respect for patient autonomy, beneficence (acting in the patient's best interest), and non-maleficence (avoiding harm) are guiding principles in this context. In Mrs. VA's case, the decision to proceed with an elective cesarean section at 34 weeks gestation was made after a thorough discussion with the patient and her family. The risks and benefits of this intervention were explained in detail, and the patient's preferences were

taken into account. The team also provided emotional support and counseling to help the patient cope with the stress and anxiety of her situation.[16,18]

The successful management of Mrs. VA's pregnancy and delivery does not mark the end of her care. Long-term follow-up is crucial for both the mother and the child to monitor for potential complications and optimize their health. Regular follow-up with a rheumatologist is essential to monitor disease activity, adjust medications as needed, and address any flares. The postpartum period is a high-risk time for flares, and close monitoring is crucial to prevent complications. Regular echocardiography and consultations with a cardiologist are necessary to assess cardiac function and identify any signs of worsening cardiomyopathy or arrhythmias. The long-term impact of pregnancy on cardiac function needs to be carefully evaluated. Given the risks associated with pregnancy in women with SLE, contraceptive counseling is essential to prevent unintended pregnancies and allow for optimal disease control before attempting future pregnancies. Regular follow-up with a pediatrician is crucial to monitor the child's growth and development, particularly in the context of preterm birth. Early intervention for any developmental delays or other complications can improve long-term outcomes. Given the maternal history of lupus carditis, the neonate should be evaluated for congenital heart block. Electrocardiography (ECG) and echocardiography can be used to assess cardiac conduction and function. The neonate should be monitored for signs of neonatal lupus, a transient condition characterized by cutaneous and hematologic manifestations. This may involve periodic blood tests and clinical assessments. While the management of pregnant women with SLE, lupus carditis, and PROM has improved significantly in recent years, there are still several areas where further research is needed: Biomarkers for Predicting Complications: Identifying biomarkers that can predict the risk of complications in pregnant women with SLE would allow for more personalized and targeted interventions. This could include biomarkers for disease flares, preterm birth, preeclampsia, and fetal complications; Personalized Treatment Strategies: Developing personalized treatment strategies based on individual risk profiles could improve outcomes for both mother and child. This would involve tailoring medication regimens, monitoring protocols, and delivery timing based on individual patient factors and disease activity; Optimizing Delivery Timing: Further research is needed to determine the optimal timing and mode of delivery in pregnant women with SLE, lupus carditis, and PROM. This would involve balancing the risks of prematurity with the potential benefits of further fetal maturation; Preconception Counseling: Enhancing preconception counseling for women with SLE is crucial to optimize disease control before pregnancy, minimize the risk of complications, and improve maternal and fetal outcomes. This would involve educating women about the potential risks and benefits of pregnancy, optimizing medication regimens, and addressing any underlying comorbidities.[19,20]

4. Conclusion

Mrs. VA's case exemplifies the complex and challenging nature of managing pregnant women with SLE, lupus carditis, and PROM. The successful outcome in this case can be attributed to several factors, including early diagnosis, comprehensive assessment, multidisciplinary collaboration, individualized care, shared decision-making, and prompt interventions guided by evidence-based recommendations.

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