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## Systemic lupus erythematosus: A clinical conundrum in pregnancy

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### Abstract

Systemic lupus erythematosus (SLE) is a common Rheumatological condition and it is associated with a number of multisystem complications (1). We describe a case report for a 26-year-old pregnant patient who has had long standing systemic lupus erythematosus with a multitude of cardiac, respiratory and obstetric complications secondary to SLE. This is her fourth pregnancy. She has a significant medical history. She has a history of 2 previous caesarean sections, one at 27 weeks for maternal reasons and the other was in January 2016 for a small for gestational age fetus. She has had a mitral valve replacement for severe mitral regurgitation and moderate inflow obstruction secondary to Libman's Sacks endocarditis related to systemic lupus erythematosus in 2008. She also has Lupus nephritis Class III on biopsy, Creatinine pre-pregnancy was 66 with an eGFR of greater than 90, and during pregnancy Creatinine and Urea rose but returned to 8.7 with a Creatinine of 91 and eGFR of 66. In addition to her complex medical history, this patient also had a complex social history which meant there were issues with the patient engaging in the healthcare system. This is an interesting case for discussion as it raises the issue of multiple-comorbidities of SLE in pregnancy.

**Keywords:** proximal tibia fracture, MIPPO, knee stiffness, wound dehiscence

### Introduction

Systemic lupus erythematosus (SLE) is a common Rheumatological condition and it is associated with a number of multisystem complications <sup>[1]</sup>. We describe a case report for a 26 year old pregnant patient who has had long standing systemic lupus erythematosus with a multitude of cardiac, Rheumatological, respiratory and obstetric complications secondary to SLE. The case highlights the multiple medical challenges faced by the patient and her team, as well as the complicating social factors that also determine health.

### Case description

#### Background

- This case describes a 26 year old patient who is currently pregnant at 13 weeks gestation
- This is her fourth pregnancy. She has a significant medical history as described below. She has a history of 2 previous caesarean sections; one at 27 weeks in 2014 for maternal reasons and the other was in 2016 for a small for gestational age fetus.
- One miscarriage at 16 weeks gestation.
- Systemic Lupus Erythematosus (SLE) diagnosed aged 13
- Has been on variable steroid regimes throughout her life.
- SLE double stranded DNA positive, low C4 (less than 10) anti Ro negative, antiphospholipid positive on Prednisolone 5mg quiescent.
- Lupus nephritis Class III on biopsy with current Creatinine pre-pregnancy at 66 with an eGFR of greater than 90.
- Mitral valve replacement in July 2015 for severe mitral regurgitation and moderate inflow obstruction secondary to Libman's Sacks endocarditis related to systemic lupus erythematosus in 2008.
- After her second delivery, she had a pancytopenia that was assumed to be related to SLE and hypersplenism (of unknown cause): pre-pregnancy Hb 104, white count 3.8, platelets 116. This resolved some months later.

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- Previous recurrent pneumonia with pleural effusions, probably related to lupus pneumonitis x 3.
- Current medication includes: Prednisolone 5mg once a day, Aspirin 75 mg once a day and prophylactic Dalteparin.
- Allergy to penicillin and paracetamol.

#### **Pregnancy 1 (2014)-Main issue: Valvular heart disease (severe mitral regurgitation)**

- Unplanned pregnancy and smoked throughout pregnancy.
- Secondary to SLE, this patient developed mixed rheumatic mitral valve disease. Therefore, she required anticoagulation in this pregnancy.
- Pregnancy complicated by her social situation and non-compliance anticoagulation. The plan was for dalteparin to be taken in the first trimester and thereafter, warfarin for the remainder of the pregnancy. Prior to the delivery date, the warfarin would be stopped and dalteparin to be re-started.
- A termination of pregnancy was offered as she was incredibly symptomatic from her mitral valve disease and this could lead to maternal death. Intrauterine growth restriction was also likely. However, the patient declined the opportunity to terminate the pregnancy.
- Anomaly scan did not reveal any fetal abnormalities.
- Live female baby delivered at a weight of 850 grams via emergency caesarean section at 27+5/40 due to fetal compromise secondary to maternal compromise (decompensated severe mitral regurgitation during pregnancy). Baby was in NICU for three months.
- One year post-delivery, she was increasingly troubled by a productive cough associated with chest pain which is worse when she walks. Finally, a diagnosis of Isoniazid resistant pulmonary tuberculosis was made and eradication therapy commenced in July 2015.
- Metallic mitral valve replacement (Frank Wells) in July 2015 for severe mitral regurgitation and moderate inflow obstruction secondary to Libman's Sacks endocarditis related to systemic lupus erythematosus in 2008.
- Warfarin therapy was commenced and once again, patient has had issues with compliance in terms of use, monitoring and engagement with healthcare professionals.

#### **Pregnancy 2**

- Late miscarriage at 16 weeks gestation; thought to be related to warfarin

#### **Pregnancy 3 (2016)**

- Smoked during pregnancy.
- Did not take folic acid supplementation pre-conceptually.
- At the onset of pregnancy, she was commenced on low molecular weight heparin injections and warfarin was stopped. During this time, she did not have good compliance with the injections and had erratic anti-Xa-levels. At the start of the second trimester, she was switched to warfarin. Therapeutic INRs were not achieved and therefore she was admitted to hospital for supervised warfarin.
- At 32 weeks gestation, her warfarin was converted to low molecular weight heparin in anticipation of delivery, but once again, there were compliance issues.
- Rheumatology plan was for monthly full blood count, urea and electrolytes and three monthly complement and ANA levels.
- Echocardiogram was repeated; replacement valve functioning well and ejection fraction 61%

- Joint pain well controlled during pregnancy.
- Police were informed mid pregnancy as the wellbeing of the patient could not be established.
- Live male baby delivered via emergency caesarean section due to fetal compromise (intrauterine growth restriction) at 35+5/40 weighing 1880 grams.
- The infant also had jaundice at birth and phototherapy was commenced for 24 hours.

#### **Pregnancy 4 (2018)**

- 13/40 pregnant
- Known systemic lupus erythematosus.
- Did not attend dating scan
- Not on any reliable anticoagulation- despite mitral valve replacement; once again, due to compliance issues.
- At the maternal medicine multidisciplinary meeting, the risk of the prosthetic mitral valve replacement clotting off or causing a transient ischaemic attack, stroke, peripheral embolus or coronary embolus was discussed.
- Claims she is taking heparin injections twice a day. We do not think she has any supply of dalteparin.
- The patient failed to attend multiple midwife visits and antenatal clinic appointments. This patient has also had compliance issues with heparin injection use and warfarin use.
- A rescue plan was made by the cardiology consultant that should the patient present with breathlessness, chest pain; syncope, embolic phenomenon or stroke, then she should have an echocardiogram by the on call cardiology registrar to assess the mitral valve in case it had thrombo-embolised.

#### **There are multiple problems in this pregnancy that have stemmed from her long standing SLE**

1. Mechanical mitral valve replacement, fully anticoagulated on twice daily low molecular weight heparin; is being monitored with anti Xa levels. She previously expressed concern about changing to warfarin (on a 2 mg dose daily). After discussion with the obstetrician and cardiologist about the risks and benefits of warfarin versus low molecular weight heparin she agreed to follow the recommendation for warfarin. Essentially, low molecular weight heparin, does not cross the placenta, favours the fetus, but is associated with a small risk of maternal valve thrombosis. Warfarin has a small risk of fetal harm, due to bleeding in the second trimester, although if the dose is less than 5 mg this risk is small. There is therefore a conflict between the optimal treatment for the mother and the optimal treatment for the baby.
2. Renal function: At present, she has impaired renal function secondary to SLE. Her creatinine is around 100 currently which is roughly in the same region as it was at the beginning of her first pregnancy. This is likely to result in growth restriction and a possible preterm birth and indeed there is concern about deterioration in her renal function during this pregnancy. She agreed to have a 24 hour urine collection for protein and check her U's and E's, creatinine and full blood count on a monthly basis.
3. She has successfully reduced her prednisolone 5 mg.
4. Anti Ro and anti La antibodies have been checked in this pregnancy and are negative. Between her second and third pregnancy, she was diagnosed with pneumonitis secondary to SLE

### **Discussion on why case is interesting**

This case highlights the multitude of complications associated with SLE. SLE is a multisystem disease and therefore, particularly in pregnancy, the role of the multidisciplinary team is absolutely essential. In this case, the patient has a complex social background and this coupled with compliance issues with medications, resulted in a number of clinical challenges. This patient has a metal tissue heart valve; considering she has a longstanding history of issues with medical compliance, would a mechanical valve not requiring anticoagulation have been more suitable? As a result of SLE, this patient developed renal complications and therefore contributed to a “high risk” pregnancy. If the renal function continued to deteriorate, then what would happen if the patient was to become pregnant again? This patient was absolutely against any form of termination of pregnancy; this in itself is an ethical dilemma. This patient has failed to attend multiple community and hospital clinic appointments; how can we engage this patient within the healthcare system?

Lupus nephritis in pregnancy can of course also result in severe complications [2]. It is important to be mindful about renal disease in pregnancy and its associated risk of developing hypertensive disease in pregnancy [2]. Various studies of patients with SLE and the respective pregnancy outcome have been conducted [3, 4]. The way in which SLE should be managed in pregnancy will of course depend on the severity and extent of complications that patients present with [3]. It is well known that patients with SLE are at higher risk of developing pre-eclampsia [5] and therefore these patients require adequate pre-pregnancy counselling and antenatal care.

### **Key learning points (patient, doctor, and colleague)**

- Multidisciplinary working is essential. All discussions and medical plans must be communicated effectively and all team members should be clear on the plan of action.
- It is important to liaise closely with primary care doctors and community healthcare workers
- Senior clinicians should be involved with such high risk patients even before pregnancy commences. Patients require care from the rheumatologist, obstetrician, midwife and primary care physician in the management of their condition pre pregnancy, during pregnancy and subsequent post-partum period

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