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Systemic Lupus Erythematosus in pregnancy – a multidisciplinary approach to family planning and adverse outcomes prevention

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ABSTRACT

Introduction and purpose

Systemic Lupus Erythematosus is a chronic multisystemic autoimmune disease with periods of remissions and flares [1,5,25]. Because of its possible consequences and unpredictability, it is undoubtedly an issue for such patients to decide about pregnancy [3].

The main aim of this review is to present the possible risks of SLE in pregnancy, its general management and current recommendations regarding pregnancy planning and pre-/postnatal care.

Review Methods

For the review we conducted research of scientific literature from PubMed and books, applying the keywords (below). Consequently, we included in our references above 20 selected articles published between 2017-2024 and 3 chapters of different medical books. All of these were analyzed in terms of their currency and relevance.

A brief description of the State of Knowledge

SLE mostly affects women at the reproductive age [2, 3,5]. It often requires long-term therapy that aims to achieve and maintain an inactive stage by means of numerous aggressive drugs. Its

proper management in gestation is even more challenging than usually, owing to the increased risk of adverse pregnancy outcomes (APO) and higher maternal mortality [1,2,4,5,7]. Therefore, to achieve successful pregnancy, risk stratification, therapy modification and individually adjusted plan of follow-up visits are the most crucial conditions to be met [1,6,7,13].

Summary

Considering all the potential complications that may occur in general, the issue of family planning should be raised with every female patient [5,6]. The key to the best outcomes is proper implementation of current strategies and empowering the patient to be an active and aware participant in the decision-making process [1,3,4,6,11].

Keywords: "SLE in pregnancy", "SLE EULAR", „Systemic Lupus Erythematosus pregnancy", „pregnancy and autoimmune diseases"

REVIEW

Introduction

Systemic Lupus Erythematosus (SLE) is a multisystemic disease that predominantly affects women of childbearing age [2,3,5,23,25]. Depending on its severity, stage, activity and organ involvement, the clinical manifestations can be extremely different. In the majority of the cases, the patient has to be under permanent specialized control and require periodically immunosuppression as the disease tends to remit and relapse. Accordingly, SLE is somehow unpredictable in its course and difficult to estimate how fast it will progress in the next few years [3,10,23,25,26]. Although there has been tremendous progress towards better control of SLE in general, there is still a high risk of its health consequences, not to mention adverse outcomes during pregnancy. Several factors that include the characteristic of the disease, aggressive treatment causing delays in pregnancy planning and simply the patients' fear make them postpone or even resign from motherhood at all [3,5].

Therefore, we should be aware of the problem and maximize our efforts as health providers to establish the patients' knowledge about the strategies for safe pregnancy, medications compatible with gestation and to enable women to have their desired family life,

without any unnecessary trauma, if it is feasible [5]. Nowadays, thanks to newly discovered therapies and methods, we have such tools to minimize the risk of Adverse Pregnancy outcomes (APO) and to individualize the patient's treatment in pregnancy [2,28].

Probably the most important point to be made is that according to the American college of rheumatology (ACR) and the European league against rheumatism (EULAR), patients should reach the stage of remission or low disease activity and maintain it for at least 6-12 months before planned gestation [3,5,9,10,11,12,20,25]. SLE patients should be assessed in terms of the autoantibodies profile, organ involvement, its activity but also severity which can be done both by clinical judgement and several quantified indices [1,3,13]. The most common is probably Systemic Lupus Erythematosus Disease Activity Index 2000 (SLEDAI-2K) which analyzes the presence of twenty four different disease-related factors and calculates the score ranging from 0 to 150 [4,25]. The result of 4 or below, is one of the components in the Lupus Low Disease Activity State (LLDAS) and if all of these are achieved, it gives the opportunity to conceive and to minimize the cardiovascular risk [3,14,25]. Additionally, SLEDAI gives an honest evaluation of SLE activity before gestation and if the pregnancy will be confirmed, Systemic Lupus Erythematosus Pregnancy Disease Activity Index (SLEPDAI) can be introduced as a more adequate choice. This modification has a huge advantage of being adapted for differential diagnosis between physiological pregnancy changes and SLE manifestations [3,4,5,9]. Another suggested way of measurement of the disease activity is BILAG-2004 index which is also adapted for pregnancy (BILAG-P). It enables reliable assessment of the patient's condition in clinical practice, but it is also more time-consuming, which can be treated as the main drawback [28].

As for the remission, it can be measured basing on the Definition of Remission in SLE (DORIS) [9,25]. Consequently, the disease might be classified as being in clinical or even complete remission which assumes the serology and complements normality. Nevertheless, many RCTs show that there is no significant difference in subsequent pregnancy outcomes whether the remission or LLDAS is reached [9].

Pregnancy-related complications in SLE and its general management

It makes no doubts, that women with SLE are more likely to develop unfavorable complications in pregnancy, both maternal and fetal-neonatal. The flare rate in pregnancy is rather high, even in stable disease [1,2,5,9]. This may be due to general vulnerability of women

during gestation and after parturition, but also because of the strict connection between SLE activity and hormonal changes such as increased level of estrogen [4,5,7,30].

Several studies have shown that SLE pregnancies tend to have higher rate of infections, thrombosis and even, a 20-fold increase in maternal death compared with the control population [5,30]. Moreover, in the course of SLE, it has been noticed an increased risk of fetal loss, relapse of the disease, fetal growth restriction (FGR), hypertension (pre-eclampsia and eclampsia), premature birth, termination of pregnancy by cesarean section, and the development of neonatal lupus [1,2,4,5,7,13,14,25,30]. So far, it is well known that not only active disease just before conception predicts flares in pregnancy, but there seems to be a similar correlation between organ involvement and the type of organ system affected in relapses during gestation [5].

Among major risk factors predictive of APO there are: childhood-onset SLE (cSLE), black race, low complement levels, need for antihypertensive treatment before conception, prevalence of anti-dsDNA, anti-Ro/SSA, anti-La/SSB, aPL antibodies or APS (antiphospholipid syndrome), organ involvement, active/flaring SLE, moderate disease activity before conception, thrombocytopenia and use of glucocorticosteroids (GCs), especially at or above maintenance dose 10-20 mg/day of prednisone equivalent [1,5,7,9,13,14,19]. Another independent risk factor is lupus nephritis (LN) which develops in approximately half of the patients with SLE [4,5,13,19]. Its occurrence before gestation significantly raises the risk of renal complications during this nine-month period and postpartum. LN is associated with higher rate of preterm birth and pre-eclampsia than in the general population [4,5,14,30]. Therefore, the proper functioning of kidneys should be checked regularly to look for any possible signs of exacerbations and to administer appropriate treatment as early as possible [8,13,20,25]. Some of the most useful markers to indicate a possible relapse in a laboratory test include the anti-dsDNA titre or the level of complement [4,5,13].

Differentiation between SLE flare and pre-eclampsia can be very problematic because in both conditions elevated creatinine levels and increasing proteinuria are observed. Changes found when urine sedimentation is examined indicate nephritis whereas gradually raising urine acid level or elevation of liver function tests are most likely associated with pre-eclampsia. The diagnosis is difficult but crucial due to completely various management. In the case of LN, intravenous GCs (or sometimes even immunosuppression) need to be introduced and on the contrary, pre-eclampsia requires immediate cesarean section [4,5].

For those reasons, SLE pregnant women should be under strict control [7,25]. Rheumatologic appointments are needed at least once in every trimester and obstetric follow-ups are also required more frequently [25]. To screen fetuses for growth restriction and

placental insufficiency, ultrasound examinations should be repeated every 3-4 weeks after the 15th week of pregnancy [4,13]. The surveillance should consist of fetal biometry and Doppler sonography of the umbilical artery, uterine arteries, ductus venosus and middle cerebral artery, especially if FGR has been already found [5,13].

At the end of the first trimester of gestation a final specialized ultrasound scan should be performed with a meticulous evaluation of the fetus development [3,13]. This in many cases reduces parents' psychological distress, if no malformations will be found, and defines further management. When no specific complications develop, due date and the way of delivery is the same as in healthy women. In the opposite situations such as small for gestational age (SGA) fetuses occurring after 34 weeks, decreased cerebroplacental ratio etc., the risk of adverse perinatal events becomes much higher [13].

Pregnancy-compatible medications in SLE and adjunct therapy

The use of medications that are safe and compatible with pregnancy and breastfeeding is probably the most vital issue from the future mothers' point of view. The role of rheumatologists is to modify the therapy properly in order to provide the patient and developing fetus both safe and effective treatment, if this is achievable.

Fundamental importance is assigned to low-dose aspirin (LDA) and anticoagulative therapy, which is discussed in the following paragraphs, but also hydroxychloroquine (HCQ) [1,2,3,4,13,17,19,20,25]. This antimalarial drug is highly recommended for all patients, especially preconceptionally and during pregnancy, unless contraindications occur [1,4,5,13,16,17]. Its beneficial influence is due to preventive activity of both lupus flare and neonatal lupus erythematosus (NLE) [5,13,17]. Furthermore, HCQ is said to cause also some antithrombotic and metabolic effects. Current studies have shown that by virtue of its lipid-lowering property and diabetes mellitus prevention, it contributes to cardiovascular risk improvement [8,12,17]. The actual strategies assume antimalarials intake as soon as the antinuclear antibodies are detected in the patient's blood. This prophylaxis is proven to delay the progression of SLE and consequently, to reduce future damage accrual and mortality in general [17]. As for the gestational period, HCQ is currently discovered to be the protection against preeclampsia, FGR or prematurity. Although the drug crosses the placenta and is also found in breast milk, its concentration is not harmful to fetuses and newborn babies when breastfed [17]. Nevertheless, its safety is often a matter of debate due to the retinopathy that can appear as a side effect. Therefore, hydroxychloroquine should be used with caution,

particularly in patients with risk factors such as daily and cumulative dose, chronic kidney disease, treatment duration and preexistent retinal disease. Additionally, automated visual fields and optical coherence tomography (OCT) are suggested as a screening for the toxicity detection. Their frequency should be adjusted on an individual basis, considering susceptibility to retinopathy. Except for this frequently discussed side effect, HCQ is generally considered to be secure [17]. Recent EULAR update proposes consensus on its use in the daily target dose of ≤5 mg/kg/day actual body weight, after risk stratification for flare and retinal toxicity [16]. Knowing that higher doses and longer treatment can lead to adverse effects, the biggest puzzle is when exactly this drug should be withdrawn to obtain the best outcomes [18]. Unfortunately, there are no guidelines for that yet.

In addition to the medications above, calcium, folic acid and vitamin D are recommended as in the general population, especially if the level of 25-OH-vit. D is low. Such measurement should be performed as soon as the pregnancy is confirmed. Deficiencies might occur more frequently in patients with SLE (and/or APS) because of the GCs and/or heparin therapy and their impact on bone mass [1,3,13].

With regard to managing SLE exacerbations or other disease-related complications during pregnancy, oral GCs account for a basis in the therapy. However, currently there is a growing tendency to introduce them in minimal but effective doses (actually suggested – max. 5 mg/day) as a bridging therapy and to withdraw as early as possible [1,5,8,12,15,16,20,25]. In more severe cases, it is recommended to start the intravenous methylprednisolone pulses for 1 up to 3 consecutive days, also at lower doses (125-1000 mg/day) than previously suggested [13,15,20]. Alternatively, intravenous immunoglobulin or plasmapheresis are good options, as well.

Despite immunosuppressive and biologic drugs being extremely useful in SLE, their implementation is not advisable during gestation due to their potentially teratogenic effect. Moreover, they have to be withdrawn even prior to pregnancy attempting. Exceptions to this rule include tacrolimus, azathioprine and ciclosporin A with acceptable safety profile, which can be used mainly for lupus nephritis (LN) [1,4,5,6,13,20,25]. As for cyclophosphamide (CYC), it should be avoided in the first trimester of pregnancy because of the risk of miscarriage, and its use in the second or third trimester should be reserved for life-threatening conditions [5,13,20].

Due to the SLE patients' cardiovascular risk being frequently increased, anti-hypertensive treatment might be required [1,3,8,12,13,20]. In fact, chronic hypertension or pregnancy-induced hypertension (PIH) itself is considered a high-risk factor in any pregnancy

(with or without SLE) [9,30]. This is because of the potential consequences including pre-eclampsia, eclampsia and ultimately HELLP syndrome. What is more, even if blood pressure (BP) is well controlled, such a comorbidity is always associated with the need for earlier delivery or its induction [24]. Current practice is to prescribe angiotensin converting enzyme inhibitors or, among others, metoprolol [8]. Though, in and prior to gestation they have to be replaced by their compatible counterparts such as methyldopa, nifedipine or labetalol [1,3].

Another important aspect of the patients' therapy modification refers to COX-2 inhibitors, and full-dose aspirin which should be discontinued. As for the non-steroidal anti-inflammatory drugs (NSAIDs) in general (except LDA), they are often applied in arthralgias and arthritis in SLE with good effects, but according to the guidelines, their use above 48 hours should be rather discouraged, particularly after week 20 of gestation [5,25].

In order to keep SLE under appropriate control, laboratory testing for disease activity and medication toxicity has to be performed at least once in each trimester of pregnancy. The examinations need to include: metabolic panel, complete blood count with differentiation, complement level, dsDNA, uric acid concentration, urinalysis with microscopy and, a urine protein to creatinine ratio (UPCR) [5].

When considering lactation-compatible medications, all of the above, safely used in pregnancy, might be continued during breastfeeding. In addition, biologics such as rituximab, belimumab, or recently approved anifrolumab, are permitted as they do not pass into breast milk [5,25].

Fetal risks of anti-SSA/SSB antibodies coexisting with SLE

The minority of patients with SLE have antibodies such as anti-Sjogren's-syndrome-related antigen A (SSA) (anti-Ro) and anti-Sjogren's-syndrome-related antigen B (SSB) with the percentages of 30% and 15-20% respectively [4,21]. In half of the cases they do not cause any symptoms in adult women but in case of pregnancy, they may result in severe fetal outcomes due to the transplacental passage of antibodies [4,21,23].

The consequences may vary from self-resolving symptoms such as photosensitive skin rash, thrombocytopenia, anemia, hepatitis to permanent fibroelastosis of myocardial tissue and congenital heart block (CHB) which in about 20% of newborns effects in their death within the first 3 years after birth [1,4,5,19,20,21,23,25,26]. The rest of them would require pacemaker before reaching adulthood. The fetuses can usually develop heart blocks in a period between 16-18 and 25 weeks of gestation, which makes a window for their special vigilance

[4,21,26,30]. The risk of its occurrence in women with no previous history of such complication is rather low, as it ranges from 1,5 to 2%, whereas in the following pregnancies after a first affected fetus it reaches about 16% [1,4,13,19,23,30]. For the cases of higher probability of CHB occurrence, EULAR indicates the need for serial fetal echocardiograms performed weekly or biweekly in the critical period of gestation [13].

Although it might be an intuitive approach to check the serological markers of future mothers pre-conceptionally, the Society for Maternal-Fetal Medicine guidelines indicate that it is associated with low predictive value if NLE has never appeared before [4]. In fact, there is no evidence on the prevention of CHB in antenatal management other than HCQ prophylaxis, which is generally recommended for all women with SLE before and during pregnancy or, alternatively, intravenous immunoglobulin [13,21]. Therefore, some opinions about women's testing are contradictory. In another study referring to NLE management and its prevention it has been stated that checking if anti-SSA and anti-SSB are positive in every pregnant woman is the key to introduce HCQ or intravenous immunoglobulin (IVIG) early enough and to protect fetuses from further cardiac complications [21].

In addition, some studies have found a link between Sjögren's syndrome and increased rate of APO as an individual risk factor [23]. This further emphasizes the importance of active screening for these antibodies during pregnancy in order to provide the most reliable estimate of obstetric risk.

When it comes to screening for CHB, Doppler assessment of the fetal heart rate should be included as a part of routine perinatal examinations. If it is found, weekly ultrasound examinations can be performed but there is a need for further research proving its usefulness [13]. Some studies suggest that if the fetus would be affected with first- or second-degree heart block, GCs treatment can be introduced with good further results in preventing complete heart block. Its role is explained by the anti-inflammatory effect and scarring reduction caused by the antibodies [4]. Conversely, if third-degree block occurs, steroid therapy has no beneficial effect. In addition to that, we need to be aware of the adverse effects of steroids that might cause numerous disturbances in maternal health and fetal development [4].

So far, there are no clear evidence about the benefits of special fetal surveillance or strategies for prevention of complete heart block, especially if the previous child was not affected. However, what EULAR lists as an 'argument in favour' in its recommendations is the fact that the strategy of intensive vigilance poses no risk to the patient or the fetus and is generally well tolerated [13]. Accordingly, obstetricians should follow the individualized path for each patient.

According to the current state of knowledge, the use of hydroxychloroquine before and during pregnancy significantly reduces the risk of NLE. What is more, its discontinuation is directly associated with poor pregnancy outcomes [5,13,17]. However, the research that have been performed disclose low treatment adherence in women [17]. Therefore, this is an area where more should be done to raise the awareness of the importance of medication compliance and persistence. Monitoring of HCQ levels at follow-up visits can be an additional motivation and information for healthy providers about the variability of the pharmacokinetics [17].

SLE and APS syndrome

Antiphospholipid syndrome is another autoimmune disease associated with specific antibodies such as anti-CL, anti-β2GPI and lupus anticoagulant (LA) [4,22]. Its clinical manifestation is characterized by proneness to recurrent miscarriages and venous or arterial thromboses. It may appear as a primary form or in the setting of other autoimmune diseases (secondary-APS) [18,22]. Positive APLAs are most frequently correlated with SLE, occurring in about 40% of the patients, but only one-third fulfill the criteria for APS syndrome [4]. In many studies it has been proven that aPL antibodies positivity (or APS) substantially contributes to decreased ovarian reserve, embryo implantation impairment, placenta dysfunction and other pregnancy-related complications including preeclampsia and eclampsia [1,5,9,18,22]. Major unfavorable outcomes are associated especially with lupus anticoagulant presence [22].

An early screening for APLAs detection is therefore a necessity in SLE women if they have reproductive plans [25]. If their presence will be found, it is recommended to introduce low-dose aspirin (LDA) or anticoagulative medications depending on the type of aPL profile and clinical criteria. When considering prophylaxis in low-, medium-high- and high-risk profiles (*criteria below*), the use of LDA can or should be considered, particularly from the time of family planning until 6 weeks after delivery [3,4,5,8,12,13,18,22,25,26]. The ACR also suggest that LDA use should become standard practice in all women with SLE during gestation, especially these at risk of pre-eclampsia, regardless of their serological status [3,29]. If, in addition to aPL antibodies, the patient meets the criteria for APS, vitamin K antagonists (VKA) are given with the need for INR monitoring [16,22]. Both VKA or DOAC (Direct Oral Anticoagulants) must be replaced with low molecular weight heparin (LMWH) immediately after pregnancy confirmation [4,12,18,22,25,26,29,30]. This would mean combined treatment with LDA and heparin in prophylactic doses (in the case of previous obstetric APS) or in

therapeutic doses (in the case of recurrent pregnancy complications or thrombotic APS) [3,13,18,22]. If such guidelines are followed and implemented in a timely manner, the risk of vascular events or APO is significantly reduced [4,12,22].

The EULAR recommendations also point out that these patients need not only rheumatological care, but also a thorough cardiovascular risk assessment and conventional prevention. Particular attention should be paid to the management of co-morbid lipid disorders and the maintenance of blood pressure even below 130/80 mmHg [8,12,13,18,19,20,25].

aPL profiles:

- **Low-risk** – anti-CL or anti-β2GPI (low-medium titres; present permanently/transiently)
- **Medium-high-risk** – anti-CL (higher titres: >40 IgG/IgM phospholipid units or >99th percentile) or anti-β2GPI (titre: >99th percentile)
- **High-risk** – three or two types of APLAs positive (anti-CL, anti-β2GPI, LA) in high titres or LA positive twice in a 12-week gap [18,22]

Pre-conception counselling

The increasing maternal age and use of gonadotoxic alkylating agents, such as cyclophosphamide (CYC) account for the factors that contribute to a possible decreased fertility although the disease itself does not have such an impact directly proved [3,5,13,25]. Furthermore, flares are said to be connected with hyperprolactinemia which affects the ovulation process and, as a consequence, the reproductive capacity. To predict objectively the ovarian reserve, anti-Mullerian hormone (AMH) level may be measured [5,13].

Accordingly, pregnancy planning issue should be discussed with a gynecologist or rheumatologist from younger age in SLE patients than in the general population [3,13]. In order to provide fertility preservation, EULAR recommends that gonadotropin analogues should be considered in all menstruating women with SLE before receiving cyclophosphamide treatment [5,13]. Its safety and efficacy in premature ovarian failure (POF) prevention have been proven in many RCTs. Ideally, it should be applied prior to CYC therapy or concomitantly, as well. Moreover, considering future pregnancy plans, the use of alkylating agents and their dosage should be weighted against the risk of fertility impairment [13]. Recent studies shows that if cyclophosphamide is used at low-dose and the interval between the last dose and subsequent pregnancy is long enough, it should not be harmful for the ovarian proper functioning [9]. If

the negative impact cannot be mitigated, an oocyte preservation before gonadotoxic therapy is another available option for such women who desire motherhood [3].

Moreover, a woman needs to be informed in advance, in which conditions pregnancy is contraindicated. These consist of active nephritis, severe pulmonary, cardiac, renal, or neurologic disease, recent stroke, catastrophic APS or pulmonary hypertension [3,4,5]. In such cases, safe and sufficiently effective contraception should be prescribed in consultation with the patient, considering the pros and cons of each method [4,19,25]. For instance, taking a risk of thrombosis into consideration, oral contraceptives (most safely with progesterone only) may be an option but only if the benefit/risk ratio in terms of thrombotic events and SLE flares is well-balanced [4,13,19,29]. It is also true for hormonal replacement therapy during menopause which may be administered if strong indication occurs and the use of it should be limited to the possible shortest duration [13,19,29].

It should be also mentioned here that if SLE is stable and asymptomatic, neither LN nor aPL antibodies are present, and the risk of thrombosis is rather low, two-component contraceptive pills are allowed, especially those with low-dose estrogen [13,27]. Moreover, according to the literature and OC-SELENA (Safety of Estrogens in Lupus Erythematosus National Assessment) randomized clinical trial (RCT), in such cases, they may be associated with relatively low risk and numerous advantageous effects such as: 1) higher efficacy profile; 2) positive impact on bone mass (especially needed in SLE patients); 3) reduction of the severity of lupus symptoms [27].

The intrauterine device (IUD) is possibly the best and mostly encouraged contraceptive option because of its safety and effectiveness, unless there are any gynecological contraindications [13,29]. What is more, levonorgestrel IUD has the benefit of reducing menstrual blood loss which may be especially important in patients on anticoagulation therapy [4].

In women with aPL (with or without APS) all the contraceptive methods that consist of combined hormones should be discouraged due to the risk of cardiovascular events [13,29]. When it comes to the progestin-only emergency pill it is allowed for all patients with SLE (including those with APS) [13]. When choosing an oral therapy, gynecologists need to be aware of any possible interactions with drugs already used in SLE, as these can reduce the contraceptive effect [4].

At the end of the day, it should be made clear to the patient that hormonal contraception is generally of utmost importance in SLE treatment due to the prevention of unwanted pregnancies during high disease activity and teratogenicity of the drugs [4,13].

If the conception is not achievable or it is contraindicated by virtue of the patient's comorbidities, ARTs can be considered, as long as the disease is quiescent and an appropriate antithrombotic treatment is introduced (in case of aPL antibodies presence) [13].

When planning pregnancy in SLE, we should remember about the increased risk of infections that is associated with the disease itself and the therapy, as well. It is therefore necessary to assess the patient's status in terms of susceptibility to various infectious diseases before planned conception and, if this is not sufficient, to immunize the patient with selected vaccinations (during stable/inactive disease) [1,3,13,16,19,20,25]. Special attention is given to human papillomavirus, herpes zoster, COVID-19, pneumococcal infections and seasonal influenza prevention [13,16,19,20].

Another formulated recommendation refers to the screening for malignancies. It is commonly known that women in SLE and/or APS, particularly those exposed to immunosuppressive drugs, are more prone to premalignant lesions occurrence, such as cervical dysplasia, compared with the general population. The higher risk is most likely related to the above-mentioned HPV infection, which is another strong argument in favor of vaccination. Additionally, in order to prevent gynecological cancers such patients should be monitored regularly [13,19,20].

CONCLUSION

As the abovementioned show, pre-conception counselling, risk stratification, strict monitoring, tailored to the patient therapy and effective reminders about the importance of treatment adherence can result in successful pregnancy that are no different from those in the general population. The review also emphasizes the significance of early prediction and intervention to achieve positive final outcomes [1,2,7].

However, none of these strategies can guarantee an uneventful pregnancy, delivery on time and fully healthy newborn child. Therefore, a thorough and honest information about potential risks should be addressed to all the patients that prepare for the pregnancy period. The key strategy is to provide them all the actual knowledge and available options, ensure good support and to involve them in a shared decision-making process [1,3,6,11].

Another important aspect is that to meet the criteria for a well-planned and managed pregnancy, a multidisciplinary approach is needed. The team should be formed of at least rheumatologist, gynecologist/obstetrician and anesthesiologist which would be helpful at the end of the pregnancy to consult the details about parturition including the type of anesthesia

[1,3]. The most crucial is the cooperation between these specialists to coordinate the patient's care in an optimal manner, particularly because not all recommendations are unambiguous and transparent enough. For this reason, each case should be discussed and treated individually [1].

Statement of the authors' contribution

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