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Prediction of placental dysfunction in pregnancies with systemic lupus erythematosus

Marin MP, Martínez HS, Sabugo F, Parra-Cordero M
University of Chile Hospital, Santiago, Chile

Objective

The aim of this study was to determine the clinical, biophysical and biochemical risk factors that might predict a higher incidence of preeclampsia (PE) and fetal growth restriction (FGR)/ small gestational age (SGA) among pregnancies with systemic lupus erythematosus (SLE) undergoing standard treatment.

Methods

We included 77 SLE pregnancies, 11.3% of and 19.3% of FGR/SGA, under standard treatment and with rheumatological control that have either 11 + 0 to 13 + 6 weeks and / or 20 + 0 to 24 + 6 weeks scans at the Fetal Medicine Unit of the University of Chile Hospital between the years 2005 to 2019. Maternal characteristics, mean arterial pressure (MAP) in the first trimester, Uterine artery Doppler (UtAD) in both scan and laboratory parameters were assessed in all pregnancies. A univariate and multivariate logistic regression analysis were performed to determine variables that were significantly associated with the development of PE and FGR / SGA. These results were plotted in ROC curve to determine the best cutting point for the model.

Results

An increased risk of PE was associated with maternal age (OR, 1.21 (95% CI, 1.00-1.346), presence of antiphospholipid antibodies (APA) (OR, 18.80 (95% CI, 2.70-130.69) and history of nephropathy (OR, 81.72 (95% CI, 4.61-1449.2). Interestingly, both first and second trimester UtAD were not useful as a predictor factor for PE in this group of SLE pregnancies. By contrast, SLE pregnancies that developed FGR/SGA were associated with altered first-trimester uterine artery Doppler (OR. 1.13 (95% CI, 1.01-1.26) and also with the use of two or more drugs during pregnancies (OR, 44.21 (95% CI, 1.17-1656.8).

Conclusion

In pregnant women with SLE receiving optimal treatment, it is possible to determine a higher risk of pathologies associated with placental insufficiency and specifically for PE and FGR using clinical and biophysical variables. It should be noted that uterine artery Doppler is not useful for predicting the risk of PE in these patients, but it is useful for predicting the risk of FGR/SGA. Based on the results of the multivariate analysis, it was possible to generate a predictive model that makes possible to predict the appearance of complications in patients with SLE even when they are under effective treatment.

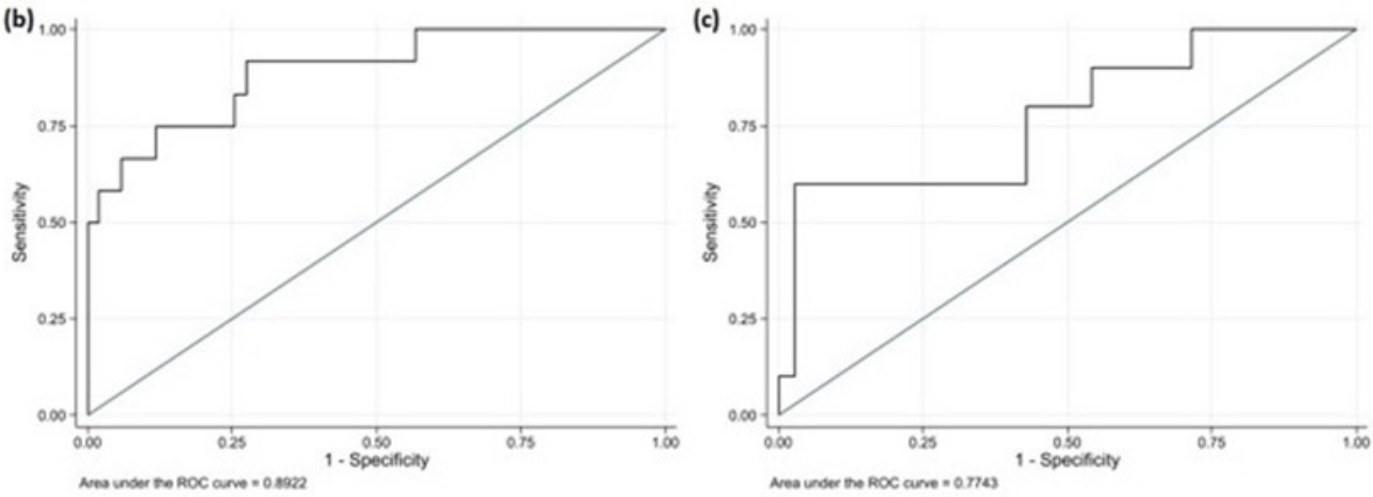

Table (a). Prediction model for adverse perinatal outcome in patients with SLE

Predictive Model	Variables	DR (%)	FPR (%)	LR (+)
PE	Maternal age + Antiphospholipid syndrome + nefropaty	66.7%	5.9%	11.3
FGR/SGA	Drug users + 1st trimester UtAD	60.0%	2.9%	21