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# Fetal growth in pregnant women receiving Beta-Blockers for maternal arrhythmia

Barral Y, Salazar L, Jordà P, Figueras F, Gratacós E, Crispi F, Arbelo E, López M
Hospital Clinic of Barcelona, Barcelona, Spain

## Objective

Beta-Blockers use during pregnancy has been associated with intrauterine growth restriction (IUGR). Nevertheless, scarce information exists about the vasculoplacental pattern in these fetuses and its association with adverse perinatal results. The aim of the present study was to assess prevalence of IUGR, feto-maternal Doppler and perinatal outcomes in pregnant women with maternal arrhythmia depending on the use of α/β- or β-adrenergic oral blocker.

## Methods

Consecutive singleton pregnancies in women with arrhythmia who delivered in a tertiary centre in Barcelona between March 2012 and March 2018 were prospectively included. Maternal characteristics, fetal ultrasound assessment and perinatal outcomes were compared between pregnant women treated with or without α/β- or β-adrenergic blockers.

## Results

A total of 42 pregnancies were included in the analysis, 12 pregnancies in the Beta-blocker group and 30 in the control group. No differences in the type of arrhythmia were observed between groups. The main indications for Beta-blocker treatment were the presence of channelopathies (50%) or supraventricular tachycardia (33. 3%). The Beta-blockers used in the treated group were atenolol (n=1), propranolol (n=1) and bisoprolol (n=8). In two pregnancies, labetalol was used as antiarrhythmic drug. Two pregnant women were treated with 2 antiarrhythmic drugs (flecainide + Beta-blocker). Most women (9/12, 75%) were on treatment before pregnancy. In 7 patients an implantable cardiac defibrillator had been implanted, with no differences between groups. Both groups showed similar feto-placental results. A similar rate of abnormal pulsatility index in the uterine artery in the first trimester was observed. We did not observe significant differences in fetal growth patterns among groups throughout pregnancy, with similar rates of small for gestational age (SGA) fetuses at 32 weeks of pregnancy (14% in both groups). Birthweight was not found to be statistically different (2922g vs 3180g; p 0. 178). Nevertheless, a 17% of newborns from the Beta-blocker group were below the 3rd centile, while only a 1. 2% in the untreated mothers group (p 0. 780). A similar gestational age at delivery, induction of labour rates, mode of delivery, neonatal acidosis and admission to NICU were observed in both groups with a similar rate of preeclampsia (0% Vs 3%, p 0. 522).

## Conclusion

Exposure to Beta-adrenergic blocker treatment was not found to be significantly associated with intrauterine growth restriction or fetoplacental Doppler abnormalities in pregnant women with arrhythmia in our study, although we acknowledge the relatively low sample size of our cohort. Further and larger studies are needed to assess the role of B-adrenergic blocker treatment in fetal growth restriction patterns.