

Adverse obstetric and neonatal outcomes of pregnancy in high-risk women with heart disease

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Background: The latest ESC guidelines on the management of cardiovascular diseases during pregnancy recommend estimating maternal cardiovascular risk according to the modified World Health Organization (mWHO) classification. In contrast, there are no validated models for predicting neonatal and obstetric risk in these women.

Objectives: To compare the neonatal and obstetric outcomes of pregnancy between two groups of mothers with heart disease: women at high to extremely high maternal risk (mWHO III-IV; group 1) and women at low to intermediate maternal risk (mWHO < III; group 2).

Methods: We included 48 consecutive women with clinically significant congenital heart diseases, valvular diseases, cardiomyopathies, aortic diseases, or heart rhythm disorders in a retrospective study. We assessed pregnancy outcomes in group 1 (19 pregnancies in 17 women, with 20 live-born neonates) and in group 2 (35 pregnancies in 31 women, with 34 live-born neonates).

Results: In group 1, there was a higher prevalence of newborns with low birth weight (50.0% vs 2.9%, $p < 0.001$), a lower prevalence of mature newborns (50.0% vs 94.1%, $p < 0.01$) and higher prevalence of preterm delivery (45.0% vs 5.9%, $p < 0.01$). Newborns of group 1 mothers had a significantly lower birth weight (2442 ± 753 g vs 3285 ± 457 g, $p < 0.0001$). Patients in group 1 gave birth significantly earlier than in group 2 (35.7 ± 3.1 weeks vs 38.5 ± 1.3 weeks, $p < 0.00001$). They had longer hospital stay (13.0 ± 14.0 days vs 5.0 ± 2.3 days, $p < 0.001$), higher prevalence of deliveries per Caesarean section (100% vs 63.6%, $p < 0.01$), and higher estimated blood loss during operative delivery (572 ± 156 ml vs 474 ± 111 ml, $p < 0.05$). We found a significantly higher risk of neonatal and obstetric complications of pregnancies in mWHO III-IV classes vs pregnancies in mWHO < III classes: delivery per Caesarean section (odds ratio [OR] 22.7, 95% confidence interval [CI] 1.3-409.0, $p < 0.05$), preterm delivery (OR 13.1, 95% CI 2.4-70.1, $p < 0.01$), low birth weight (OR 33.0, 95% CI 3.8-290.2, $p < 0.01$), neonatal immaturity (OR 16.0, 95% CI 3.0-85.5, $p < 0.01$).

Conclusion: Pregnancy in women at high to extremely high maternal risk (mWHO III-IV) was burdened with a high risk of neonatal and obstetric complications. We found significantly worse obstetric and neonatal outcomes in pregnancies in mWHO classes III-IV than in mWHO classes < III.

Key words: heart disease, mWHO classification, neonatal outcomes, obstetric outcomes, pregnancy.