To the Editor:

The number of women with congenital heart disease (CHD) surviving to adulthood is growing. Prepregnancy counselling is an important challenge, especially when managing women with CHD of higher complexity. Patient-tailored medicine is a challenge in this heterogeneous population. Therefore it is important to externally validate and compare the different risk estimation models in various populations.

Lu et al. validated maternal cardiac risk estimation models in a Taiwanese population. So far, most of the research concerning pregnancy in women with CHD has been concentrated in Europe and Northern America. Therefore, it is encouraging that outside these 2 continents this important topic gets the attention that it deserves.

In 2014 we published the results of our ZAHARA II study regarding the very same topic. This was the first prospective study to validate and compare the various models that are used to predict cardiovascular and offspring risk during pregnancy in women with CHD. We also found that the modified WHO classification is the most favorable risk estimation model for maternal cardiac risk, but the risk in the ZAHARA score is probably underestimated in the study of Lu et al. Because CARPREG and ZAHARA additionally identified specific offspring risk factors, it would have been more interesting if the authors would have validated these offspring risk factors. We assessed both offspring risk models but found insufficient predictive power of any of these risk models. The modified WHO classification was also incapable of predicting offspring outcome in our study, in contrast to the study of Lu et al. and the ROPAC study.

It is important that there are now several studies that reinforce the choice of the ESC for the modified WHO classification as the preferred model for estimation of maternal risk.

A high ZAHARA score >3.51 overestimated the risk in the study of Lu et al. We found a similar overestimation in the high-risk groups for both CARPREG and ZAHARA. This is attributable to the relative small number of patients in these groups in both CARPREG and ZAHARA studies. Additionally, as Lu et al. state, a problem of a high ZAHARA risk score is the relatively large contribution of the presence of a mechanical valve. Mechanical valves do constitute a high maternal risk, but the risk in the ZAHARA score is probably overestimated because of non-contemporary anticoagulation regimes and low numbers of patients.

We were confused concerning the definitions that were used for left heart obstruction in the study of Lu et al. Did the authors, when calculating the ZAHARA risk score, use the definition of left heart obstruction as reported by the ZAHARA investigators (>50 mmHg)?

It is also notable that 13% of the women included in this study were in modified WHO class IV, which is a very high percentage. Women in WHO class IV have an extremely high risk of maternal mortality or severe morbidity. This retrospective study covered the period from 1985 to 2011 and the modified WHO classification was first introduced in 2006. The authors state that in the early years of their study prepregnancy counselling was not provided. Hence, it would be interesting to know whether the number of pregnant women with CHD in modified WHO class IV has declined in recent years. In our data, only 0.9% of women were in modified WHO class IV. It is interesting that in the study by Lu et al. the maternal complications in women with WHO class IV occurred in 25.7%, which is similar to the complication rate in women with a CARPREG score 1 and lower than the complication rate of women with a ZAHARA score >2.51, which are not regarded to constitute a contraindication to pregnancy.

There is a need for studies that do not merely use a composite endpoint of complications, but that differentiate between the risk of complications such as arrhythmias, heart failure, mortality, etc.

The study of Lu et al. has great value for risk assessment of women with CHD in the Asian population and underlines the importance of external validation of existing risk models.

References


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