What Is New in Maternal Heart Disease?

Best Articles From the Past Year

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This month we focus on current research in maternal heart disease. Dr. Metz discusses four recent publications, which are concluded with a "bottom-line" that is the take-home message. A complete reference for each can be found on Box 1 on this page along with direct links to abstracts.

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Pregnancy Outcomes in Women with Heart Disease: The CARPREG II Study

Several models exist to predict the likelihood of serious morbidity or mortality in women with heart disease who opt to pursue pregnancy.[1] Investigators from two large Canadian tertiary care hospitals prospectively followed 1,938 pregnancies among women with maternal heart disease for cardiac outcomes from 1994 to 2014. Aims were to examine temporal trends and identify predictors of complications antepartum or postpartum.

Cardiac complications (maternal cardiac death, cardiac arrest, sustained arrhythmia requiring treatment, left- or right-sided heart failure, stroke or transient ischemic attack, cardiac thromboembolism, myocardial infarction, vascular dissection) were present in 16% of the cohort. Complication rates did not change over time. General cardiac factors, lesion-specific variables, and late pregnancy care variables were ultimately included in the CARPREG-II risk prediction model. With a C-statistic of 0.77 (95% CI 0.74–0.81), the CARPREG-II model exceeded the predictive capability of existing models and may allow for improved risk assessments for women with cardiac disease. However, unique individual circumstances must still be considered.[2]

Bottom Line: The CARPREG-II prediction model integrates both lesion-specific and general factors to improve prediction of cardiac morbidity among women with heart disease in pregnancy and postpartum.

Box 1. Abstracts Discussed in this Commentary

1. Silversides CK, Grewal J, Mason J, Sermer M, Kiess M, Rychel V, et al. Pregnancy outcomes in women with heart disease: The CARPREG II Study. J Am Coll Cardiol 2018;71: 2419–30. Available at: http://dx.doi.org/10.1016/j.jacc.2018.02.076.
2. van Hagen IM, Thorne SA, Taha N, Youssef G, Elnagar A, Gabriel H, et al. Pregnancy outcomes in women with rheumatic mitral valve disease: Results from the Registry of Pregnancy and Cardiac Disease. Circulation 2018;137:806–16. Available at: http://dx.doi.org/10.1161/CIRCULATIONAHA.117.032561.
3. Codsi E, Rose CH, Blauwet LA. Subsequent pregnancy outcomes in patients with peripartum cardiomyopathy. Obstet Gynecol 2018; 131:322–7. Available at: http://dx.doi.org/10.1097/AOG.0000000000002439.
4. Hameed AB, Morton CH, Moore A. Improving healthcare response to cardiovascular disease in pregnancy and postpartum. Available at: https://www.cmqcc.org/resources-toolkits/toolkits/improving-health-care-response-cardiovascular-disease-pregnancy-and. Retrieved October 23, 2018.

Pregnancy Outcomes in Women with Rheumatic Mitral Valve Disease: Results from the Registry of Pregnancy and Cardiac Disease

Investigators used data from the international, prospective Registry of Pregnancy and Cardiac Disease

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to examine pregnancy outcomes for women with rheumatic mitral valve disease and no history of valve replacement. Of 390 included women, 75.4% were from developing countries. The majority (70%) had mitral stenosis with or without regurgitation. Before pregnancy, 26.9% had a percutaneous or surgical valve repair.

During pregnancy, heart failure was common, affecting 23.1% of women with moderate or severe mitral regurgitation. Similarly, hospital admission, typically for heart failure, was common among women with mitral stenosis (23.1% overall and 49.1% with severe stenosis). A New York Heart Association Classification of II or greater was associated with adverse cardiac events (odds ratio 3.77, 95% CI 1.93–7.38). In women with severe stenosis (valve area less than 1.0 cm^2), those with an intervention before pregnancy had fewer adverse cardiac events than those without a repair (14% versus 66%, $P=.014$).

Bottom Line: Almost 50% of pregnant women with severe mitral stenosis and 23% of those with significant mitral regurgitation developed heart failure. Preconception counseling with prepregnancy valve repair or replacement should be considered in women with mitral valve disease.

Subsequent Pregnancy Outcomes in Patients with Peripartum Cardiomyopathy

Data regarding how to counsel women with a history of peripartum cardiomyopathy about the risk of relapse in subsequent pregnancies are limited. Investigators used a retrospective cohort design to evaluate neonatal and maternal outcomes of all pregnant patients with prior peripartum cardiomyopathy at a single center from January 2000 to March 2017.

There were 43 subsequent pregnancies among 25 participants; all but one woman had recovery of cardiac function to a normal ejection fraction (50% or greater) before any subsequent pregnancy. The majority (76.7%) of subsequent pregnancies resulted in live births (four late preterm). Relapse occurred in nine women over the 43 pregnancies, for a relapse rate of 20.9%. There were no deaths, and all women who relapsed again recovered normal ventricular function, with a median recovery time of 1 month. Although the cohort is limited by small numbers and may be biased to women with favorable outcomes after the incident pregnancy, the authors provide valuable information for counseling women with a history of peripartum cardiomyopathy.

Bottom Line: Women with a history of peripartum cardiomyopathy and recovered cardiac function (normal ejection fraction) had a 21% chance of relapse in subsequent pregnancies.

Improving Healthcare Response to Cardiovascular Disease in Pregnancy and Postpartum

Cardiovascular disease is the leading nonobstetric cause of maternal mortality.[3] As such, the California Maternal Quality Care Collaborative partnered with the California Department of Public Health to produce a toolkit for clinicians to improve the health care response to cardiovascular disease in pregnancy and postpartum. This toolkit is free and available to health care providers on the California Maternal Quality Care Collaborative's website: https://www.cmqcc.org/resources-toolkits/toolkits/improving-health-care-response-cardiovascular-disease-pregnancy-and.

The toolkit consists of algorithms to guide risk stratification and evaluation of women with known cardiac disease or signs and symptoms of cardiac disease. Specifically, signs and symptoms that should prompt evaluation by a specialist are delineated. In addition, the toolkit provides health care providers with recommended resources for caring for women with complex cardiovascular disease in pregnancy, which includes discussions of appropriate contraceptive counseling and information about the risk profiles of various cardiac medications. Finally, the document focuses on known racial disparities in cardiovascular disease prevalence and outcomes.

Bottom Line: A toolkit to improve health care provider response to cardiovascular disease in pregnancy and postpartum is free for download and use by clinicians. The purpose of the toolkit is to prevent maternal morbidity and mortality related to cardiovascular disease in pregnancy.

REFERENCES

1. Balci A, Sollie-Szarynska KM, van der Bijl AG, Ruys TP, Mulder BJ, Roos-Hesselink JW, et al. Prospective validation and assessment of cardiovascular and offspring risk models for pregnant women with congenital heart disease. Heart 2014;100:1373–81.
2. Elkayam U. How to predict pregnancy risk in an individual woman with heart disease. J Am Coll Cardiol 2018;71:2431–3.
3. Creanga AA, Syverson C, Seed K, Callaghan WM. Pregnancy-related mortality in the United States, 2011–13. Obstet Gynecol 2017;130:366–73.