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Editorial commentary: High risk cardiac conditions in pregnancy: Stratification and teamwork☆,☆☆

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Cardio-obstetrics has come a long way from the 1992 Special Situations [1] discussing physiologic changes in pregnancy, cardiopulmonary resuscitation and post-mortem caesarian section. In 2017, the scope of guidelines for cardiac disease in pregnancy has been expanded to cover complex congenital heart disease [2]. In this issue of the Journal, the authors provide an excellent review of physiologic changes in pregnancy followed by specific high-risk lesions and management options [3]. We would like to further emphasize standardized risk stratification and strong collaboration with obstetrics, anesthesiology, and critical care medicine in coordinating complex care of mother and fetus in a "pregnancy heart team" concept [4].

The ability to care for these high risk patients during pregnancy requires coordinated care beginning well prior to pregnancy. A multi-disciplinary preconception counseling visit is recommended prior to consideration of pregnancy [4]. This visit, ideally conducted with both a cardiologist and maternal fetal medicine obstetrician, includes discussion of patient expectations, a complete history and genetic counseling. A thorough risk assessment is performed utilizing one of the bevy of tools available. Currently, stratification via mWHO classification is more prevalent although other scoring systems such as CARdiac disease in PREGnancy (CARPREG), ZAHARA or others can be useful. Of note, the CARPREG score has been updated as of 2018 to incorporate mechanical valves, pulmonary hypertension, coronary artery disease, high risk aortopathy, late pregnancy assessment, and lack of prior cardiac intervention as the CARPREG-II score [5]. These add to the original categories of prior cardiac event or arrhythmia, baseline NYHA III-IV or cyanosis, ventricular dysfunction, or left-sided obstructive lesion. Routine calculation to estimate risk can help patients weigh risk prior to becoming pregnant. Additionally, the risk assessment can help inform important decisions such as: location of care (local vs center of expertise), mode of delivery as well as frequency of follow-up during pregnancy.

Proper preconception counseling enables development of an individualized plan for each patient during pregnancy guided by their diagnoses and disease severity. The authors focus their discussions on those issues encountered as they relate to anticoagulation, high risk valve disease and cardiomyopathy.

The need for anticoagulation continues to present providers with exceedingly difficult management decisions. The authors note the difficulties that exist in reconciling the guidelines with the reality often faced in practice, especially related to mechanical valves. Anticoagulation for mechanical valves is classified as a WHO class 3 condition [6]. Shared decision making remains critical when optimizing risks to mother and fetus. Proper monitoring of therapeutic levels during pregnancy is of the utmost importance. It is interesting to note that though apixaban carries a pregnancy category B rating compared to the others, which are rated pregnancy category C, none of them are recommended in pregnancy or for breastfeeding mothers [7]. Pregnancy and pediatrics remain challenging fields to try novel therapies given the potential downstream risks and we agree with improved registries for the unplanned pregnancies while on these agents should they eventually become a reasonable option, even if serial monitoring (e.g. anti-Xa) is required.

Rheumatic mitral stenosis may be on the decline worldwide [8] but outside hypertensive disease, remains the leading cause of cardiac disease in the non-Western world [4]. Interventions for mitral valve area <1 cm^2 is recommended allowing medical management with diuretics and beta-blockade for severe stenosis 1–1.5 cm^2. Preconception counseling plays a critical role here to avoid the rare second trimester intervention, late enough after organogenesis and prior to inducing preterm labor in the third trimester where guidelines recommend delivery followed by valve intervention. Asymptomatic NYHA I-II patients may deliver vaginally while highly symptomatic patients should consider caesarian section. We agree with the overall progress to reduce unnecessary caesarian sections, allowing mothers to recover safely and more quickly with decreased cost to the healthcare system [9].

Wearable cardiac defibrillators have been used in peripartum cardiomyopathy with conflicting data. One showed reasonable compliance (76% average daily use), with no appropriate or inappropriate shocks and no deaths [10] while another showed much higher ventricular arrhythmia burden (12%) in initial follow-up but no events after 3–6 months [11]. No data for external wearable defibrillators could be found regarding dilated or hypertrophic cardiomyopathy in pregnancy; however, these conditions have clearer guidelines for implantable cardiac defibrillator use.

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At our institution, we believe that a strong multidisciplinary team approach is vital to insure the best care for these high-risk patients. While data are limited regarding outcome measures in this approach, data have shown success of multidisciplinary approaches in addressing other complex patient cohort such as those patients with congestive heart failure [12]. We continue to support the development of cardio-obstetrics programs that allow for strong collaboration between obstetrics, critical care, anesthesiology, cardiology and other required services. Scheduled conferences in which representatives for all services are present allow for real-time patient discussions so that all services can be aware and in agreement of care plans. In the upcoming years, we anticipate with establishment of these coordinated programs and higher volume, best practice guidelines will progress with better supportive evidence to reduce maternal and neonatal morbidity and mortality.

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