Anticoagulation a Sticky Problem in Pregnant Patients Who Have Mechanical Heart Valves

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SNowMAss, Colo. — When it comes to managing anticoagulation in the pregnant patient with a mechanical heart valve, there is simply no ideal solution, Dr. Carole A. Warnes stressed at a conference sponsored by the Society for Cardiovascular Angiography and Interventions.

“This is not the same as getting your patient through noncardiac surgery. It’s very different. The blood is stickier than at any other time you’ll have to manage a mechanical valve,” cautioned Dr. Warnes, professor of medicine at the Mayo Clinic, Rochester, Minn.

Other normal physiologic changes in pregnancy that increase the risk of thromboembolic events in patients with mitral or aortic valve prostheses include a nearly 50% increase in circulating blood volume, accompanied by a 30% rise in cardiac output and a 10-20 beat-per-minute increase in resting heart rate. Also, uterine contractions can trigger sudden jumps in systolic and diastolic blood pressure.

What makes managing thromboembolic risk in pregnant patients with a mechanical heart valve so challenging is the need to trade off maternal versus fetal risk.

Unfractionated heparin doesn’t cross the placenta. It is often considered safer for the fetus than warfarin in pregnancy. But unfractionated heparin is a poor anticoagulant in pregnancy. The response to the standard dosage varies widely because of the background increase in factor VIII and fibrinogen. As a result, the risk of a thromboembolic event other than thromboembolic event with prolonged heparin is about 10%. The maternal hemorrhage risk is increased as well.

Warfarin is far more effective than unfractionated heparin at preventing valve thrombosis in pregnancy. However, it crosses the placenta, and fetal exposure during gestational weeks 6-9 can result in warfarin embryopathy. The risk is approximately 6% but might be dose dependent.

In one older Italian study involving 58 pregnancies, no cases of embryopathy were observed. But in 243 women (mean age 30.5 years) admitted from 1995 to 2005 for early-onset preeclampsia and delivery before 34 weeks and a population-based control group of 374 healthy, nonpregnant women (mean age 28.3 years) women with aortic or mitral valve prostheses (mean age 40/90 mm Hg) were excluded. Outcomes were adjusted for age.

When compared with matched controls, women in the preeclampsia group had significantly higher rates of obesity (body mass index 26.1 vs. 24.3 kg/m²), high blood pressure (126/79 vs. 120/70 mm Hg), and fasting glucose (5.1 vs. 4.8 mmol/L), LDL cholesterol (119 vs. 104 mg/dL), total cholesterol (198 vs. 186 mg/dL), and triglyceride (121 vs. 108 mg/dL) levels, Dr. Warnes and associates reported.

HDL cholesterol levels were significantly lower among cases versus controls (53 vs. 61 mg/dL).

No significant differences were found for rates of diabetes mellitus and smoking.

In all, 15.2% of women with a history of preeclamp- sia met the criteria for metabolic syndrome, as formulated by the AHA and World Health Organization versus only 4.3% of controls (odds ratio 3.6).

The estimated 10-year risk for first cardiovascular disease events, as calculated by the Framingham CHD risk prediction scores, remained less than 10% for all of the women. This places the women in the AHA low-risk range, which is a 1%-2% absolute risk of developing a major cardiovascular event in the coming years, he said.

However, this is a bit deceptive, mainly because of the young age of the women, Dr. Warnes added.

For example, if one adds 10 years to the Framingham risk score (mean age 40 years), the risk category for the preeclampsia group would be 5%-10%, which is comparable to a woman who has experienced a myocardial infarction.

“Women with a history of early-onset preeclampsia exhibit many risk factors, but their relatively young age is masking their absolute cardiovascular risk,” said Dr. Warnes, who disclosed no financial conflicts of interest.

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