

Cardiac Adaptation Weak in Gravidas With CHD

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Contributing Writer

TORONTO — Pregnant women with congenital heart defects are not able to ramp up their cardiac output to handle the stresses of pregnancy, according to a small study out of the Netherlands. Dr. Jolien Roos-Hesselink reported the study results in a poster presentation at the 18th International Symposium on Adult Congenital Heart Disease.

“We know that cardiac output generally rises during pregnancy and we felt it important to see what happens in women with congenital heart disease as a means of perhaps explaining the increased risk of complications seen in these women and their offspring,” Dr. Roos-Hesselink, a cardiologist, said in an interview. “We suspected that maybe cardiac output wasn’t increasing enough in these patients.”

Pregnancy is a major issue in the management of women with congenital heart

disease, complicated by a greater risk of fetal growth retardation, premature birth, and perinatal mortality. Normally, cardiac output increases by 40%-50% during pregnancy.

Dr. Roos-Hesselink’s team at the Thoraxcenter of Erasmus Medical Center in Rotterdam, the Netherlands, studied eight patients before, during, and after pregnancy. Subjects had a variety of congenital heart defects, including aortic valve replacement, tetralogy of Fallot, Ebstein

anomaly, ventricular septal defect, atrio-ventricular septal defect, and pulmonary stenosis. Subjects underwent cardiac magnetic resonance imaging (cMRI) at 20 weeks’ gestation and again at 32 weeks. Measurements were compared with measurements taken 6-12 months preconception and post partum.

“In the first eight patients we studied, we saw that in seven of the patients, cardiac output did not rise as the pregnancy progressed, but rather fell,” reported Dr. Roos-Hesselink.

Although the data presented are limited, Dr. Roos-Hesselink notes that they have now tested 25 patients and will be presenting further data soon.

Previous echocardiography studies have hinted at the issue of cardiac output in pregnancy complicated by coronary heart disease, but until cMRI was determined to be safe for women in pregnancy, there was no means of accurately measuring cardiac output during gestation, said Dr. Roos-Hesselink.

“It seems to be that the ventricular function in these women is not capable of handling the stress of pregnancy, although it does increase from baseline during the first trimester.”

After increasing appropriately from pre- and postpregnancy baseline values up to 20 weeks’ gestation, cardiac output decreased significantly, from 6.9 L/min at 20 weeks to 5.4 L/min at 32 weeks of gestation. In addition, a significant reduction in end-diastolic volume and stroke volume between 20 and 32 weeks of gestation was observed, along with a decline in left ventricular ejection fraction from 53% to 49%. Left ventricular mass increased from 87.5 grams at 20 weeks to 94.4 grams at 32 weeks.

Said Dr. Roos-Hesselink, “These findings could add to our ability to risk-stratify these patients and could explain many of the complications we see in this patient subgroup. We haven’t yet tested cardiac output with MRI during exercise prepregnancy, but if women at risk are tested before or during pregnancy and cardiac output is found to be lacking, this might be an indication to treat them more intensively, maybe with diuretics or other medications.”

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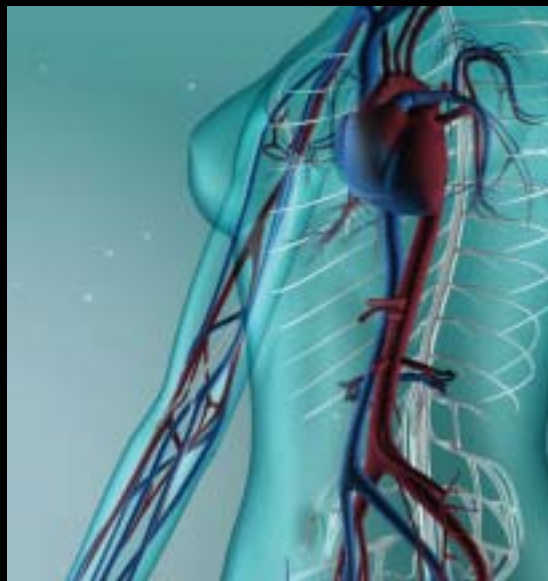


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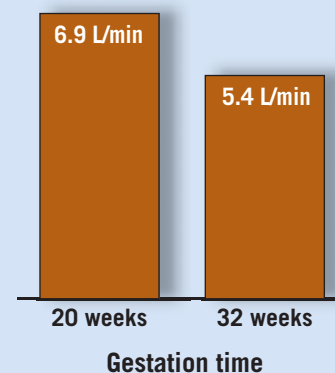
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Cardiac Output Decreases Over Time in Pregnant Women With Congenital Heart Disease



Note: Based on a study of 8 women.
Source: Dr. Roos-Hesselink