

Risk factors associated with in utero demise in fetuses with congenital heart disease: A case/control study

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Basics

The objectives of this study are to define the prevalence of in utero demise (IUD) in fetuses diagnosed with congenital heart disease (CHD) and to identify prenatal echocardiographic predictors of IUD. IUD occurs in all types of CHD. Factors associated with IUD are largely unknown.

Methods

Between Jan 2004-Dec 2010, cases of IUD were identified from the Hospital for Sick Children database. Control echocardiograms were cases of fetal CHD diagnosed within 48 hrs of the case. For multiple possible controls, the control with more severe CHD was chosen. Multivariate regression models were used to determine echocardiographic predictors of IUD.

Results

Of 1584 fetal cases, 74 IUD were identified (4.6%). IUD cases were diagnosed earlier (mean gestational age was 23.8±5/3 weeks vs. 26.7±5.8 weeks controls, p=0.002) and were smaller (biparietal diameter 5.6±1.6 cm vs. 6.58±1.6, p=0.001). The mothers were healthy in 80% of both groups. Main diagnoses were: hypoplastic left heart (N=10, N=11 control), hypertrophic cardiomyopathy (N=8, N=0 control), isolated ventricular septal defect (N=6, N=9 control). The majority demised in the 2nd trimester (N=39, 53%). Cause of demise was hydrops in 17, arrhythmia in 11 (tachycardia in 8, complete heart block in 2 and 2:1 atrioventricular block in 1) and unknown in 46. Echocardiographic variables associated with IUD after multivariate analysis were: cardiomegaly (p=0.0005, HR 26.7), extracardiac abnormalities (p=0.002, HR 10.2), umbilical artery absent end diastolic flow (p=0.05, HR 7.8), and any pericardial effusion (p=0.02, HR 5.8).

Conclusions

Basic fetal echocardiographic parameters such as cardiomegaly and pericardial effusion are associated with IUD.