18th World Congress in Fetal Medicine

Risk of spontaneous and iatrogenic preterm birth in pregnancies with prenatal diagnosis of major congenital heart disease

Giorgione V, Fesslova V, Boveri S, Candiani M, Khalil A, Cavoretto P
San Raffaele Research Institute, Milan, Italy

Objective

Congenital heart diseases (CHD) are the most common congenital anomalies and present high mortality and morbidity. Preterm birth (PTB) can significantly worse the prognosis of fetuses with CHD adding the burden of prematurity. Therefore, it is critically relevant for clinical practice to investigate the association of PTB with CHD. The aims of our work are firstly to evaluate the prevalence of preterm birth (PTB) in pregnancies affected by CHD and secondly to investigate the etiology of PTB in CHD, differentiating spontaneous (SPTB) and iatrogenic (IPTB) components.

Methods

Retrospective cohort study of singleton pregnancies beyond 23 weeks with prenatal diagnosis of major CHD seen at a tertiary Fetal Echocardiography Center (Policlinico San Donato, Milan, Italy) from 2003 to 2018. Intrauterine deaths, aneuploidies, non-structural cardiac anomalies, minor CHD and venous system anomalies were excluded. The outcomes assessed were: PTB <37 weeks, PTB <34 weeks, PTB <32 weeks, IPTB and SPTB. Chi-square, Fisher's, Wilcoxon tests and Dwass-Steel-Critchlow-Fligner multiple comparison procedure were used, as appropriate. Logistic regression analysis with adjustment for maternal age, parity, comorbidities and type of conception was also applied.

Results

480 pregnancies with major CHD were compared with 456 normal controls. Median gestational age at delivery was slightly lower in CHD group than in control group (median [IQR] 268.0 [264.0-273.0] vs 272.0 [266.0-280.0] days, p <0.0001). PTB <37 weeks occurred in 65/477 (13.6%) cases with CHD and in 39/447 (8.7%) cases without CHD (adjusted OR 2.1, 95% CI: 1.24-3.81 p=0.007). PTB <34 weeks occurred in 12/477 (2.5%) cases with CHD and in 9/447 (1.8%) cases without CHD (adjusted OR 2.93, 95% CI: 0.80-10.82 p=0.10). Patients with PTB <32 weeks were 5/477 (1%) in CHD and 4/447 (0.9%) in controls (p=1.00). PTB <37 weeks was significantly increased in Cardiomyopathy (4/12, 33.3%, p=0.02), Aortic Stenosis (5/19, 26.3 %, p=0.03), Truncus Arteriosus (4/7, 57.1 %, p=0.002) and Univentricular Heart (5/18, 27.8%, p=0.02), as compared to the control group. Comparing median gestational age at delivery in different CHD subgroups, there was a significant difference in pregnancy duration. Gestations affected by Transposition of Great Arteries (median [IQR] 266 [263-270] days, p <0.001), and Pulmonary Atresia (median [IQR] 267 [264-270] days, p=0.008) ended earlier than those with Ventricular and Atrial Septal defect (median [IQR] 275 [267-280]). SPTB occurred in 39/477 (8.2%) cases of CHD and 23/447 (5.1%) of controls (p=0.06), whereas and IPTB in 23/477 (4.8%) cases and 16/447 (3.5%) controls (p=0.35). Looking at specific CHD subgroups, there was significantly increased SPTB in pregnancies with Truncus Arteriosus (4/7, 57.1%, p=0.003) and Cardiomyopathy (3/12, 25%, p=0.03) and IPTB for Ebstein anomaly (4/23, 17.4%, p=0.01).

Conclusion

This study points out an overall positive association between PTB and CHD with predominance of SPTB and late preterm. These findings should be carefully considered in the obstetrical management as neonatal morbidity and mortality in CHD decrease with advancing gestation. Screening for risk of PTB is particularly recommended in pregnancies complicated by CHD with focus on etiology, in order to deliver specific prevention and treatment.