

Efficacy and impact of a nation-wide prenatal cardiac screening program

*Tomek V., Škovránek J., Gilík J., Janoušek J.
Children's Heart Center Prague, Czech Republic*

Introduction: The aim of the study was to describe the evolving efficacy of a prenatal ultrasound screening program for congenital heart disease (CHD) and its impact on pregnancy management and outcome.

Methods: All pregnant women the Czech Republic undergo fetal ultrasound scanning provided by obstetricians trained by paediatric cardiologists. Every prenatal CHD is confirmed in a single tertiary referral centre and/or by a post mortem evaluation, which is obligatory in all terminated pregnancies. A prenatal registry was created of all foetal patients with detected CHD over a 25-year period from 1986 to 2010.

Results:

Most common lesions detected prenatally were atrioventricular septal defect (N=384, 15.2%), hypoplastic left heart syndrome (N=379, 15.0%), ventricular septal defect (N=230, 9.1%) and double outlet right ventricle (N=220, 8.7%). As compared to estimated postnatal incidence at given birth rate detection of all/critical heart disease increased significantly between 1986 -1999 and 2000-2010 from 7.3/20.8 to 29.4/76.5% ($p < 0.001$ for both). In the latter period, the detection rate reached 95.1% for hypoplastic left heart syndrome and 40% for transposition of great arteries. Families opted for early termination in 1403/2528 fetuses with prenatally detected CHD (55.5%). Extracardiac malformations were observed in 705/1403 (51%) and the aneuploidy rate was 24.2% (338 cases, trisomy 21/18 in 57/24%). Of the respective prenatally detected lesions the most frequently terminated was the hypoplastic left heart syndrome HLH (22.7 %), atrioventricular septal defect AVSD (15.8%), double outlet right ventricle DORV (12.3%) and pulmonary atresia PA (7.7%) leading to a significant decrease of expected postnatal incidence (HLH from 3.4 to 1.3%, AVSD from 4 to 2.6%, DORV from 1.4% to 0.3% and PA from 2.2 to 1.5%, resp.). From the continuing pregnancies, 73 (6.7%) of 1125 fetuses died in utero, and 1052 (93.3%) babies were born alive.

Conclusions:

The nation-wide prenatal ultrasound screening program showed an increasing efficacy for the detection of congenital heart disease. High rate of pregnancy termination leads to a significant change of postnatal incidence in selected lesions.