

Prenatal and postnatal detection of congenital heart diseases

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INTRODUCTION

Congenital heart defects are among the most common birth defects and represent a major challenge in prenatal diagnosis and therapy of a newborn.

CASES PRESENTATION

The results of prenatal foetal heart examinations, which were performed at the Ultrasonographic Laboratory in the years 2013 to 2014, were subjected to retrospective analysis. Incompatibility of diagnoses was evaluated based on the modified classification created by Berkley et al., who distinguished the so-called “large” and “small” differences. “Large” differences resulted in the necessity of a sudden change in the child care program, implementation of urgent highly-specialized interventions available in the centres with the highest degree of referentiality and thus determining the place of delivery. On the other hand, “small” differences did not imply the need for such changes in the newborn care program.

Forty-nine foetal heart defects were analyzed. The abnormal four chamber view in routinely performed ultrasonography was the most common indication (71.4%) for prenatal echocardiography. The mean gestational age at the time of the first consultation was 30 weeks. The most frequently observed defects include: ventricular septal defect (20 cases), atrioventricular septal defect (7 cases), coarctation of the aorta (5 cases) and hypoplastic left heart syndrome (4 cases). There was no intrauterine death reported and verification of the type of defect took place within two days after birth.

Prenatal diagnosis was consistent with postnatal diagnosis in 76.2%. In 11.1% defects detected in utero differed from post-natal diagnoses (Table 1). All differences in pre- and post-natal diagnosis were classified as “small”. Furthermore,

Table 1. Non-compliance of pre- and postnatal diagnosis and classification into “small” and “large” differences

Prenatal diagnosis	Postnatal diagnosis	Management	Classification of diagnoses non-compliance
ToF	Pulmonary valve stenosis	Surgery vs. valvuloplasty of pulmonary valve	Small
VSD	AVSD	Expectant vs. elective surgery	Small
AVSD	VSD	Elective surgery vs. expectant	Small
TGA + VSD	DORV	Surgical treatment in both cases	Small
DORV	Dextroposition of the aorta + VSD	Surgery vs. expectant	Small
AVSD	VSD	Elective surgery vs. expectant	Small
VSD	AVSD	Expectant vs. elective surgery	Small

ToF — tetralogy of Fallot; VSD — ventricular septal defect; AVSD — atrioventricular septal defect; TGA — transposition of the great arteries; DORV — double outlet right ventricle

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in 8 cases (12.7%) false positive diagnoses of heart defects were made. Most often they related to the defect in the interventricular septum and coarctation of the aorta (2 and 3 cases, respectively).

Many studies analyze the compliance of prenatal and postnatal diagnoses, but only some of them focus on a thorough analysis of differences. Berkley et al. analyzed 53 echocardiograms performed both pre- and postnatally, which showed 3 cases (5.7%) of "small" differences and 3 cases (5.7%) of "large" differences. In our study, we observed only "small" differences. Discrepancies classified as "small" do not considerably change the management after birth. Discrepancies classified as "large" prevents *in utero* transport to centres providing proper care in the postnatal period, which in turn may lead to the delay of aid and worsening of prognosis.

The studies conducted by Seulgi et al. demonstrated complete compliance between pre- and post-natal diagnosis in 88.5%. Meyer-Wittkopf et al. showed complete compliance of such diagnoses in complex heart defects in 59% of cases, if the test was performed by obstetricians and in 95% of cases if such an examination was conducted by paediatric cardiologists. In our material, this percentage is similar to that described in the literature.

CONCLUSIONS

Prenatal foetal heart evaluation performed by a well-trained obstetricians is a very useful tool for the identification of fetal congenital heart defects.