Incidence of Congenital Heart Defects in the Czech Republic

Jiří Horáček (1,2), Antonín Šípek (2), Vladimír Gregor (2), Antonín Šípek jnr (3)

1) Gennet Ltd, Prague, Czech Republic,
2) Dept of Medical Genetics, Thomayer’s University Hospital, Prague, Czech Republic,
3) Institute of Biology and Dept of Medical Genetics, General Teaching Hospital and the 1st Faculty of Medicine, Charles University, Prague, Czech Republic

http://www.vrozeny-vady.cz

Summary:
The aim of this retrospective study was to evaluate the incidence of congenital heart defects (CHD) in Czech Republic in the 1994–2008 period. An assessment of absolute numbers, frequencies and incidences for particular selected diagnoses according to ICD-10 classification were performed. The study was based on data from the Czech Register of Birth Defects (ZRRD) and ICD data. The study included the period 1994–2008.

Methods:

Data from the ZRRD from the 1994–2008 period were used. In our study, CHD incidences (ICD 10 Q20-Q28 Congenital malformations of the circulatory system group) in the Czech Republic were analyzed. First, CHD incidences in births were assessed – absolute numbers, frequencies and incidences for particular selected diagnoses. Second, absolute numbers, frequencies and incidences of particular selected diagnoses in prenatally diagnosed fetuses and a secondary prevention measure efficiency in selected CHD were evaluated. To the third part, survival of babies with CHD during the first year of their life was analyzed.

Results:

In the period under the study there was a total of 1,472,610 live births in the Czech Republic. Congenital malformations of the circulatory system (Q20-Q28) present more than 45% of all registered congenital anomalies and are themselves the most frequent with other group in births in the Czech Republic. As a whole 20,130 CHD were diagnosed (137.83 per 10,000 live births) in 18,881 children (127.50 per 10,000 live births) in this period which presents more than 50% of children born with a congenital anomaly in the Czech Republic during 1994–2008. CHD most frequently diagnosed in births were congenital malformations of heart septum (total 16,408, 145.05 per 10,000 live births, more than 50% of all CHD) and congenital malformations of great arteries (total 5,389, 0.03% per 10,000 live births, more than 15% of all CHD).

Further, prenatally diagnosed CHD were analyzed. Incidences for particular diagnoses as well as percentage of pregnancy termination were assessed. A rate of prenatally diagnosed was 11.35% in discordant ventriculoarterial connection (Q20.5), 3.81% in discordant atrioventricular connection (Q22.4), 5.64% in hypoplastic left heart syndrome (Q22.4), 7.64% in coarctation of aorta (Q22.2) and 3.71% in tetralogy of Falot (Q22.3). These anomalies were parts of chromosomal syndromes in 42.56% and non-chromosomal syndromes in 8.3% of cases. There were also associated malformations from other systems than circulatory ones. The most frequent were congenital malformations of the nervous system (Q07), – 14.59%, congenital malformations of the musculoskeletal system (Q20), 12.44%, deafness and deaf-mute palate (Q38.1), 7.45% and congenital malformations of the urinary system (Q28) – 6.75%.

An influence of prenatal diagnosis among the five selected CHD was most important in hypoplastic left heart syndrome (Q22.4), less so in others. In prenatal diagnosis group it is necessary to distinguish between those anomalies which may lead to pregnancy termination (parts of chromosomal and non-chromosomal syndromes and/or association with other severe anomalies) and those in which pregnancy leads to a delivery (late diagnosis, operable defects, parental decision).

CHD can be a part of chromosomal syndromes. In our study, in prenatally diagnosed CHD it was more than 42%. A presence of other associated diagnoses of congenital anomalies in births will significantly influence infant mortality and morbidity.

Publications: