

**Prenatal detection of congenital heart defects after in vitro fertilization**

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**Objectives:** Increasing number of children born by assisted reproductive techniques (ART) is associated with higher risk for unfavourable birth outcome. ART is related to preterm delivery, intrauterine growth retardation and based on recent studies to higher birth defects including CHD. The aim of the study was to determine the incidence of CHD in foetuses after in vitro fertilization (IVF).

**Methods:** All pregnant women undergo prenatal ultrasound examination in the Czech Republic. In case of any suspected or proven heart abnormality, the foetus is referred for specialized centralized prenatal echocardiography. There is not any special screening programme and follow-up for pregnancies after IVF, thus CHD detection rate after IVF should not be biased.

**Results:** From 469 671 children born between 2007 and 2010, 8226 (1.75%) were conceived using IVF. CHD was more frequently prenatally detected in IVF+ than IVF- pregnancies: 41/8226 (0.50 %) vs. 881/461445 (0.19 %). Pregnant women with IVF had higher rate of twins (22.0% vs. 1.5%,  $P<0.001$ ) and were older (22% vs. 8%  $>35$  years,  $P<0.001$ ). Due to pre-implantation diagnosis, IVF+ foetuses with CHD were less frequently affected by chromosomal aberrations than those conceived spontaneously: 2/41 (4.9 %) vs. 140/881 (15.9%),  $P<0.001$ . The incidence of non-cardiac congenital defects was, however, similar: 10/41 (25%) vs. 238/881 (27%),  $P$  NS. In case of an isolated CHD the parents of IVF conceived foetuses opted for termination of pregnancy less often than in IVF- pregnancies (1/31, 3.2% vs. 202/643, 31%,  $P<0.001$ ).

**Conclusions:** In vitro fertilization is associated with 2.5- times higher rate of congenital heart defects detected by prenatal screening. Pregnancy termination for an isolated CHD is less common than after spontaneous conception.

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