

Prevalence of congenital heart disease in fetuses conceived after assisted reproductive technology. Observational study.

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Background: Assisted reproductive techniques (ART) are nowadays increasingly used in couples with infertility and there is a concern about outcomes of children conceived, both for the preterm delivery and low birth weight and a possible increased risk of congenital anomalies. Data regarding a possible increase of congenital heart disease (CHD) are coming out and therefore the women pregnant after ART are often referred for fetal echocardiography.

The aim of this study was to analyse the prevalence of CHD in fetuses conceived after ART referred to our center, specifically for an evaluation of the fetal heart

Method: observational prospective study regarding unselected consecutive fetuses conceived after ART referred to our Center between Jan. 2010 - Nov. 2017.

Population: Five hundred seven women (aged 30-55 yrs, median 36) that became pregnant after ART underwent fetal echocardiography at median gestational age 21 week's gestation: 197 pregnancies resulted after in vitro fertilization (IVF), 206 after intracytoplasmic sperm injection (ICSI) and 104 after heterologous fertilization (egg or embryo-donation ED); 27/197 IVF, 33/206 ICSI and 25/104 ED were twins (one triplet). Cases with known chromosomal anomaly or major extracardiac anomalies were excluded. Suspicious cardiac findings were reported in two cases at the 1st level scan and not confirmed by us.

Results: CHD was found in 23 pregnancies (5 twins of healthy co-twins); 11 cases were product of IVF, 4 of ICSI and 8 of ED. Prevalence of CHD in the whole population was $23/507 = 4.54\%$, in IVF $11/197 = 5.58\%$, in ICSI $4/206 = 1.94\%$ and in ED $8/104 = 7.69\%$. Prevalence in all ART singletons was $18/425 = 4.23\%$, in twins $5/85 = 5.9\%$. CHD found after IVF were 1 HLH, 2 TGA, 1 PAtr+VSD, 1 DORV, 1 VSD, 1 AVSD, 1 CoA+AS, 1 PLSVC+mild CoA, 2 Ebstein/ Non-Ebstein; after ICSI 3 HLH, 1 AVSD; after ED 2 PS, 1 TF, 1 PAtr+VSD, 2 CoA, 1 rhadomyoma.

Conclusions: The data of our observational study show an increased prevalence of CHD after all techniques of ART, with respect to references of normal population. Obviously, further research is needed in this topic.