

PERINATOLOGIC OUTCOMES OF CHILDREN BORN AS A RESULT OF IN VITRO FERTILISATION IN THE CZECH REPUBLIC DURING 2000 – 2006: CONGENITAL ANOMALIES AND BIOSOCIAL FACTORS

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Aim and type of study: Neonatal data on a cohort of 22 949 children born as a result of In Vitro Fertilisation (IVF) in the Czech Republic (CR) compared with a cohort of 649 595 naturally conceived (NC) children. Analysis of perinatal data – birth weight, gestational age, maternal age, fetal number, sex ratio and the occurrence of congenital anomalies (CA).

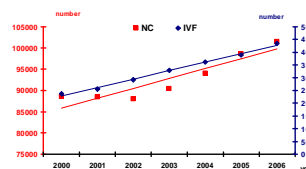
Material and methods: A retrospective epidemiological analysis of perinatal data from the National Registry of Births and the National Registry of Congenital Anomalies in the CR during 2000 – 2006.

Results: During this period, there were 22 949 children born as a result of IVF with a sex ratio M/F of 1.03. From this total number there were 46.89% twins and 53.12% singletons. During the same period 649 595 NC children were born, with a sex ratio M/F of 1.06. From this total number there were 96.94% singletons and 3.06% twins. In IVF/non-IVF cohort the average gestational age in weeks was 37.32/39.37; the average birth weight was 2796.72g/3321.71g and the average maternal age in years was 30.66/27.43. Prematurity in the IVF/non-IVF cohort (not distinguishing the fetal number) was 1.80%/0.27% for prematurity below the 28th week and 19.62%/3.58% for prematurity between the 28th and 35th week. A higher occurrence of prematurity below the 28th week in the IVF children cohort was found in the singleton pregnancies (1.23% in the IVF cohort vs. 0.22% in the non-IVF cohort) as well as in the twin pregnancies (2.46% in the IVF cohort vs. 1.47% in the non-IVF cohort). Extremely low birth weight \leq 999g (ELBW) in the IVF/non-IVF cohort was found in 2.32%/0.33% of the whole cohort and Low birth weight (1000–2499g - LBW) in the IVF/non-IVF cohort was found in 27.72%/5.91% of the whole cohort. The incidence of CA was 464.06 in 10 000 live births in the IVF children cohort and 369.27 in 10 000 live births in the NC children cohort. In the IVF group, the incidence of CA per 10 000 live births was 544.06 in singletons and 362.80 in twins. In the NC children cohort, the incidence of CA per 10 000 live births was 349.95 in singletons and 425.57 in twins.

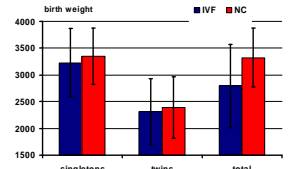
Prenatal diagnosis of CA leading to premature termination of pregnancy occurred in 115 cases in the IVF cohort (50.11 of CA in 10 000 live births) and in 3 745 cases in the non-IVF cohort (55.51 of CA in 10 000 live births). In the IVF cohort there was a higher occurrence of some CA of the central nervous system (CNS), heart, lower respiratory tract and oesophagus, selected anomalies of female and male genital organs, selected anomalies of extremities and balanced chromosomal rearrangements.

Conclusion: In the cohort of IVF children we found a significantly lower birth weight and gestational age at birth, further a higher occurrence of twins and increased maternal age. After dividing the cohort into singleton and twin groups - we found no statistically significant differences in birth weight and gestational age between the IVF and NC children. However, in the IVF cohort (in both singletons and twins) we found a significantly higher occurrence of ELBW, LBW, prematurity below the 28th week and prematurity between the 28th and 35th week, compared to the control cohort of NC children. This difference could be caused by higher mother's age we found in the IVF cohort, what may result in higher occurrence of gestational complications. Higher occurrence of selected CA may relate to the parent's infertility itself (which is the reason for IVF), or may relate to higher maternal age and to parental genetic predisposition.

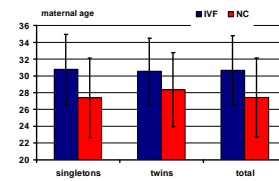
Number of births in the Czech Republic – NC x IVF



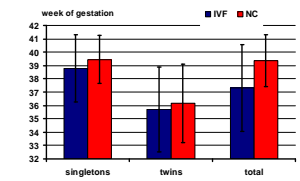
Birth weight (singletons/twins/total) – NC x IVF



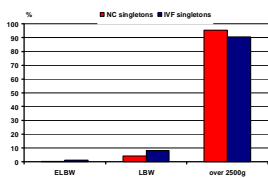
Maternal age (singletons/twins/total) – NC x IVF



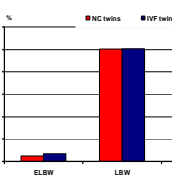
Week of gestation (singletons/twins/total) – NC x IVF



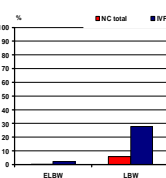
ELBW, LBW - singletons – NC x IVF



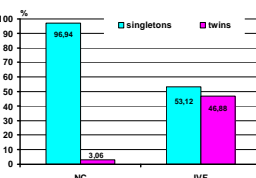
ELBW, LBW - twins – NC x IVF



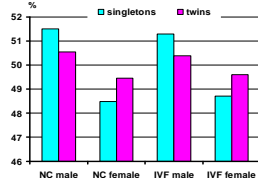
ELBW, LBW - total – NC x IVF



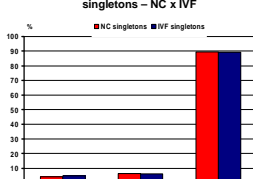
Proportion of singletons and twins – NC x IVF



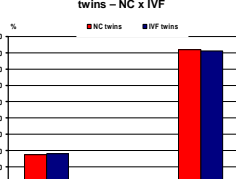
Sex ratio - singletons and twins – NC x IVF



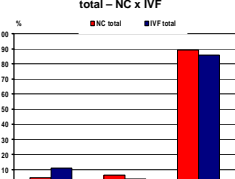
Hypo-, hyper- and eutrophy birth weight - singletons – NC x IVF



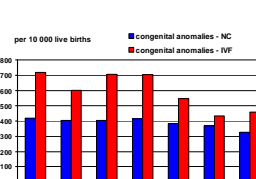
Hypo-, hyper- and eutrophy birth weight - twins – NC x IVF



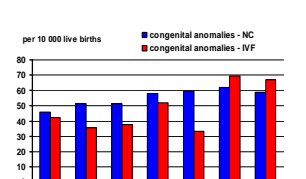
Hypo-, hyper- and eutrophy birth weight - total – NC x IVF



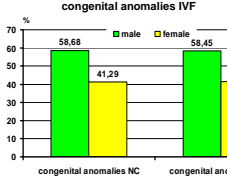
Incidence of congenital anomalies – NC x IVF



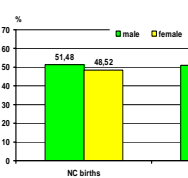
Congenital anomalies – prenatal diagnosis – NC x IVF



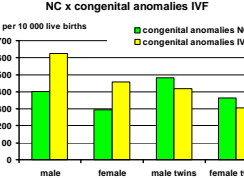
Sex ratio – congenital anomalies NC x congenital anomalies IVF



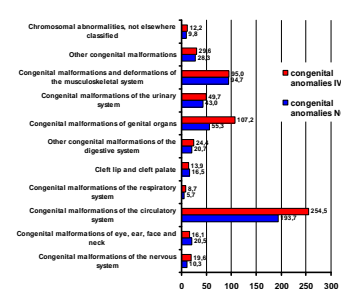
Sex ratio – total births – NC x IVF



Sex ratio by twinning – congenital anomalies NC x congenital anomalies IVF



Congenital anomalies by diagnosis – NC x IVF



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