



[Start](#) | [Browse by Day](#) | [Author Index](#)

Congenital Malformations Associated with Assisted Reproductive Technology: A California Statewide Analysis

Saturday, October 20, 2012: 7:37 AM
Versailles Ballroom (Hilton Riverside)

Lorraine I. Kelley-Quon, M.D., M.S.H.S.¹, Chi-Hong Tseng, Ph.D.¹, Carla Janzen, M.D., Ph.D.² and Stephen B. Shew, M.D.¹,
(1)Pediatric Surgery, Mattel Children's Hospital, David Geffen School of Medicine at UCLA, Los Angeles, CA, (2)Obstetrics and Gynecology, David Geffen School of Medicine at UCLA, Los Angeles, CA

Purpose

Management of congenital malformations comprises a large part of pediatric surgical care and demands significant healthcare resources. Despite increased utilization of in-vitro fertilization (IVF), associations between birth defects and IVF are poorly understood. Even less is known regarding other fertility-related services (FRS). The aim of this study was to identify the risk of specific congenital malformations associated with IVF and FRS.

Methods

Infants born after use of IVF or FRS (fertility-enhancing drugs, artificial insemination or intrauterine insemination) were identified from the California Linked Birth Cohort Dataset from 2006-2007. This dataset provides hospital admission data for all infants born in California linked with vital statistics and maternal prenatal and hospital records for the first year of life. Maternal age, parity, plurality and race were extracted alongside infant gender and year of birth. These factors were used to create propensity matched control groups of infants conceived naturally. Major congenital malformations were identified using ICD-9 diagnostic codes. Birth defects were divided anatomically by system affected. Unadjusted bivariate analysis was conducted to determine baseline differences between infants born after IVF versus matched controls. Firth multivariate logistic regression was utilized to identify factors associated with birth defects using a penalized likelihood to address the occurrence of rare events (i.e. birth defects).

Results

Overall, 3,463 infants with major congenital malformations were identified among 4,795 infants born after IVF and 46,025 naturally conceived matched controls. Birth defects were significantly increased for infants born after IVF (9.0% vs. 6.6%, p-value <0.001). Major malformations of the eye (0.3% vs 0.2%, p-value 0.008), head and neck (1.0% vs. 0.7%, p-value 0.031), heart (4.8% vs. 3.0%, p-value <0.001) and genitourinary system (1.5% vs. 1.0%, p-value 0.002) were increased in IVF infants. Infants with chromosomal abnormalities were uncommon but present in a lower proportion in the IVF group (0.2% vs. 0.5%, p-value <0.001). After adjusting for infant and maternal factors, IVF infants exhibited increased odds of major malformations (OR 1.25, 95% CI 1.12-1.39). Specifically, IVF infants had an increased likelihood of defects of the eye (OR 1.81, 95% CI 1.04-3.16), heart (OR 1.41, 95% CI 1.22-1.64) and genitourinary system (OR 1.40, 95% CI 1.09-1.82) but decreased likelihood of chromosomal abnormalities (OR 0.31, 95% CI 0.15-0.63). However, odds of congenital malformation after FRS alone (n=1,749) were non-significant (OR 1.08, 95% CI 0.89-1.31) compared to a separate matched control group.

Conclusion

IVF independently contributes a significant risk of congenital malformation in addition to known maternal factors. In particular, defects of the eye, heart and genitourinary system are more likely in infants born after IVF. Use of FRS alone is not associated with increased risk of malformation. These results underscore the importance of accurate prenatal counseling for parents considering IVF and multidisciplinary coordination of care prior to delivery.

See more of: Scientific Session # 1 -- Clinical. Rosenkrantz Research Competition

See more of: Section on Surgery

<< Previous Abstract | Next Abstract >>