Low birth defect by sperm selection, follow up prospective study

Cassuto Nino Guy (FR) [1]

Context:
The prevalence of birth defects after assisted reproductive technologies (ART) is controversial. To date, the rate of major malformations after natural conception is estimated at 2.40%.
Previously, most publications examining the incidence of major malformations in Intracytoplasmic sperm injection (ICSI) and in vitro fertilization (IVF) compared to spontaneously conceived infants showed an increased rate of malformations after ICSI and IVF.

Objective:
The aim of this study was to compared the follow up cohort of children born after two different ART: Intracytoplasmic sperm injection (ICSI) and intracytoplasmic morphologically selected sperm injection (IMSI)

Methods:
This prospective population-base study was performed from October 2005 to July 2010; with the children follow up during 2 years. The ICSI routine and IMSI at high magnification (x6100) according to Cassuto-Barak classification, allowing to select more precisely the sperm head morphology since the nucleus abnormalities are highly implicated in the paternal genome effect, were performed only in women under 39.
As of to date, no survey of children conceived after this process has been published.

Intervention(s):
We hereby communicate the results of the first prospective study including 1028 children born after IMSI compared with the outcome of children born after ICSI.
The mean age of women at conception were 32.4 ± 4.0 years for ICSI and 32.8 ± 3.5 for IMSI, and for men were 36.3 ± 6.3 and 36.4 ± 5.9 years, respectively.
In all the attempts, fresh ejaculated semen was considered.
The two groups are similar according number of oocyte retrieval, fertilization rate, embryos rate, and drugs treatment used.

[1] Drouot Laboratory
No significant different in terminated pregnancies due to foetal malformations or genetic disorders between the two groups.

Patient(s):
We studied 1028 infants: 578 (56%) conceived after ICSI and 450 (44%) after IMSI. The lost follow up is 1.09%.

Main Outcome Measure(s):
Medical data from babies born alive were collected based on 6 questionnaires sent to the parents or attending physicians from birth to 2 years.
The major malformations were identified, compared and classified in the ICSI and IMSI groups, respectively.

Results:
Major malformations were significantly lower with IMSI (6/450, 1.33%) versus ICSI (22/578, 3.80%; Adjusted OR 0.35, 95% confidence interval 0.14-0.87, P = 0.014), and for the 2 groups mainly affecting the uro-genital system.
Surprisingly the birth defect concerned more often the boys than the girls (Adjusted OR 2.84, 95% CI 1.24-6.53, P = 0.009).

Conclusion:
This follow-up study emphasizes the importance of spermatozoon selection before ICSI.
The use of high magnification before injection in the oocytes minimizes the risk of major malformations in offspring.