

Intracytoplasmic Sperm Injection Induces Transgenerational Abnormalities in Mice

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In vitro fertilization (IVF) and intracytoplasmic sperm injection (ICSI) are two major assisted reproductive techniques (ARTs) widely used to treat infertility. More recently, spermatogonial transplantation emerged as a new ART to restore fertility to young cancer patients after cancer therapy. To examine the influence of germ cell manipulation on behavior of offspring, we produced F1 offspring by a combination of two ARTs, spermatogonial transplantation and ICSI. When these animals were compared with F1 offspring produced by ICSI using fresh wild-type sperm, not only spermatogonial transplantation-ICSI mice but also ICSI-only control mice exhibited behavioral abnormalities, which persisted in F2 generation. Furthermore, although these F1 offspring appeared normal, F2 offspring produced by IVF using F1 sperm and wild-type oocytes showed various types of congenital abnormalities, including anophthalmia, hydrocephalus, and missing limbs. Therefore, ARTs can induce morphological and functional defects in mice, some of which become evident only after germline transmission.

References:

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