Birth From Cryopreserved Egg Matured In Vitro Is First

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LYON, FRANCE — Canadian researchers have announced the birth of the world's first baby that was conceived from an egg matured in vitro and then frozen, thawed, and fertilized.

Three other pregnancies conceived in the same way are ongoing, Dr. Hananel Holzer of the McGill Reproductive Center in Montreal reported at the annual meeting of the European Society for Human Reproduction and Embryology.

The conceptions occurred in a group of 20 women, all with polycystic ovarian syndrome (PCOS), or polycystic ovaries detected on ultrasound. However, the findings may have important clinical implications for women with systemic lupus erythematosus (SLE) and other autoimmune diseases as well as cancer patients who must undergo potentially gonadotoxic chemotherapy, said Dr. Holzer in an interview.

Women with SLE who receive high dose cyclophosphamide, and those with other autoimmune indications for cytotoxic therapy such as Behcet's disease, steroid-resistant glomerulonephritis, inflammatory bowel diseases and pemphigus vulgaris are all potential candidates for fertility preservation techniques.

"These are preliminary results, and they have not yet been proven in cancer patients," he cautioned. "But this treatment has the potential to become one of the main options for fertility preservation, especially for patients who cannot have ovarian stimulation and all patients who do not have enough time to undergo ovarian stimulation."

Patients choosing in vitro maturation (IVM) of oocytes can avoid ovulation induction by having immature oocytes removed and then matured in the lab, Dr. Holzer explained.

The researchers collected from among the 20 patients a total of 312 oocytes, of which 305 were immature. Of these immature eggs, 209 (68%) were successfully matured in the lab and frozen, along with 6 of the naturally matured oocytes.

A total of 148 of these 215 oocytes (69%) survived freezing and thawing, and 96 were successfully fertilized. There were 64 embryos transferred, resulting in four clinical pregnancies—including one live birth and three ongoing pregnancies.

While IVM is routinely used by the center to avoid the increased hyperstimulation risks in patients with PCOS, oocyte cryopreservation and subsequent fertilization has not been attempted previously.

Although cryopreservation is not essential for patients with PCOS, it is necessary for patients undergoing chemotherapy. In such patients, the procedure presents no risk of aggravating existing disease, and there is theoretically no risk of reintroducing a metastatic malignancy when an embryo is implanted, Dr. Holzer added.

"We have demonstrated for the first time that this is possible to do. … However, we have to remember that these are only preliminary results from a small number of patients who were not cancer patients themselves." In the context of all other methods of fertility preservation, these results "should be looked at as preliminary and experimental," he said.

"We need to inform patients about the early stage of these treatments without giving any false hope," Dr. Holzer added. ■

COURTESY DR. HANANEL HOLZER/MCGILL UNIVERSITY/MONTREAL

Autoimmune disease patients facing gonadotoxic therapy can avoid ovulation induction by having immature oocytes (pictured) removed and then matured in a lab.