ASSOCIATION OF DONOR OOCYTES AND SEVERE NEONATAL MORBIDITY

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Background: The use of donor oocytes in assisted reproductive technology has increased, improving pregnancy rates for many patients. Although some data suggest an association with higher rates of preterm birth and low birth weight, its link to severe neonatal morbidity (SNM) remains unexplored. Investigating this relationship could provide valuable insights for guiding clinical decisions and patient counseling.

Objective: The objective of the study was to evaluate the association between the use of donor oocytes and SNM in pregnancies conceived through in vitro fertilization.

Material and Methods: A retrospective cohort study of all IVF-conceived deliveries at ≥ 23 weeks gestational age at two tertiary hospitals in NY from 2019-2023. Patients with multiple gestation or fetal demises were excluded. The primary exposure was IVF with donor oocytes. The primary outcome was SNM, a composite neonatal adverse outcome indicator which includes diagnoses and procedures (Table 1). SNM is a minimally modified version of the composite neonatal outcome indicator, which reliably identifies infants with significantly increased risk for hospital readmission or death in the first year of life and has been validated in Australia and the UK. Data collected from electronic medical records included maternal demographics, health insurance, parity, preferred language, obstetric comorbidity index (OB-CMI) score, and obstetric and neonatal variables. The OB-CMI score is based on 24 weighted comorbidity indicators identified by ICD-10 codes and clinical documentation. It is a validated tool that predicts severe maternal morbidity. Binary logistic regression analysis was used to model the probability of SNM as a function of IVF with donor oocytes, while adjusting for covariate factors, including race and ethnicity group, insurance type, and OB-CMI category.

Results: A total of 2,378 IVF pregnancies were included: 138 donor oocyte and 2,240 autologous. The study population was predominantly advanced maternal age, nulliparous, Non-Hispanic White race and ethnicity, and English speaking. The SNM rate among pregnancies achieved using donor oocytes was 15.94% (n=22), compared to 12.23% (n=274) among pregnancies achieved via autologous cycles; unadjusted OR 1.36 (95% CI, 0.85-2.18) and adjusted OR 1.08 (95%CO, 0.67-1.76).

Conclusions: Our results indicate that patients undergoing donor oocyte and autologous cycle IVF have similar odds of having infants that experience SNM. This data is reassuring for patients and clinicians considering donor oocytes. Future studies should review whether the SNM rate is affected by the underlying reasons for using donor oocytes, such as diminished ovarian reserve, premature ovarian insufficiency, Mullerian structural abnormalities, or partner-assisted reproduction.

Table 1: SNM variables

Variables	
Any body cavity surgery	Mechanical ventilation
Birthweight less than 1500 grams	Necrotizing enterocolitis
Blood transfusion	Neonatal resuscitation
Brachial plexus injury	Periventricular leukomalacia
Bronchopulmonary dysplasia	Pneumonia
Chest tube insertion	Pneumothorax
CPAP continuous positive airway pressure	Respiratory distress syndrome
Death within 28 days or before discharge	Retinopathy of prematurity
Exchange transfusion	Seizure
Gestational age less than 32 weeks	Sepsis
Hypoxic ischemic encephalopathy	Stroke
Intraventricular hemorrhage	

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