

Obesity and assisted reproduction

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Excess body weight impacts fertility during both natural and assisted reproduction (ART) cycles. In men, the immediate effect is hypoandrogenism through decreased testosterone levels and an increase in peripheral aromatization of androgens to estrogen, although this does not seem to cause significant change in conventional semen parameters.¹ In women, the impact seems to be through various pathways, by both animal and human studies. Insulin resistance (IR) typically accompanies obesity, leading to anovulation and hyperandrogenism. Although ovulation can be achieved via ART, oocyte quality is typically poor in these women due to IR, hyperandrogenism and perhaps the underlying inflammatory milieu associated with obesity.^{2,3} Obese woman's endocrinologic environment may potentially lead to unfavorable endometrial changes that may participate in the increased miscarriage rate, in addition to the impact of poor oocyte quality. Exposure to such an environment even during early embryogenesis stage may lead to neonatal as well as life-long consequences in offspring of these women.^{4,5} Among those are both intrauterine growth restriction (IUGR)

and macrosomia, early development of metabolic syndrome, insulin resistance, hypertension, and atherosclerotic heart disease. Clinical studies indicate lower likelihood of both clinical and ongoing pregnancy, as well as live birth in obese women.^{6,7} They also indicate reduced number of oocytes retrieved with ART, despite higher doses of gonadotropins used.⁸ Various problems complicate the pregnancy of these women, among which are increased risk of preeclampsia, gestational diabetes, and cesarean section.⁶ The impact of obesity on endometrium is somewhat debatable, since these associations seem to be lost when donated oocytes are used,⁷ although conflicting findings exist.⁹ Further studies are warranted not only to optimize ART outcome in this patient population, but also to prevent consequences in the children of obese women during newborn period as well as the rest of their lives.

References

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