

Prenatal metformin treatment improves ovarian function in offspring of obese rats

Álvarez, Daniela

Ceballo, Karina

Olgún, Sofia

Martinez-Pinto, Jonathan

Maliqueo, Manuel

Fernandois, Daniela

Sotomayor-Zárate, Ramón

Cruz, Gonzalo

Maternal obesity causes a wide range of impairment in offspring, such as metabolic and reproductive dysfunctions. We previously demonstrated that female offspring of obese rats have increased serum estradiol levels during early postnatal life, probably because of decreased hepatic cytochrome P450 3A2 levels, which could lead to early onset of puberty and polycystic ovary condition in adulthood. Using metformin during pregnancy and nursing to improve the metabolic status of obese mothers could prevent the sequence of events that lead to an increase in postnatal serum estradiol levels in female offspring and, hence, reproductive dysfunction. We found that metformin prevented an increase in serum estradiol levels at postnatal day 14 in female offspring of obese mothers, which was associated with a restoration of hepatic cytochrome P450 3A2 levels to control values. Treatment using metformin could not prevent advanced puberty, but we observed that the number of antral follicles, follicular