LP-51 LH-producing Cells of 19-day-old Rat Fetuses after Maternal Dexamethasone Exposure

N. Ristić, N. Nestorović, M. Manojlović, B. Šošić-Jurjević, V. Ajdžanović, M. Sekulić

Institute for Biological Research “Siniša Stanković”, Blv. Despota Stefana 142, 11060 Belgrade, Serbia, negicn@ibiss.bg.ac.yu

Introduction During pregnancy, maternal dexamethasone (Dx) treatment is often used to treat woman at risk of preterm delivery. Dexamethasone passes through the placenta without being inactivated by the enzyme 11β-hydroxysteroid dehydrogenase [1] and promotes differentiation and maturation of fetal tissues [2]. The aim of this study was to determine whether Dx treatment of pregnant Wistar rats would influence the morphology of the luteinizing-hormone (LH) producing cells of the 19-day-old fetuses.

Material and methods Pregnant females in the experimental group received subcutaneous injections of 1.0, 0.5 and 0.5 mg Dx /kg body weight on days 16-18 of pregnancy. Control mothers were injected with the same amount of 0.9% saline. On day 19 of pregnancy, the dams and their fetuses were sacrificed under ether anesthesia and the fetuses were referred to as 19-day-old fetuses. The pituitary glands were excised with part of the sphenoid bone and prepared for immunocytochemical and stereological analysis. LH cells were studied using peroxidase-antiperoxidase method. The cell volume of LH-immunoreactive cells (Vc) and their volume densities (VVc) were measured in 50 test areas per pituitary gland using a light microscope at the magnification of x 1000, on 5 µm thick sections, using M42 multipurpose test system [3]. The volume of LH-positive cells was expressed in µm³. Volume density of these cells was expressed as percentages of total pituitary cells in mm².

Results The LH cells in control 19-day-old fetuses were polygonal or oval in shape, with prominent often eccentrically located nuclei. They showed strong immunopositivity for LH and were positioned throughout the pituitary pars distalis alone or in groups, often in close contact with blood capillaries (Fig 1A). The LH cells of the fetuses of Dx-treated dams were smaller in size and less numerous than those of control fetuses (Fig 1B). The volume of LH-positive cells and their volume density in 19-day-old fetuses of dams treated with Dx for 3 consecutive days from day 16 of gestation were significantly reduced by 20% (<0.05) and 23% (0.05), respectively in comparison to control values(Fig. 2A and B).
Figure 1. Immunoreactive βLH cells in the pars distalis of the pituitary glands of a 19-day-old control fetus (A) and a 19-day-old fetus from a Dx treated dam (B).

Figure 2. A) Cellular volume (Vc) and B) volume density (VVC) of LH cells in 19-day-old fetuses from dams treated with saline (C) or dexamethasone (Dx). Results are given as means ±SD (n=8); *p<0.05.

Conclusion It can be concluded that maternal Dx treatment has inhibitory effects on functional activity of LH cells in 19-day-old fetuses.

References: