

Prenatal cigarette smoke exposure in pregnant animals and its effects on the motor and emotional behavior of the offspring (Note II)

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Abstract

Background. Maternal smoking during pregnancy is a major public health problem, with obvious consequences on the mother and the newborn. Studies on nicotine indicate a high risk for ADHD-like disorders in children whose mothers have smoked during pregnancy.

Aims. The motor and emotional behavior of the offspring of pregnant animals exposed to cigarette smoke, as well as behavior differences depending on the sex and age of the offspring were evaluated.

Methods. Researches were performed in Wistar rats of both sexes, born to females that were prenatally exposed to cigarette smoke for 14 days, assigned to 4 groups as follows: group I (L I) – female offspring of control pregnant females; group II (L II) – male offspring of control pregnant females; group III (L III) – female offspring of pregnant females prenatally exposed to nicotine; group IV (L IV) – male offspring of pregnant females prenatally exposed to nicotine. The offspring rats, maintained under adequate vivarium conditions, were tested at 3 times: T₁ - day 21; T₂ - day 42; T₃ - day 90. The tests used were the Elevated Plus Maze (EPM) test and the Open Field Test (OFT).

Statistical analysis was performed using the SPSS 13.0, Statistica 8.0 and Microsoft Excel applications.

Results. The prenatal exposure of rats to cigarette smoke (passive smoking) is associated with behavior changes in the offspring, males being more vulnerable compared to females. The male offspring of pregnant women exposed to cigarette smoke are characterized by hypermotility, hyperemotionality and hypoanxiety.

Conclusions. The changes found in male offspring are ADHD-like changes and they occur early. Prenatal cigarette smoke exposure can be a risk factor for ADHD in male offspring.

Keywords: cigarette smoke, rats, elevated plus maze test, open field test, motor behavior, emotional behavior, ADHD.