Morphine analgesia and methamphetamine-induced behavioral changes in prenatally buprenorphine-exposed offspring at their adulthood

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Abstract

Heroin use among young women of reproductive age is an important issue. Buprenorphine is a newer maintenance agent and have been used in pregnant of female addicts. However, there is lack of information on the long-term effects of prenatal exposure to buprenorphine on their offspring. A prenatally buprenorphine-exposed animal model was established to investigate prenatal effects of buprenorphine on the offspring. Results of morphine-induced analgesia and tolerance showed that tolerance development to morphine was quicker in the prenatally buprenorphine-exposed animals. The locomotor activities and conditioned place preference induced by methamphetamine were also significantly increased in prenatally buprenorphine-exposed animals as compared with their control mates. The mRNA expression of dopamine D_1R in the nuclease accumbens was lower in the prenatally buprenorphine-exposed offspring, but no significant changes in μ-, κ-opioid, NOP, D_2R, and D_3R receptors were noted. Furthermore, the basal level of cAMP and the D_1R agonist enhanced cAMP production were significantly altered in

the prenatally buprenorphine-exposed group. Overall, these studies reveal that prenatal exposure to buprenorphine caused long-term effects on the offspring and affected the opioidergic and dopaminergic system-related mechanism. (The work was supported by National Health Research Institutes (NHRI-102A1-PDCO-1312141 and NHRI-EX102-10224NC) and China Medical University Hospital (DMR-101-117) in Taiwan.

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