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Narges Pachenari, J Addict Behav Ther Rehabil 2017, 6:3
DOI: 10.4172/2324-9005-C1-005

6th World Congress on

Addiction Disorder & Addiction Therapy

August 29-31, 2017 | Prague, Czech Republic

Transgenerational effect of adolescent male rat morphine exposure on pain perception and morphine analgesia in the offspring

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During the past decades, use/misuse of opioids has dramatically increased among adolescent population. It is firmly confirmed that different morphological and physiological changes occur in the brain during adolescence. Brain development and maturation, during this critical period, could be affected by several factors, including stress, drug abuse, nutritional status, etc. While studies on transgenerational effect of substances such as alcohol, nicotine and cocaine are focused on both paternal and maternal drug exposure, most of the studies of morphine administration are restricted to maternal exposure. So in this study we aimed to investigate transgenerational effect of male rats on morphine administration during adolescence against pain perception and morphine analgesia in the offspring. Male rats received escalating doses of morphine for 10 days during their adolescence. 20 days after last morphine injection, male rats were mated with intact female rats and then behavioral tests conducted on the offspring. Pain perception was evaluated by formalin test, and morphine analgesia by formalin, tail flick and paw withdrawal tests. Our results demonstrated that morphine and saline sired animals differ in interphase of formalin test. Besides, morphine sired animals respond more strongly to acute morphine injection in comparison to saline sired ones. Overall, these findings indicate significant transgenerational effect of morphine exposure during adolescence on pain perception and morphine analgesia in the offspring.

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