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Adulthood paternal and/or maternal exposure to morphine affects memory and drug reinforcing effects in male rat offspring

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Drug addiction is a multifactorial disorder and is affected by genetics, environment, and developmental issues. It has been shown that epigenetics is critically involved in the addiction process and memory formation in the brain. We have evaluated passive avoidance memory and morphine conditioned place preference (CPP) in the male offspring of male and/or female rats with a history of morphine exposure in the adulthood. Adult male and female animals consumed oral morphine for 3 weeks and then were kept drug free for 10 days. After that, animals were let to mate with either a control or an abstinent rat. Memory of male offspring was assessed by step through test, and morphine reinforcement was tested with CCP method. Offspring of morphine exposed parents showed considerable memory deficit in comparison to the control group which was more noticeable in the progeny of abstinent mothers. Data of CPP indicated that injection of 7.5 mg/kg morphine that could meaningfully induce CPP in control rats was not efficient to cause CPP in the offspring of abstinent rats. While these animals were conditioned with a greater dose of morphine (10 mg/kg), but, tolerance to the reinforcing effects of morphine was more in the progeny of abstinent mothers compared to the offspring of abstinent fathers. It is concluded that parental morphine exposure in adulthood even before mating has damaging effects on memory of the male progeny and may result in tolerance to the morphine reinforcing effects. These effects are more prominent when the morphine exposed parent is the female animal.

Biography

Nasim Vousooghi became Pharm. D. At the age of 26 and completed her PhD of pharmacology at the age of 33 years from Shahid Beheshti University of Medical Sciences. She is working as assistant professor and director of research deputy in the department of neuroscience and addiction studies in Tehran University of Medical Sciences from 2010 till now. She is also the head of genetics laboratory of the Iranian National Center for addiction studies (INCAS). She has published more than 20 papers in prestigious journals.

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