

Poster presentation

Effects of female sex hormones on morphine dependence

Setare Sianati*^{1,2}, Behrang Sharif^{1,2,3}, Mahsa Sadeghi^{1,2}, Dina Kalbasi Anaraki^{1,2} and Ahmad Reza Dehpour¹

Address: ¹Department of Pharmacology, School of Medicine, Tehran University of Medical Sciences, Tehran, Iran, ²Interdisciplinary Neuroscience Research Program(INRP), Tehran University of Medical Sciences, Tehran, Iran and ³Department of Pharmacology, School of Pharmacy, Shahid- Beheshti University of Medical Sciences, Tehran, Iran

* Corresponding author

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Background

Sex hormones have a variety of neurobehavioral effects including modulatory roles in anxiety and memory. It also has been shown that female sex hormones can alter some of the modulatory effects of opioids, such as morphine on seizure susceptibility. Thus, we conducted this study to evaluate the effects of female sex hormones on morphine dependency using a behavioral model of morphine withdrawal.

Materials and methods

Female swiss mice (weighing 25-30 g) were divided into 3 main groups: unoperated, sham-operated and operated (OVX). Morphine dependence was induced in mice by repeated injection of increasing morphine doses for 5 days. Then animals were assessed for dependency using the behavioral model of naloxane-induced withdrawal (jumping behavior and diarrhea). Also, the effects of ovarian hormones (estradiol and progesterone) on dependency to morphine were assessed in OVX mice.

Results

Ovarectomized mice had significant decrease in jumping ($p < 0.01$) and significant increase in weight loss ($p < 0.001$) compared with appropriate control groups. Pretreatment with physiologic doses of estrogen and progesterone significantly increased jumping response and decreased weight loss ($p < 0.001$) compared to non-hormone receiving operated mice.

Conclusions

Our results demonstrated that female sex hormones are possibly involved in morphine dependence. More studies are needed to find the underlying mechanism(s) of this effect.

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