

The effect of A_{2a} receptors antagonist on morphin withdrawal syndrome

Z. Namjoo*, Charkhpoor

Food and Drug organization, Tabriz, Iran

Background and Aims: Long-term exposure to opiates induces physical dependence. The neurobiological mechanisms of these phenomena are not completely clear.

Objective: The aim of this study was to evaluate the effect of intracerebroventricular (icv) administration of antagonist of A_{2a} receptors on morphine withdrawal syndrome in male rat.

Methods: Male wistar rats (200-240 g) were selected (n=6) randomly and divided into seven groups. Morphine sulphate (daily 10mg/kg) diluted in water which distilled twice per day and injected daily by Insulin syringe 1ml as IP injection. Selective antagonist of A_{2a} receptor or SCH-58261) 40, 80, 160 µg /5 µl/Rat) was diluted in 0.9% saline normal and injected as ICV by Hamilton syringe. We considered 2 control groups one of which received morphine (daily morphine 10mg/kg IP + 0.9% saline normal ICV) and the other took morphine (daily 10mg/kg IP). Total volume of injection was 5 µl per rat which was injected with the rate of 5 µl/min. On ninth day, an hour after the last dose of morphine, at first, Selective antagonist of A_{2a} receptor or SCH-58261) 40, 80, 160 µg /5 µl/Rat) that was diluted in 0.9% saline normal, injected as ICV by Hamilton syringe. So after 3 minutes, naloxone (4 mg/kg ip) injected and the withdrawal signs (Jumping, Rearing, Genital Grooming, Abdomen Writhing and Wet Dog Shake) were recorded for 60 minutes. Results showed that pretreatment intracerebroventricular (icv) administration of SCH-58261) 40, 80, 160 µg /5 µl/Rat) evidently reduced all morphine-induced withdrawal symptoms (Jumping, Rearing, Genital Grooming, Abdomen Writhing and Wet Dog Shake). Using SCH-58261 alone didn't have any interaction or effect on withdrawal symptoms and none of the tests had any difference with saline normal.

Conclusions: In conclusion we found that central injection of SCH-58261 decreased the morphine withdrawal symptoms.

Keywords: Intracerebroventricular; Morphine; SCH-58261; Withdrawal symptoms