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Memantine produces modest reductions in heroin-induced subjective responses in human research volunteers.

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Abstract

RATIONALE: Previous studies have demonstrated an interaction between opioids and noncompetitive antagonists at N-methyl-D: -aspartate (NMDA) receptors, but few studies have examined the utility of these medications for treating opioid dependence.

OBJECTIVE: In this 8-week inpatient study, participants were maintained on the low-affinity, noncompetitive NMDA receptor antagonist memantine (0, 30, and 60 mg per day, PO) and under each maintenance dose condition, the effects of intranasal heroin (0, 12.5, and 50 mg, IN) were examined.

METHODS: During the first week after admission to the hospital, participants were detoxified from heroin. All of the volunteers received all of the memantine and heroin dose combinations. Participants (N = 8) first sampled a dose of heroin and $20. During a subsequent choice session, participants could self-administer heroin and/or money. Responses, which consisted of finger presses on a computer mouse, were made under a modified progressive ratio schedule (PR 50, 100, 200, 400, 800, 1,200, 1,600, 2,000, 2,400, and 2,800) during a ten-trial self-administration task. Subjective, performance, and physiological effects were measured repeatedly during laboratory sessions.

RESULTS: Memantine produced modest reductions in subjective ratings of drug quality, liking, willingness to pay for the drug, and craving for heroin. However, memantine produced few changes in the reinforcing effects of heroin.

CONCLUSIONS: These data demonstrate that memantine was well tolerated and modestly effective in reducing the subjective but not the reinforcing effects of heroin. Although it is unlikely that memantine will be useful as a stand-alone maintenance medication for opioid dependence, it may have some utility as an adjunct treatment medication.

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