

7-Nitroindazole and its rapidly emerging role in opioid pain management and withdrawal

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To the editor

I read with great interest the paper by Jin et al in a recent issue of your journal.¹ The article is highly thought-provoking. Interestingly, the past few years have also seen the emergence of nitric oxide synthetase inhibitors, especially 7-nitroindazole, as novel new agents with significant benefits in opioid pain management and withdrawal.

For instance, 7-nitroindazole attenuates the development of tolerance to the anti-nociceptive activity of kappa and mu opioid receptors.² Similarly, 7-nitroindazole blocks the neurotoxicity secondary to ketamine in animal models.³ This may very well play a significant role in protecting the human brain from the toxicity of ketamine, especially in the pediatric population.

7-Nitroindazole also has a negative impact on morphine dependency.⁴ Tian et al have shown that 7-nitroindazole decreases physical dependence on opioid agonist/antagonist agents such as butorphanol.⁵ Medvedev et al have recently shown that administration of 7-nitroindazole also decreases symptoms of opioid withdrawal, such as tremors and diarrhea.⁶ The clinical benefit of 7-nitroindazole in individuals with opioid withdrawal is that it does not cause hypertension, unlike other nitric oxide synthase inhibitors, such as L-NG-nitroarginine methyl esters.⁷

7-Nitroindazole may also have other benefits. For instance, 7-nitroindazole injection into the bronchial vasculature decreases pulmonary changes such as edema secondary to hypoxic trauma.⁸ The examples cited here clearly illustrate the beneficial effects of 7-nitroindazole and the need for further large-scale studies to elaborate fully its beneficial effects in pain management.

Disclosure

The author reports no conflicts of interest in this work.

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