

What Is the Main Reason for Reduction in Duration of Action of Local Anesthetics Used for Spinal Anesthesia in Opium Addicted Patients?

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Letter to Editor

Dear editor

According to recent studies, in opioid abusers, compared with non-addicts, spinal anesthesia with local anesthetics has been accompanied with shorter duration of action and lower level of sensory block.¹⁻⁴ Thus, it seems that chronic opiate abuse can produce tolerance, or probably, cross-tolerance to analgesic effects of local anesthetics. As yet, no clear explanation has been presented for this tolerance.

Local anesthetics produce their analgesic effects through connection to voltage-gated sodium channels.⁵ Opiate analgesia is attributed to μ receptors.⁶ Apparently, there is no similarity between opiate or local anesthetic receptors. This

can explain addicts' tolerance to local anesthetics. Opiates cause respiratory depression.⁷ Therefore, they cause mild respiratory acidosis in opioid abusers. Plasma acidosis can lead to diffusion of H^+ to cerebrospinal fluid. Acidosis reduces the lipophilicity, and hence, efficiency of local anesthetics.

Based on the abovementioned issues, perhaps occurrence of unexpected phenomenon, such as reduction of sodium channels, following chronic addiction to opiates results in tolerance to intrathecal local anesthesia. Moreover, secondary acidosis in cerebrospinal fluid following chronic addiction to opiate may be the cause of reduction in the efficacy of intrathecal local anesthesia. Therefore, we recommend these topics for future studies.

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