

Dextromethorphan, 3-Methoxymorphinan, and Dextrorphan Have Local Anesthetic Effect on Sciatic Nerve Blockade in Rats

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摘要

Abstract

Dextromethorphan has been used as an antitussive for more than 40 years and is considered a drug with a good margin of safety. The aim of the study was to evaluate whether dextromethorphan and its metabolites--3-methoxymorphinan and dextrorphan--had local anaesthetic effects. Using a method of sciatic nerve blockade in rats, the potencies and durations of actions of dextromethorphan and its metabolites on sciatic nerve blockades of motor function, proprioception, and nociception were evaluated. Lidocaine was used as control. We found that dextromethorphan and its metabolites produced dose-related local anaesthetic effects on sciatic nerve blockades of motor function, proprioception, and nociception. The ranks of potencies were lidocaine>dextromethorphan>3-methoxymorphinan>dextrorphan ($P<0.01$ for each comparison). Under an equi-potent basis, dextrorphan and 3-methoxymorphinan had durations of actions longer than that of lidocaine ($P<0.05$ for each comparison). Co-administration of dextromethorphan or its metabolites with lidocaine produced an additive effect on sciatic nerve blockades. In conclusion, dextromethorphan and its metabolites - 3-methoxymorphinan and dextrorphan- had a local anaesthetic effect on sciatic nerve blockades of motor function, proprioception and nociception with durations of actions longer than that of lidocaine. Co-administration of dextromethorphan and its metabolites produced an additive effect on sciatic nerve blockades.