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The Role of QX-314 and Capsaicin in Producing Long-Lasting Local Anesthesia in the Animal Model of Trigeminal Neuralgia

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Abstract : Trigeminal Neuralgia (TN) consists of painful attacks often triggered with general activities, which cause impairment and disability. The first line of treatment consists of pharmacotherapy. However, the occurrence of many side-effects limits its application. Acute pain relief is crucial for titrating oral drugs and making time for neurosurgical intervention. This study aimed to examine the long-term anesthetic effect of QX-314 and capsaicin in trigeminal neuralgia using an animal model. TN was stimulated by surgical constriction of the infraorbital nerve in rats. After seven days, anesthesia infiltration was done, and the duration of mechanical allodynia was compared. Thirty-five male Wistar rats were randomly divided into seven groups as follows: control (normal saline); lidocaine (2%); QX314 (30 mM); lidocaine (2%)+QX314 (15 mM); lidocaine (2%)+QX314 (22 mM); lidocaine (2%)+QX314 (30 mM); and lidocaine (2%)+QX314 (30 mM) +capsaicin (1µg). QX314 in combination with lidocaine significantly increased the duration of anesthesia, which was dose-dependent. The combination of lidocaine+QX314+capsaicin could significantly increase the duration of anesthesia in trigeminal neuralgia. In the present study, we demonstrated that the combination of QX-314 with lidocaine and capsaicin produced a long-lasting, reversible local anesthesia and was superior to lidocaine alone in the fields of the duration of trigeminal neuropathic pain blockage.

Keywords : trigeminal neuralgia, capsaicin, lidocaine, long-lasting
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