

Study suggests dexmedetomidine before surgery reduced remifentanil-induced hyperalgesia

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Surgical patients who demonstrated heightened pain sensitivity, or hyperalgesia, induced by high doses of a synthetic opioid had their symptoms alleviated by co-treatment with dexmedetomidine, according to new research. Study investigators, who presented their results today at the 29th Annual Meeting of the American Academy of Pain Medicine, concluded that dexmedetomidine may be a new and effective treatment option for opioid-induced hyperalgesia (OIH).

OIH refers to increased [pain sensitivity](#) due to high-dose or prolonged opioid exposure. [Dexmedetomidine](#) is an alpha-2 adrenergic agonist that is believed, based on prior research, to reduce pain and opioid requirements after surgery (Blaudszun et al, Anesthesiology 2012;116(6):1312-22). In the current study, OIH was induced by high doses of remifentanil, which is an ultra short-acting synthetic opioid used during surgery as an adjunct to anesthesia and to relieve pain.

"High-dose remifentanil can induce hyperalgesia, which is marked by a decreased mechanical hyperalgesia threshold, enhanced [pain intensity](#), shorter time to first postoperative analgesic requirement and greater morphine consumption," said Kim Yeon-Dong, MD, lead study author and a clinical professor of anesthesiology and pain medicine at Wonkwang University Hospital in Iksan City, South Korea. "Dexmedetomidine infusion efficiently alleviated these symptoms."

Patients treated with dexmedetomidine reported less pain, used less post-surgical morphine, and went longer before requesting medication for pain relief than patients treated with placebo. They also reported fewer adverse opioid-related effects, including nausea.

The research was conducted on 90 patients who underwent laparoscopically-assisted [vaginal hysterectomy](#). Patients were randomly assigned to 1 of 3 research groups, each of which received either dexmedetomidine or placebo saline 15 minutes before surgery. During surgery, all patients received a remifentanyl infusion.

Group C received placebo and a comparatively low dose (0.05 µg/kg/min) of remifentanyl. The next 2 groups received higher doses of remifentanyl: group RH received placebo and 0.3 µg/kg/min remifentanyl; and group DRH received dexmedetomidine and 0.3 µg/kg/min remifentanyl.

Patients in the RH group, who were treated with placebo and high-dose remifentanyl, had a lower threshold for mechanical [hyperalgesia](#) in the 24 hours after surgery than the other 2 groups and were the first to require analgesia for pain. The same placebo group also had more pain intensity and greater use of patient-controlled morphine for pain than group DRH, which received dexmedetomidine and high-dose remifentanyl. Additionally, group DRH reported less shivering and postoperative nausea and vomiting than the other 2 groups. All findings were statistically significant.

Dr. Kim said those who might benefit from treatment with alpha-2 agonists include patients who are hospitalized for painful conditions or procedures and who have not responded to traditional [opioid](#) medication.

Provided by American Academy of Pain Medicine

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