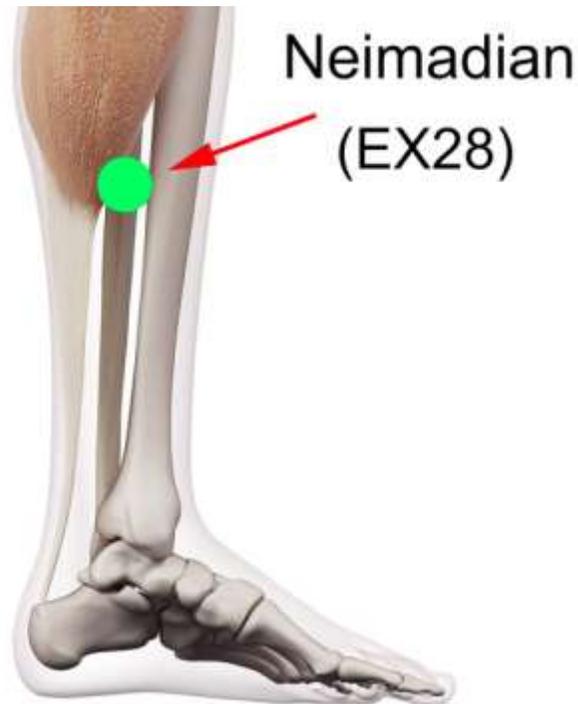


Acupuncture Painkiller Postoperative Narcotic Boost Found

Published by [HealthCMi](#) on September 2017



Researchers conclude that acupuncture increases the total effective rate of the drug sufentanil citrate for the relief of pain after thoracic surgery.

Researchers from the First Affiliated Hospital of Henan University of Science and Technology combined acupuncture with standard drug therapy. Patients receiving both sufentanil citrate injections and acupuncture in a

combined treatment protocol had superior patient outcomes compared with patients receiving only sufentanil citrate. The researchers conclude that the addition of acupuncture to a sufentanil treatment regimen reduces the total dosage requirements for the drug and mitigates associated adverse effects. [1] Furthermore, acupuncture increases the effective rate of sufentanil citrate for postoperative pain relief. Let's take a look at the results.

Thoracic surgery may lead to multiple complications, including anxiety, insomnia, pathophysiological changes, and postoperative pain. Postoperative pain may cause overstimulation of the phrenic nerve, which may precipitate postoperative lung function decline. Patients suffering from pain after thoracic surgery may find difficulty changing positions or may experience coughing with sputum production, which increases the risk for pneumonia and influences the long-term prognosis. An important aspect of surgery is convalescence and acupuncture was included in this investigation to determine its effects on recuperation.

Patient-controlled intravenous analgesia (PCIA) with sufentanil citrate is commonly used for the management of postoperative pain. The upside of PCIA is that it has an immediate, powerful, and longstanding effect while mitigating excessive complement cascade production of proinflammatory biochemicals. The downside is of sufentanil citrate includes adverse effects including dizziness, nausea, muscle stiffness, seizures, gastrointestinal distress, addiction, and life-threatening respiratory or cardiovascular depression. Access to naloxone (trade name Narcan) reverses the effects of the narcotic drug sufentanil citrate to prevent life-threatening situations; nonetheless, mitigating adverse effects of opioids, including sufentanil citrate, is an important concern.

Design

Researchers (Zhou et al.) used the following study design. A total of 60 patients that received esophageal cancer surgery under general anesthesia were treated and evaluated in this study. The patients received elective radical resection for esophageal cancer between October 2015 and June 2016. They were randomly divided into an acupuncture treatment group and a control group, with 30 patients in each group. For the control group patients, general anesthesia was administered before the operation, while sufentanil was administered for patient-controlled intravenous analgesia (PCIA) after the operation. The treatment group received acupuncture in addition to the identical anesthesia treatment administered to the drug control group.

The statistical breakdown for each randomized group was as follows. The average age in the treatment group was 55 (± 7) years. The average length of operation in the treatment group was 221 (± 29) minutes. The average weight in the treatment group was 59 (± 8) kilograms. The average age in the control group was 54 (± 9) years. The average length of operation in the control group was 219 (± 31) minutes. The average weight in the treatment group was 60 (± 7) kilograms. There were no significant statistical differences in age, length of operation, and weight relevant to patient outcome measures for patients initially admitted to the study.

For both groups, patients received general anesthesia before the operation. After the operation, patient-controlled intravenous analgesia (PCIA) with sufentanil citrate injection was also prescribed. Two $\mu\text{g}/\text{kg}$ of sufentanil citrate was diluted with 0.9% sodium chloride to make a 100 ml solution, which was injected into a patient-controlled analgesia infusion pump. Thirty minutes before the operation was completed, the patients received an intravenous injection of 0.1 ml/kg sufentanil citrate. Next, a patient-controlled analgesia infusion pump was given to the patients daily, for 2 continuous days. Additional medications were prescribed under the following situations: If nausea and vomiting occurred after sufentanil citrate

injections, 6 mg of ondansetron (Zofran) was administered given by intravenous (IV) injection. Zofran tablets are prescription drugs used to treat postoperative nausea and vomiting (PONV). If sufentanil citrate injections caused serious adverse reactions, including a respiratory rate of less than 10 times/minute and loss of consciousness, naloxone (Narcan) was injected intravenously. Patients with serious adverse reactions to sufentanil citrate were excluded from the experiment.

Acupuncture Procedure

The treatment group patients received two sessions of acupuncture therapy, one prior to the induction of general anesthesia and the other after the operation. The acupoints used for the treatment group included the following:

- **Neimadian (EX28)**
- **PC6 (Neiguan)**

Neimadian (EX28) is located on the medial aspect of the lower leg, 7 cun superior to the apex of the medial malleolus, 0.5 cun posterior to the margin of the tibia. This acupoint was selected because it is indicated for the treatment of postoperative pain in Traditional Chinese Medicine (TCM). Researchers from the department of anesthesia at The First Affiliated Hospital of Henan University of Science and Technology (Ding et al.) tested Neimadian (EX28) in a controlled experiment and confirm that it is effective for the relief of postoperative pain. In the experiment, patients reported significant pain reduction and acupuncture significantly raised endogenous beta-endorphin levels. In addition, acupuncture outperformed sufentanil citrate PCIA. [2]

PC6 (Neiguan) is located 2 cun proximal to the medial wrist crease between the palmaris longus and flexor carpi radialis tendons. In TCM, this acupoint is indicated for benefitting the chest, heart, and stomach. It is especially useful for the treatment of nausea and vomiting, including postoperative causes. Modern research confirms that PC6 mitigates postoperative pain. For example, Xie et al. note, “It was concluded that intraoperative ipsilateral EAS [electroacupuncture stimulation] at PC4 and PC6 provides effective postoperative analgesia for patients undergoing radical esophagectomy with remifentanyl anesthesia and significantly decrease requirement for parental narcotics.” [3]

Given the historical TCM indications and proven modern applications of Neimadian (EX28) and PC6 (Neiguan), Zhou et al. combined both acupoints into an electroacupuncture treatment protocol to determine its effects on PCIA outcomes after thoracic surgery. Acupuncture treatment commenced with patients in a supine position. A 0.40 mm X 50 mm disposable acupuncture needle was inserted

perpendicularly into each acupoint, to a maximum depth of 37 mm. Once a deqi sensation was obtained, the needles were connected to an electroacupuncture device with a continuous wave. The frequency was adjusted from a low level (4 Hz) to a high level (100 Hz). The intensity level was set to patient tolerance levels or until muscle contractions were observable. Once the electric stimulation began, the needles were retained for 30 minutes.

Evaluations

Multiple subjective and objective instruments were used to measure patient outcomes at several data points: prior to electroacupuncture (T1) and 2 hours (T2), 12 hours (T3), 24 hours (T4), and 48 hours (T5) after completion of the operation. First, the total dosage of sufentanil citrate used during the anesthesia process was calculated. Second, the improvement of pain intensity was scored using the visual analog scale (VAS). Third, the levels of plasma β -endorphin (β -EP), 5-hydroxytryptamine (5-HT), and prostaglandin E2 (PGE2) were recorded. Previous studies have proven that a higher β -EP level is associated with decreased pain intensity, while a higher 5-HT or PGE2 level is associated with increased pain intensity. Fourth, the total effective rate was recorded 2 hours, 12 hours, and 24 hours after the operation based on the VAS rating. Fifth, the safety level was measured.

The total dosage of sufentanil citrate required in the acupuncture treatment group was less than that in the drug-only control group ($P < 0.05$). VAS scores at T2, T3, and T4 in the patients of the acupuncture treatment group were all lower than those in the control group ($P < 0.05$). The levels of plasma β -EP at T3, T4, and T5 in the treatment group were increased significantly as compared with those in the control group ($P < 0.05$) and the levels of plasma 5-HT and PGE2 at T2, T3, and T4 were reduced significantly as compared with those in the control group ($P < 0.05$). The excellent analgesia rates at T2, T3, and T4 in the treatment group were better than those in the control group ($P < 0.05$). The rate of the A-grade safety in the treatment group was higher than that in the control group ($P < 0.05$).

Results

The results indicate that acupuncture combined with sufentanil citrate into an integrated treatment protocol is more effective than sufentanil citrate as a standalone therapy. Zhou et al. conclude that acupuncture is safe and effective for the relief of postoperative thoracic surgery pain.

Notes:

1. Zhou MT, Li Y, Han XC, Xing QZ, Wang YY, Dong X, Chang JX. *Clinical Research of Electroacupuncture on the Analgesic Effect of Thoracic Perioperative Stage [J]. Chinese Acupuncture and Moxibustion, 2017, 37(7).*
2. Ding, L. X., Q. Z. Xing, J. J. Sun, and Yu Li. "Analgesic effect of acupuncture at Neimadian (Extra) in postoperation of abdominal surgery." *Zhongguo zhen jiu= Chinese acupuncture & moxibustion* 31, no. 8 (2011): 738-742.
3. Xie, Yan-hu, Xiao-qing Chai, Yue-lan Wang, Yan-chun Gao, and Jun Ma. "Effect of electro-acupuncture stimulation of Ximen (PC4) and Neiguan (PC6) on remifentanyl-induced breakthrough pain following thoracal esophagectomy." *Journal of Huazhong University of Science and Technology [Medical Sciences]* 34, no. 4 (2014): 569-574.