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Cervical Epidural Block Can Relieve Postoperative Intractable Hiccups

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PERSISTENT hiccups after abdominal surgery are stressful for patients. While a variety of treatments for hiccups have been reported,¹⁻³ no "cure" stands out as the most effective. We describe two patients in whom intractable postoperative hiccups were treated successfully by cervical epidural block.

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Case 1

A 57-yr-old man underwent cholecystectomy for cholecystitis under a combination of general (nitrous oxide, enflurane) and epidural

anesthesia. During the operation, hiccups occurred twice and were treated with 20 mg succinylcholine on each occasion.

Three days after surgery, hiccups recurred. No subphrenic abscess was confirmed by echography. Nasopharyngeal stimulation, aspiration of the stomach, 20 mg metoclopramide, and 50 mg intravenous chlorpromazine failed to stop the hiccups. The patient became severely depressed and experienced difficulty sleeping because the hiccups were continuous. On the 7th day after surgery, melena and fresh blood from the nasogastric tube were observed. Gastroscopy revealed a gastric ulcer, and gastrectomy was planned. General anesthesia was maintained with nitrous oxide and enflurane, and muscle relaxation was achieved using 6 mg pancuronium bromide. After the administration of pancuronium bromide, the hiccups disappeared. Gastrectomy was performed, and surgeons could find no cause of the hiccups. After reversal of paralysis, the hiccups recurred.

In the surgical postoperative unit, a continuous infusion of droperidol (1.6 mg/h) was started, and epidural block at the T5 intervertebral space was performed with 10 ml 1.5% lidocaine. Although analgesia was obtained from T3 to T11, the hiccups continued. On the next day, a cervical epidural catheter was placed at the C7 intervertebral space and 8 ml 1.5% lidocaine was injected through the catheter. Hiccups stopped 10 min after the injection. The hiccups did not appear for the next 1.5 h. The analgesic level was from C3 to T4 bilaterally. The position of the diaphragm in the chest x-ray appeared unchanged from where it had been before the block, and the patient did not complain of dyspnea. As 8 ml 0.5% bupivacaine was effective in suppressing the hiccups for 4-5 h, the same dose was injected every 6 h. Although minimal hiccups appeared just before the next injection, a bolus 6 ml 1.5% lidocaine was effective

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in stopping them. The patient felt relief and could sleep comfortably. On the 2nd day after the onset of cervical epidural block, the droperidol was stopped. However, hiccups recurred 8 h after the cessation of droperidol, and droperidol was restarted. On the 3rd day, the dose was changed to 6 ml 0.5% bupivacaine per day and droperidol 0.8 mg/h. On the 13th day after the first surgery, the hiccups disappeared. The epidural block and droperidol were discontinued.

Case 2

A 61-yr-old man underwent gastrectomy and cholecystectomy for gastric cancer and cholelithiasis. Anesthesia was maintained with 60% nitrous oxide, oxygen, and 0.3–0.5% isoflurane in combination with epidural anesthesia. The patient did well until the 10th postoperative day, when intractable hiccups began. Treatment with chlorpromazine, metoclopramide, and other tranquilizers was ineffective. He complained of sleeplessness and inability to eat. After 12 days of persistent hiccups, cervical epidural block was performed at the C7 intervertebral space with 8 ml 2% lidocaine. The hiccups decreased after about 10 min, stopped after 45 min, and did not recur. The analgesic level confirmed 15 min after the block was from C3 to T6 bilaterally. The patient felt at ease and did not complain of dyspnea.

Discussion

We describe two cases of intractable hiccups resistant to conventional treatments. Case 1 was well controlled by continuous cervical epidural block combined with droperidol. Case 2 was treated with only a cervical epidural block in a single injection.

The afferent portion of the neural pathway of hiccup formation is composed of the vagus nerve, the phrenic nerve, and the sympathetic nerve chain arising from T6 to T12. The efferent limb is the phrenic nerve.⁴ Thus, a nerve block of some part of this pathway might be an effective treatment for hiccups.

In case 1, extended thoracic epidural block from T3 to T11 was ineffective. We thus can assume that a block of the afferent portion of the sympathetic nerves was of no use in stopping hiccups. After cervical epidural block, in both cases the extent of block was sufficient to cover the levels supplying the phrenic nerve (C3–C5). Since respiration in the both cases showed no abnormal patterns, we assumed that the phrenic nerve was partially blocked without serious effect on diaphragmatic respiration.

If hiccups persist despite common physical maneuvers such as pharyngeal stimulation or gastric aspiration, drug therapy usually becomes necessary. Chlorpromazine is more effective in treating hiccups when

given intravenously, especially after a single intravenous bolus of 50 mg. Haloperidol also has been reported to be effective in "several" patients, perhaps related to its dopamine antagonist effect.^{5–7} The effective dose appears to be 3–12 mg/day.⁶ In case 1, we used droperidol, which also has the ability to antagonize the actions of dopamine on specific areas of the nervous system.⁸

For hiccups unresponsive to both physical maneuvers and drug therapy, block of the phrenic nerve can be considered, especially in patients in whom persistent hiccups are the cause of significant discomfort such as in those presented here. A temporary phrenic nerve block, using a long-acting agent such as bupivacaine, should be attempted. However, selective bilateral block of the phrenic nerves is difficult to achieve, even with the use of a nerve stimulation,⁹ and phrenic nerve blocks have not been uniformly successful in terminating hiccups.^{10–12}

Safety with the cervical epidural block has been reported elsewhere.¹³ In the two cases presented here, ventilatory difficulty secondary to phrenic nerve paralysis was not observed. However, cervical epidural block for a patient showing hiccups may be difficult to perform because of the intermittent movements of the patient. Furthermore, before performing the block, caution should be exercised concerning the assessment of volume status and preparation for treatment of hypotension, bradycardia, and respiratory impairment—all possible side effects of cervical epidural block.

In conclusion, cervical epidural block may be an effective treatment for persistent intractable hiccups.

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