

Experience of lumbar epidural insertion in 573 anesthetized patients

Kiyoshi Terasako

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Abstract Performing regional blockade on anesthetized patients may increase the risk of postoperative neurologic complications, because these patients cannot respond to painful stimuli. In orthopedic patients, especially those with leg fracture, it is sometimes difficult to find a suitable position for epidural catheterization because of pain. This study evaluates the frequency of neurologic complications after lumbar epidural catheter placement in anesthetized adult patients undergoing orthopedic surgery. Among 581 patients, there were 8 failed epidural catheter insertion: the catheter could not be inserted in 4 patients including one dural puncture, and the position of the epidural catheter was judged as inappropriate in 4 patients postoperatively. In the remaining 573 patients, the catheter was inserted uneventfully under general anesthesia, and they received continuous local anesthetic infusion for postoperative analgesia. No neurologic complication related to epidural catheter was observed in these patients. This observation suggests that epidural puncture under general anesthesia may be acceptable in some conditions, for example obtaining appropriate consent, difficulty in positioning when awake, proper monitoring and vigilance, etc.

Keywords Complication · Epidural

Performing regional blockade on anesthetized patients may increase the risk of postoperative neurologic complications, because these patients cannot respond to painful stimuli.

However, most children who undergo regional anesthetic techniques are either heavily sedated or under general anesthesia [1, 2]. Grady et al. [3] reported no cases of nerve injury caused by the placement of cerebrospinal fluid drainage needles and catheters in 530 anesthetized patients undergoing neurosurgery.

In orthopedic patients, especially those with leg fracture, it is sometimes difficult to find a suitable position for epidural catheterization because of pain. This study evaluates the frequency of neurologic complications after lumbar epidural catheter placement in anesthetized adult patients undergoing orthopedic surgery.

In this study, after obtaining oral informed consent I evaluated the success and the incidence of neurologic complications for 581 orthopedic surgical patients undergoing lumbar epidural catheter placement while under general anesthesia at Hamawaki orthopedic hospital in a 7-year period. During the study only one patient requested insertion of the catheter in the awake state. The Arrow FlexTip Plus (Teleflex Medical Japan, Tokyo) steel coil catheters were placed in the lateral decubitus position immediately after the induction of general anesthesia. General anesthesia was maintained with 66% nitrous oxide and 1% sevoflurane. Identification of the epidural space was accomplished by using the loss of resistance to saline. In four patients systolic blood pressure decreased below 80 mmHg and recovered after 8 mg bolus intravenous infusion of ephedrine during the procedure. No other anesthesiologists joined this study.

Patients were examined daily for evidence of neurologic complications resulting from infection, needle or catheter-induced trauma, or spinal bleeding. These prospectively collected data were retrospectively reviewed to evaluate the frequency of neurologic complications among study patients.

K. Terasako (✉)
Division of Anesthesia, Shobara Red Cross Hospital, 2-7-10
Nishihonmachi, Shobara, Hiroshima 727-0013, Japan
e-mail: kterasa@hbs.ne.jp

Table 1 Problems in 581 patients

	No. of patients	%
Insertion failure	4	0.69
Dural puncture	1	0.17
Retained catheter	0	0
Catheter site infection	0	0
Neuraxial infection	0	0
Spinal hematoma	0	0
Neurologic complication related to epidural catheter	0	0
Inadequate analgesia	4	0.69

I could not place an epidural catheter in four patients including one dural puncture. For four other patients opioids were administered intravenously because analgesia was graded as poor. The remaining 573 patients received local anesthetics epidurally with no use of opioids. There were no neurologic complications, including spinal hematoma, epidural abscess or catheter site infections, radicular symptoms, or persistent paresthesias.

There was one peroneal nerve palsy, unrelated to epidural catheter placement, which was possibly because of perioperative compression. The patient recovered fully (Table 1).

None of the 581 patients in this retrospective study who underwent lumbar catheter placement while anesthetized developed a neurological complication related to lumbar epidural catheter placement or epidural infusion. The Arrow FoexTip Plus steel coil catheter has a more flexible design than the polyethylene epidural catheter and has been reported to reduce catheter-induced paresthesia [4].

In reviewing this subject, the following question should be asked. Is this study large enough? Because the risk of

cord or nerve root damage is small, a large number of patients need to be examined before seeing such a complication [5]. It is difficult to collect a large number of cases personally. I admit the limitation of this study.

In conclusion, this study suggests that epidural puncture under general anesthesia may be acceptable under some conditions, for example obtaining appropriate consent, difficulty in positioning when patient is awake, proper monitoring and vigilance, etc. Catheter insertion under general anesthesia is of special benefit for patients with leg fracture, because it is sometimes very difficult to find a suitable position for epidural catheter placement because of severe pain. However the relative risk of this practice, compared with epidural catheter placement in awake patients, is unknown.

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