Case Report

Recurrent spinal myoclonus after two episodes of spinal anesthesia at a 1-year interval
-A case report-

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Spinal myoclonus is an unusual, self-limiting, adverse event that may occur during spinal anesthesia. The exact cause and underlying biochemical mechanism of spinal myoclonus remain unclear. A few cases of spinal myoclonus have been reported after administration of intrathecal bupivacaine. We report a case in which spinal myoclonus recurred after two episodes of spinal anesthesia with bupivacaine at a 1-year interval in a 35-year-old woman. The myoclonus was acute and transient. The patient recovered completely, with no neurologic sequelae. (Korean J Anesthesiol 2010; 59: S62-S64)

Key Words: Spinal anesthesia, Spinal myoclonus.
On a preoperative visit to our hospital, she expressed no fear regarding spinal anesthesia and agreed to undergo spinal anesthesia again.

Premedication consisted of 2.5 mg of midazolam, administered intramuscularly 30 min before surgery. In the operating room, standard monitoring (non-invasive blood pressure, peripheral oxygen saturation, and electrocardiogram) was used. The patient was placed in the right lateral decubitus position, and lumbar puncture was performed without difficulty at L3-4. After free-flowing cerebrospinal fluid was obtained, 9 mg of heavy bupivacaine 0.5% (Marcaine Spinal 0.5% Heavy®, AstraZeneca, Sweden) and 0.2 mg of epinephrine were administered via a 25 G spinal needle. The procedure was performed without complication. Sensory input to T10 was blocked, and the surgery was completed uneventfully in approximately 50 min.

After surgery, the patient was transferred to a recovery room. Approximately 100 min after administration of anesthesia, she began to experience bilateral, involuntary myoclonic movement of both legs and arms. Sensory function in her arms was intact, and the rhythm of the movement varied widely in rate. She was conscious, oriented, and calm. At that point, 2 mg of midazolam was administered intravenously. Approximately 10 min later, she was treated with 0.5 mg of oral clonazepam and 2 mg of IV midazolam. The myoclonic movement diminished slightly, but persisted. A neurology consult was obtained. There was no evidence of weakness or impairment of cerebellar or cranial nerve dysfunction. Thus, these movements were clinically defined as spinal myoclonus. After approximately 1 h, 0.5 mg of clonazepam was administered again. The myoclonic movement disappeared completely at 4 h after its onset. Postoperative laboratory findings, including serum electrolytes and glucose, were within normal limits. When she was examined again the following day, no abnormal neurologic finding was evident. One month later, she visited the hospital again; no recurrence of spinal myoclonus had occurred.

Discussion

The present report describes an interesting case of spinal myoclonus that occurred immediately after intrathecal injection of bupivacaine and fentanyl in a 45-day-old healthy infant. Onset was more rapid than in our case, and the duration was only 4 min. Intrathecal bupivacaine appears to be the most likely cause, because there was no history of a seizure disorder, a normal neurological examination, and unremarkable follow-up imaging. The local anesthetic may have induced spinal cord irritation, resulting in spontaneous and repetitive discharges of the anterior horn cell groups. Some have suggested that the effect of bupivacaine on inhibitory neurons may have led to a loss of inhibitory function in the spinal cord and heightened irritability of the alpha motor neuron, leading to myoclonus [3,4]. Because our patient had no specific disease history and had unremarkable neurologic and laboratory findings, the cause of spinal myoclonus was likely spinal anesthesia with bupivacaine. Spinal myoclonus is an unusual and self-limiting adverse event during the practice of spinal anesthesia, and usually resolves after the disappearance of the drug’s effect. However, in some cases, specific treatment, including benzodiazepines and anticonvulsants, is needed. Alfa and Bamgbade [7] suggested that midazolam is the benzodiazepine of choice for treating perioperative spinal myoclonus.

For diagnosis, blood tests, including electrolytes, glucose, renal function tests, hepatic function tests, paraneoplastic antibody detection, and electromyography (EMG), are useful. EMG shows bursts >100 ms with or without rhythmic findings in spinal myoclonus. Electroencephalography and somatosensory-evoked potentials show normal findings [8]. MRI of the spine or brain is also useful to rule out spinal cord or brain abnormalities. In our patent, blood tests were performed, but other tests were impractical. Considering our patient’s past history, spinal anesthesia should not be repeated. Neither we...
nor the patient thought that her experience was trivial.

In conclusion, anesthesiologists must be aware of the potential for this very rare phenomenon to occur as a result of spinal anesthesia. Also, anesthesiologists should carefully take past anesthetic histories and consider the recurrence when planning anesthetic technique for the patients who had an episode of spinal myoclonus.

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