Apnea and unconsciousness after accidental subdural placement of an epidural catheter

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moderate to severe hypotension, delayed or extreme rapid onset, progressive respiratory depression and incoordination, unconsciousness, papillary dilation, and rapid recovery of neurologic function [3,4]. Therefore, the clinical features vary greatly and are difficult to anticipate. Diagnostic guidelines proposed by Lubenow et al. [1] are intended for patients that are not under general anesthesia, and was therefore impossible to apply in this case. However, the radiographic findings of subdural block are archetypal with anterior-posterior views showing narrow lateral columns of dye resembling railroad tracks, usually in the thoracic and upper lumbar spine, while lateral views display thin films of dye along the dorsal and/or ventral part of the spinal canal [3]. Although the present case only partially presents with the above-mentioned clinical features, the radiographic findings as seen in Figure 1 supported our suspicion. In addition, other possible causes of delayed awakening from anesthesia such as residual effects of anesthetics, incomplete neuromuscular relaxation reversal or hypothermia were ruled out. The discrepancy in clinical signs such as high blood pressure and constricted pupils of this case may be due to the effect of fentanyl rather than ropivacaine. The development of symptoms might have been subtle and further delayed had we not injected the bolus dose at the end of the surgery, which seems to have triggered the exaggerated spread of drug within the subdural space. Moreover, the rather low concentration of local anesthetics (0.15% ropivacaine) may have resulted in the weak effect of local anesthetic. However, the infusion rate and bolus dose of epidural fentanyl that was used in this case is reported to be safe from the risk of respiratory depression [5]. Although the dose of subdural fentanyl that will cause respiratory depression and mental status change is not clear, the clinical and radiographic findings of the present case and the fact that the patient was stabilized after naloxone administration strongly supports the possibility of the effect of subdurally injected fentanyl.

We suggest that subdural complications from local anesthetics and opioids should be considered when unexpected clinical features develop, and radiologic identification of the epidural catheter may be helpful when other clinical symptoms are difficult to assess.

References

1. Lubenow T, Keh-Wong E, Kristof K, Ivankovich O, Ivankovich AD. Inadvertent subdural injection: a complication of an epidural block. Anesth Analg 1988; 67: 175-9.
2. Mehta M, Salmon N. Extradural block. Confirmation of the injection site by X-ray monitoring. Anaesthesia 1985; 40: 1009-12.
3. Collier CB. Accidental subdural injection during attempted lumbar epidural block may present as a failed or inadequate block: radiographic evidence. Reg Anesth Pain Med 2004; 29: 45-51.
4. Parke TJ. Variable presentation of subdural block. Anaesthesia 1995; 50: 177.
5. Weightman WM. Respiratory arrest during epidural infusion of bupivacaine and fentanyl. Anaesth Intensive Care 1991; 19: 282-4.