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Date submitted : 23 July 2019
Date accepted : 30 August 2019

Epidural anesthesia masking pain from spinal epidural hematoma

Spinal epidural hematoma (SEDH) without pain due to epidural anesthesia is a rare but serious complication. We report the successful treatment of a patient with progressive paraparesis after the development of SEDH during the administration of epidural anesthesia. An 84-year-old woman underwent laparoscopy with epidural anesthesia. To prevent deep vein thrombosis, the delivery of low molecular weight heparin was started 16.5 hours after laparoscopy. On the 1st postoperative day she reported painless leg paralysis and on the 2nd day she manifested severe paraplegia and urinary retention. Magnetic resonance imaging revealed an SEDH compressing the spinal cord at the Th12 - L1 and we performed emergent laminectomy. After the laminectomy her symptoms disappeared completely. SEDH is a rare but serious complication related to epidural anesthesia. As its excessive analgesic effect may elicit motor weakness and mask pain, SEDH must be ruled out in patients with paraparesis with continuous epidural anesthesia.

Keywords: spinal epidural hematoma, epidural anesthesia, antithrombotic therapy, anticoagulant therapy

Epidural anesthesia is useful for intra- and post-operative pain control. In rare cases it results in spinal epidural hematoma (SEDH), a serious complication [4, 12]. We report a patient who developed SEDH after the insertion of an epidural catheter for laparoscopic surgery.

Case presentation

An 84 year-old woman with ascending colon cancer underwent laparoscopic colon resection. Her past medical history included cerebral infarction, osteoporotic vertebral fracture, and pemphigus and treatment with aspirin, prednisolone, eldecalcitol, and elcatonin. Preoperative blood sampling data were normal.

We used the physiologic saline technique and encountered no resistance when we inserted an 18-gauge epidural catheter in the rostral direction at the Th12 - L1 interspace. A small amount of blood was aspirated through the catheter. After 3-hr surgery, ropivacaine analgesia (0.2%) was provided, after 16.5 hr we injected enoxaparin to prevent deep vein thrombosis (DVT).

In the evening of the 1st postoperative day she reported slight, painless left leg weakness that progressed in the next 2 hr [manual muscle test (MMT) 2/5]. As we thought that the symptom was due to the analgesic effect of epidural anesthesia we discontinued its delivery; 3 hr later the MMT score was 3/5. The next morning she reported back- and left leg pain with progressive paraparesis (right MMT: 2/5, left MMT: 1/5). As we observed bilateral hypoesthesia below the Th10 dermatome and impairment of her anal sphincter reflex, we removed the epidural catheter without encountering resistance.

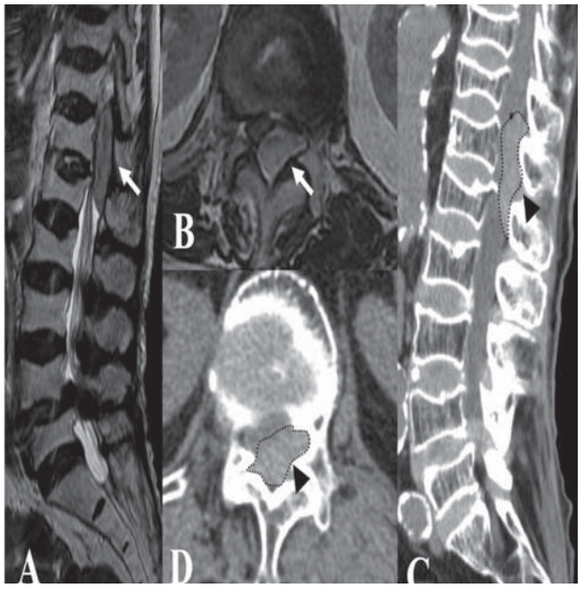

Figure 1. Thoracic MRI and CT showing SEDH from Th11 to L1; it has severely compressed the spinal cord

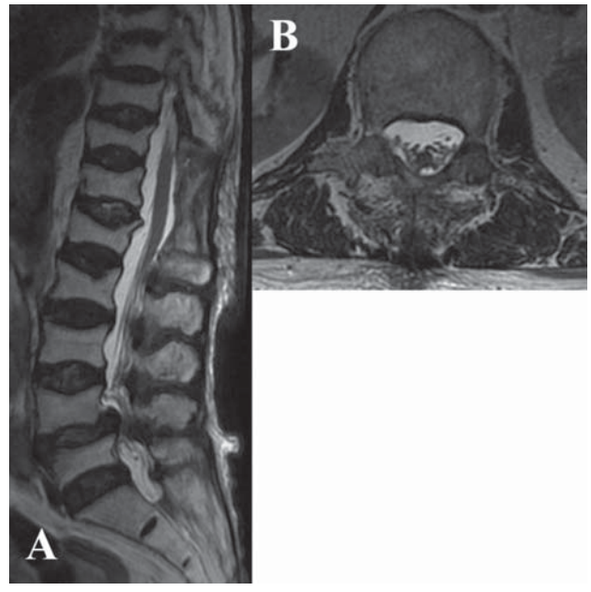

Figure 2. Follow-up MRI study showing disappearance of the SEDH with no signal change in the spinal cord

Thoracic magnetic resonance imaging (MRI) and computed tomography (CT) revealed SEDH from Th11 to L1; it severely compressed the spinal cord (Figure 1). We performed emergency Th10 to L1 laminectomy to remove the SEDH. We suspected that the site of bleeding was in the vertebral venous plexus; there was no evidence of vascular malformation. Her postoperative course was uneventful and her leg paraparesis gradually improved. Follow-up MRI study confirmed disappearance of the SEDH; there was no signal change in the spinal cord (Figure 2). She was discharged 54 days after spinal surgery without any neurological deficits. At the time of 32-month follow-up she manifested no neurological deficits.

Discussion:

SEDH elicited by epidural anesthesia

Epidural anesthesia has good analgesic effects and can lower the incidence of postoperative complications.[10, 15] However, bleeding can occur and although SEDH is rare but serious complication.[4, 12] a delayed diagnosis can result in sequelae.[2, 4, 9]

SEDH can arise upon catheter removal. Symptoms are seen immediately or up to 4 days after catheter withdrawal [2, 3]. Transient hemostasis upon catheter insertion results in exfoliation when the catheter is removed and leads to bleeding.[3, 7, 13] The abdominal pressure rises after catheter withdrawal and standing and movement can also affect bleeding. In some patients, as in ours, SEDH developed before catheter withdrawal.[13, 16]

Risk factors for SEDH elicited by epidural anesthesia

Reported risk factors are shown in Table 1. Our patient, was a short (135 cm) elderly woman with osteoporosis and scoliosis. Her oral antiplatelet treatment was stopped 7 days before surgery.

We started enoxaparin 16.5 hr after the operation to prevent deep vein thrombosis while the epidural catheter was in place. Although there are some reports of SEDH related to the treatment with enoxaparin[11, 14] according to its manufacturer, the SEDH risk of patients receiving epidural anesthesia did not increase when the drug was delivered within 24 hr after surgery.[8]

Symptoms of SEDH during epidural anesthesia via catheter infusion

Although SEDH usually elicits severe pain[1, 6] it can be masked by the analgesic effect of epidural anesthesia.[2, 5] Consequently, the diagnosis of SEDH can be delayed.

Spinal cord symptoms were reported in 2 - 3% of patients receiving continuous epidural anesthesia. When such symptoms are observed, its cessation is recommended because the neurological symptoms due to excessive nerve block effects improve immediately.[4, 14, 5]

Our patient developed painless paraparesis during the postoperative administration of continuous epidural anesthesia. It improved transiently after stopping the epidural block and worsened thereafter. Her clinical course was important for the diagnosis of SEDH related to epidural anesthesia.

Treatment of SEDH

Severe paralysis and urinary retention due to SEDH can be addressed by posterior decompression with hematoma removal. In patients with mild neurological symptoms that tend to show early improvement, conservative therapy under close observation may be indicated. The neurological prognosis is affected by factors such as the severity of preoperative neurologic deficits and the speed of deterioration, the location and size of the hematoma, the patient age, signal changes in the cord on the preoperative MRI studies, and the interval between the clinical onset and surgery.[13, 16]

Early surgical intervention and our patient's incomplete paresis that progressed relatively slowly contributed to her good neurological prognosis despite her severe urinary retention.

Conclusion:

The diagnosis of SEDH arising during epidural anesthesia can be hampered by its analgesic effect. Paraparesis during epidural anesthesia requires close monitoring of the clinical course to rule out the presence of SEDH.

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