

## ภาวะขาอ่อนแรงภายหลังการดมยาสลบร่วมกับการฉีดยาชา เหนื่อช่องไขสันหลัง

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### บทคัดย่อ

ถึงแม้ว่าการบริหารยาชาเฉพาะที่ทางระบบประสาทส่วนกลาง เป็นวิธีที่ปลอดภัย แต่ก็มีโอกาสเกิดภาวะแทรกซ้อนได้ ภาวะแทรกซ้อนทางระบบประสาทเป็นภาวะแทรกซ้อนที่รุนแรง อาจเกิดจากการบริหารยาชาเฉพาะที่ทางระบบประสาทส่วนกลาง หรือจากสาเหตุอื่นๆ คณะผู้เขียนได้รายงาน ผู้ป่วยชาย อายุ 48 ปี เข้ารับการผ่าตัด radical cystectomy with ileal conduit ได้รับการดมยาสลบร่วมกับการใส่สายที่ช่องเหนื่อไขสันหลัง ภายใน 30 นาทีแรก เกิดภาวะความดันโลหิตตกเล็กน้อย ระยะเวลาการผ่าตัดนาน 20 ชั่วโมง หลังผ่าตัดผู้ป่วยเกิดอาการชาและกล้ามเนื้ออ่อนแรงบริเวณขาข้างซ้าย ส่งตรวจเอกซเรย์และตรวจคลื่นแม่เหล็กไฟฟ้า พบการตีบแคบของช่องด้านข้างกระดูกสันหลังระดับเอวที่ 5 คิดว่าน่าจะเกิดจากการดึงรั้งเส้นประสาท จากการจัดทำ lithotomy

**คำสำคัญ :** การระงับความรู้สึกในไขสันหลังส่วนกลาง , ภาวะแทรกซ้อนทางระบบประสาททำนอนหงาย  
ขึ้นขาหยั่ง

## Case report : Lower extremity neuropathy after combined epidural and general anesthesia

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### ABSTRACT

Although central neuraxial block has been considered a safe anesthetic technique, there still exists side effects and complications. One serious concern of central neuraxial block is neurological complications. However not all neurological complications are caused by neuraxial block. Hence, other etiologies should be investigated before neurological complications can be attributed to neuraxial block anesthesia. We report a case of numbness and motor weakness after continuous lumbar epidural anesthesia in a 48-year-old diabetic Thai male who underwent radical cystectomy with ileal conduit under a combination of general anesthesia and continuous lumbar epidural analgesia. Within 30 minutes from the start of surgery, the patient developed mild transient hypotension. The operation lasted 20 hours. During the postoperative period, the patient complained of numbness and motor deficits. An urgent radiography and a magnetic resonance imaging (MRI) were arranged. The results showed mild lateral canal stenosis of left side L<sub>5</sub>. The patient's symptoms might be attributed to prolonged stretching of the nerves.

**Keyword:** central neuraxial block, neurological complication, lithotomy position

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### Case report

A 48-year-old Thai male weight 50 kg, height 165 cm and ASA class 2 presented with a history of intermittent hematuria and obstructive uropathy secondary to carcinoma of urinary bladder. He was scheduled for radical cystectomy with ileal conduit. He had a history of well controlled type II diabetes mellitus and hypertension. A month previously, his first operation was TUR-P and circumcision which were operated under spinal anesthesia and presented no complications. The preoperative physical examination and biochemical test were BP 130/80 mmHg, HR 70/min, hemoglobin 8.9 g/dl, hematocrit 27%, BUN 14, creatinine 1.4, BS149. Pain management plans included a combined general anesthesia and continuous lumbar epidural analgesia. He was sent to the operating room after obtaining an intravenous access. The patient was monitored with the standard monitoring: ECG, pulse oximeter and automated noninvasive blood pressure cuff. Under aseptic precaution, continuous epidural anesthesia was performed at the L<sub>3-4</sub> interspace to the patient in a right lateral decubitus position. The epidural space was identified by loss of resistance test to

air. An epidural catheter was gently inserted up to 9 cm mark at skin. There was no pain or paresthesia during the insertion. The total volume of 20 ml of local anesthetic/opioid mixture containing 1.5% lidocaine with 3 mg. morphine and 100 µg epinephrine was incrementally injected (5 ml.) following a test dose (3 ml.), without evidence of subarachnoid block or intravascular injection, then continuous infusion throughout surgery of bupivacaine 0.25% was started at a rate of 5 ml/hr. Thereafter, anesthesia was induced by intravenous thiopental 250 mg, fentanyl 50 µg and vecuronium 6 mg through a face mask with isoflurane in a 50% nitrous oxide-oxygen mixture. After tracheal intubation, the patient was placed in a lithotomy position. Within 30 minutes, a mild transient hypotension (BP 85/40 mmHg, HR 65/min) was detected. The patient was treated with intravenous bolus of 200 ml Ringer's lactate solution and a total of 24 mg of ephedrine. The patient remained stable throughout the operation, despite of an estimated of 1700 ml blood loss. The patient was transferred to the throughout the operation, despite of an estimated of 1700 ml blood loss. The patient was transferred to the surgical intensive care

unit after 20 hours of operation. Six hours later, he regained full consciousness and was extubated. However, the patient complained of numbness and weakness of left lower extremity upon awakening. The patient's physical examination revealed the following: fully conscious but in mild discomfort. The musculoskeletal system examination revealed: hip flexor grade 3, hip extensor, knee extensor and knee flexor all grade 4, Extensor hallucis longus grade 1, decrease sensation along L<sub>1-3</sub> dermatome, the reflexes of the limb were normal. Plain X-ray and MRI results of the lumbar spine were normal except mild lateral canal stenosis of left L<sub>5</sub>. The anesthetist decided to remove the sited epidural catheter. With the patient in the lateral position, the epidural catheter was removed uneventfully. The tip of the catheter was found to be undamaged. The patient's conditions gradually improved and symptoms completely disappeared within 2 days.

## Discussion

Regional anesthesia has many benefits especially in the postoperative period. When used alone or combined with general anesthesia for major surgery, it has been shown to reduce post-

operative mortality and morbidity, such as deep vein thrombosis, pulmonary embolism, stroke, myocardial infarction, wound infection and pneumonia<sup>1</sup>

However, the benefits of regional anesthesia must balance with the risks of the neurological injury Which is the most serious complications. Fortunately, many studies of the complications of regional anesthesia have confirmed that neurological injuries are rare and usually involve a single spinal nerve<sup>2-6</sup>. Neurological complications associated with neuraxial block may be divided into two categories.

1. Unrelated to anesthesia such as patient position, surgical retractor, surgery trauma, tourniquet long pressure, cast or dressing application and undiagnosed neurologic disease.

2. Related to anesthesia, such as trauma to nerve fiber by needle or catheter, anterior spinal artery syndrome, space occupying lesion such epidural hematoma or an abscess

Several risk factors have been described in various studies in association with neurological complications following regional anesthesia, including paresthesia during needle placement or pain during injection

of local anesthetic, hypotension, anticoagulation, use of lidocaine<sup>5,7,8</sup>, pre-existing neurological condition including spinal stenosis, position during and after surgery and arteriosclerosis

Patient position (especially lithotomy position) can often cause injury to the sciatic nerve, femoral nerve or common peroneal nerve. External pressure on a nerve could compromise its perfusion, disrupt its cellular integrity, and eventually result in edema, ischemia, and necrosis. Lower extremity neuropathies have been associated with improper lithotomy positioning, high lithotomy position and especially prolonged duration (greater than 2 hours). Patient risk factors include hypotension, thin patient, old age, and a history of vascular disease, diabetes, or smoking. The prolonged operation time in the lithotomy position has been accepted as the main reason for increasing the risk of neuropraxia in the lower extremity as a result of greater pressure being exerted on the nerves.

Common complications associated with epidural catheters include dural puncture, blood vessel puncture, shearing or kinking of the catheter, accidental subdural Catheterization<sup>9,10</sup>,

infection<sup>11</sup>, abscess formation<sup>10</sup> and neurological complication. Rare, potentially devastating neurological complications include spinal nerve neuropathy, anterior spinal artery syndrome, adhesive arachnoiditis and space occupying lesions. (hematoma or abscess).

Tanaka et al<sup>12</sup> have observed that the incidence of paraesthesia was 0.16% in patients receiving epidural anesthesia and analgesia. Although there were reports on transient neuropathy related to epidural puncture, no serious neurological complication occurred. Griebler & colleagues studied the complications after thoracic epidural catheterization in a series of 4,185 patients and found that the overall incidences of catheter related complication was at 3.1%. In this study they also noted that 0.2% of the patients had postoperative radicular type pains, which responded to the withdrawal of catheters in all cases. There were no permanent sensory or motor deficits attributable to epidural catheterization.

Transient nerve root irritation (TNR) often occurs after spinal anaesthesia and is characterized by burning pain sensations in the low back

and buttocks, radiation to lower limbs. Pain appears may an hour after complete recovery from anaesthesia and usually disappears in the next few days. Transient neurological symptoms rarely occur after epidural analgesia, although this syndrome has been reported in adults. Local anaesthetics injected into the epidural space may undergo transmeningeal transfer into cerebrospinal fluid, mostly via arachoid villi in dural cuff region. Repeated injections or continuous infusion may result in increase intrathecal concentrations of local anaesthetic in the spinal fluid causing neurotoxic effect even after epidural analgesia. This impression has been confirmed by Avidan and colleagues<sup>13</sup>, who recently reported the radiological diagnosis of enhanced (inflamed and swollen) nerve roots at MRI.

We reported this case to document an uncommon event of postoperative neuropathy. The patient developed motor and sensory impairment after epidural catheterization. Risk factors of neurological sequelae in this case were spinal stenosis, prolonged lithotomy position, incidence of intraoperative hypotension and diabetes. The review of systems and physical examination suggested that the femoral nerve (L<sub>1-3</sub>)

and the L<sub>5</sub> nerve root were injured. The X-ray and MRI were performed to discover the etiology. They showed no evidence of nerve root irritation or other causes of neurological deficit except the mild lateral canal stenosis of the left L<sub>5</sub>. We believed that lithotomy position may have caused post-operative neurological complication. The femoral nerve lesion was attributed from kinking and ischemic pressure at Poupard's ligament from prolonged flexion in the lithotomy position. The L<sub>5</sub> nerve root lesion might have attributed from spinal stenosis and lithotomy position which caused a reduction of physiologic lordosis of the lumbar column that may jeopardize blood perfusion of the nerves or of a subset of nerve fibers may increase their vulnerability to injury.

### Summary

We report this case of neuropathies caused by lithotomy position and other risk factors. It highlights the importance of monitoring patients for any sensory or motor deficit, particularly after epidural catheter insertion and lithotomy position. Post-operative neurological complications that affect the patient quality of life can be reduced by taking necessary precautions.

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