

CAUDA EQUINA SYNDROME BY SUBDURAL HYGROMA AFTER LUMBAR SPINE SURGERY USING EPIDURAL BLOCK

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ABSTRACT

We experienced a case of cauda equina syndrome after spine fusion surgery. An 82 years old man received L4/5 fusion under general and epidural anesthesia. After surgery, He could not dorsiflex both ankles and constrict his anus. A magnetic resonance imaging showed subdural hygroma at L3. Direct puncture was done using an epidural needle using X-ray fluoroscopy and clear fluid 10 mL was aspirated. The hygroma decreased and his symptom improved after aspiration. The surgical procedure might injure dura or arachnoid.

KEYWORDS: Cauda equina syndrome, spine surgery, epidural block.

INTRODUCTION

Cauda equina syndrome is a compressive neuropathy of lumbar or sacral nerve roots, which is a rare complication of lumbar spine surgery,^[1] or epidural or spinal anesthesia.^[2] We experienced a case of cauda equina syndrome who received posterior lumbar spine fusion under epidural and general anesthesia.

CASE REPORT

An 82 years old man (height 156.8 cm and body weight 58.6 kg) has had lumbago for 3 months without any leg or foot symptoms and was diagnosed as lumbar discopathy. He had histories of cerebral infarction at 75 years old, surgery for inguinal hernia at 76 years old and lumbar spine surgery (no details) at 79 years old, and has hypertension since 79 years old. His chest X-ray, electrocardiogram, blood and urine laboratory data were in normal ranges. He has taken ticlopidine 100 mg, amlodipine 5 mg, and nicergoline 10 mg per day.

Posterior spine fusion of L4/5 was scheduled. Ticlopidine was stopped 14 days before surgery and changed to cilostazol 200 mg per day. Cilostazol was stopped 2 days before surgery.

He took amlodipine 5 mg in the morning on the day of surgery. General anesthesia was induced with midazolam 3 mg, propofol 100 mg, fentanyl 250 µg, and flurbiprofen 50 mg was administered at induction. After muscle paralysis with vecuronium 10 mg, intratracheal intubation was performed using clear tracheal tube (internal diameter 8.0 mm). Then he was put in the prone

position, and an epidural block was performed at S1/S2 using a 20 G Tuohy needle by median approach with loss of resistance method. No aspiration was observed and levobupivacaine 0.75% 3 mL diluted with saline 6 mL was administered. Anesthesia was maintained with oxygen 1 L/min, nitrous oxide 1 L/min, propofol 1.5 – 5 mg/kg/h and remifentanyl 0.005 – 0.3 µg/kg/min. Posterior fusion of L4/5 was done without any problems in 1 h and 56 min. Before closure, surgical field was washed by saline. Duration of anesthesia was 2 h and 50 min. He was extubated in the operating room and went back to the ward. He was clear and no pain and numbness, but could not dorsiflex both ankles and constrict his anus. Magnetic resonance imaging (MRI) was performed. Subdural effusion compressed cauda equina at L3 (Figure 1-B).

Emergency aspiration of the effusion was performed at prone position under sedation with midazolam 2 mg and fentanyl 200 µg using X-ray fluoroscopy. Aspiration was done using an 20G epidural needle and the total aspirated volume was 10 mL. The components were sodium 150 mEq/L, chlorine 111 mEq/L, potassium 3 mEq/L, and glucose 69 mg/dL. After the procedure, MRI showed decrease of effusion (Figure 1-C). His ankle movement recovered and could constrict his anus after the procedure. No further complication occurred.

Figure legend

MRI

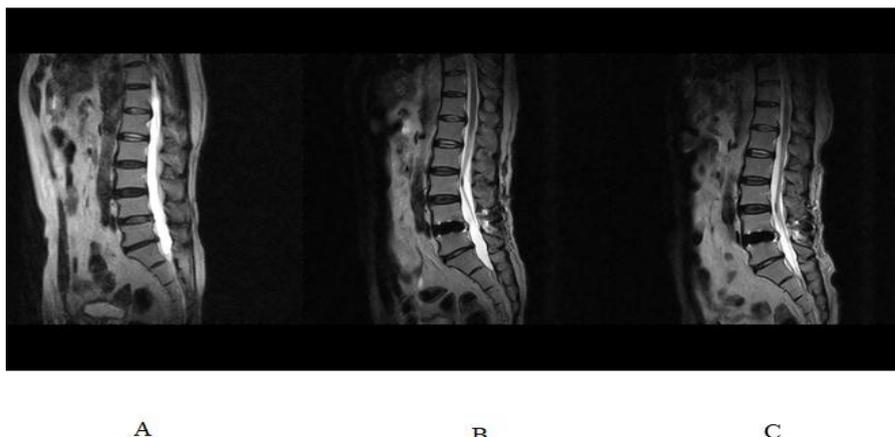


Figure 1: MRI

A. Before surgery

B. After spine fusion

Subdural effusion at L3 compresses cauda equina. Concave at L5 dura.

C. After aspiration

Subdural effusion and compression of cauda equina decrease.

DISCUSSION

The cauda equina syndrome showed bowel or bladder dysfunction and loss of lower extremity sensory and motor disturbance.^[3] Our case showed disturbance of flexion of both ankles and constriction of anus. The MRI indicated compression of cauda equina by subdural hygroma.

Lumbar epidural anesthesia induced paraparesis was reported,^[4] which occurred immediately after anesthesia. We performed an epidural block under general anesthesia, therefore, we did not know when disturbance of flexion of both ankles occurred. We observed subdural hygroma, which was the direct cause of cauda equina syndrome. Subdural extra-arachnoid cerebral spinal fluid (CSF) collection was rarely observed after lumbar spine surgery. CSF flows into subdural space through pinhole of arachnoid.^[5] The pinhole or laceration of arachnoid might occur by epidural puncture or surgical procedure. The aspirated fluid had sodium 150 mEq/L, chlorine 111 mEq/L, potassium 3 mEq/L, and glucose 69 mg/dL. The CSF has glucose 50 – 80 mg/dL and chlorine 118 – 130 mEq/L. Levobupivacaine and saline has sodium 154 mEq/L and chlorine 154 mEq/L. From these data, the aspirated fluid could include serum. However, inclusion of CSF, saline, or levobupivacaine could not be confirmed. Therefore, hygroma might be made by serum from surrounding tissue and CSF by arachnoid injury with surgical procedure or epidural puncture, or saline and/or levobupivacaine with epidural injury by surgery or epidural puncture. The hygroma was at L3 level. The epidural puncture was at S1/2 and spine fusion was L4/5. Therefore, surgery is more likely to be guilty to injure dura or arachnoid.

Wilkinson et al. reported that a symptomatic thoracolumbar subdural hygroma was successfully treated with lumbar puncture.^[6] We also successfully decreased hygroma and improved symptom by direct puncture of hygroma under X-ray fluoroscopy.

In conclusion, we experienced a case of cauda equina syndrome by hygroma after spine fusion surgery. Aspiration of hygroma by direct puncture of hygroma improved symptom.

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