Case Report

Spinal subdural hematoma with cauda equina syndrome: A complication of combined spinal epidural anesthesia

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Abstract

Combined spinal-epidural anesthesia (CSE) is considered safe in lower limb surgeries. We report a case of sudden neurological deterioration in a stable postoperative patient who was given CSE for total knee replacement and low molecular weight heparin in postoperative period. On the 4th postoperative day, she developed sudden onset weakness in left lower limb along with bladder incontinence. Magnetic resonance imaging spine revealed a subdural hematoma at L2-L3 level. Immediate laminectomy along with cord decompression was done and patient recovered well except for a persistent foot drop on left side.

Key words: Cauda equina syndrome, combined spinal epidural anesthesia, epidural analgesia, subdural hematoma

Introduction

Subdural spinal hematoma is an extremely rare complication of spinal and epidural anesthesia and may lead to cauda equina syndrome, bowel bladder dysfunction or even complete permanent paraplegia.[1]

Case Report

A 60-year-old female patient was diagnosed to have osteoarthritis of right knee joint and was advised knee arthroplasty. She was not on any anticoagulant drug and her preoperative coagulation profile was normal. Patient was operated under CSE. Intra-operative period was uneventful. Enoxaparin sodium 40 mg (LMWH) was started 9 h after surgery and was followed by once daily dose. Physiotherapy and walker aided ambulation was started on 1st postoperative day. Foot pump and compression stockings were applied for deep vein thrombosis (DVT) prophylaxis. On day 2, the epidural catheter was removed 13 h after last dose, and she was discharged on 3rd postoperative day in stable condition. At the time of discharge, her neurological status and bowel-bladder functions were within normal limits. Surgical wound was healthy with good range of motion at right knee.

On 4th postoperative day, she developed sudden onset pain in the lower back which was radiating to left lower limb. The pain was followed by loss of sensation and weakness in the left lower limb. Urinary incontinence was also present. Patient was immediately brought to the hospital. On examination, the patient was conscious and her higher mental functions were normal. There was decreased sensation in L2-L3 dermatome. Power at ankle and foot was 3/5. Peri-anal hypoesthesia was present with bowel and bladder involvement. Urgent magnetic resonance imaging (MRI) of the spine was done. It showed a large subdural hematoma, which was compressing the thecal sac at L2-L3 level. All anti-coagulants were stopped. Laminectomy with decompression of spinal cord and evacuation of hematoma was done on the emergent basis. Postoperatively patient recovered well with complete control over bowel and bladder functions, but foot drop on the left side persisted after 6 months of follow-up.

Discussion

Combined spinal epidural anesthesia though safe has been

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associated with uncommon neurologic complications like subdural hematoma.[2,3]

Venous stasis, endothelial injury and hypercoagulable conditions contribute to the postoperative development of DVT which can be a life-threatening complication. In surgeries as total knee and hip replacement, direct injury to the large vessels of lower limb predispose patients for increased chances of DVT especially in absence of postoperative anticoagulation prophylaxis. However, prophylaxis must be balanced against the risks for postoperative bleeding and epidural hematoma.[4]

Spinal and epidural anesthetic procedures in combination with anti-coagulant therapy represent the fifth most common cause of spinal hematoma.[5] Dahlgren *et al.*[6] prospectively followed 18,000 consecutive regional blocks over 3 years. Three cases developed paraplegia due to subdural hematoma which was due to underlying coagulation disorder. Vandermeulen *et al*. and Horlocker and Wedel highlighted the risk of spinal hematoma which gets aggravated by concomitant administration of anticoagulants and anti-platelet drugs.[7,8] Fryburg *et al*.,[9] reported two patients who suffered from spontaneous acute spontaneous subdural hematoma while taking fondaparinux for venous thromboembolism prophylaxis. Our patient was on LMWH as part of DVT prophylaxis. It is recommended that LMWH should be used once daily and to be started 12-24 h postoperatively, especially when indwelling spinal catheter are present or when concomitant antiplatelet or oral anticoagulant medication is being given.[8]

Patients who develop extra or subdural hematoma usually present with acute back or radicular pain radiating to limbs, followed by progressive sensory and motor involvement in either one or both the lower limbs along with saddle anesthesia and bowel and bladder dysfunction.[7] In most of the cases, these symptoms usually develop shortly after the procedure with mean age of onset being 30 h after operation,[10] but in our case, the patient developed sudden onset neurological symptoms suggestive of cauda equina syndrome on 4th postoperative day. Urgent MRI was done to confirm the diagnosis and patient was immediately taken to the operation theatre where laminectomy with decompression of spinal canal and evacuation of hematoma was done. Gradual recovery occurred in the immediate postoperative period. According to Vandermeulen *et al.*, neurosurgical intervention must be sought immediately, because recovery is unlikely if surgery is postponed for more than 8 h.[7]

This case highlights that even in the absence of an existing spinal pathology and carefully administrated spinal-epidural anesthesia, CSE may cause dreaded neurologic complication like subdural hematoma especially in the presence of anti-coagulant therapy. Hence frequent 4 hourly neurological examination is essential for early detection of hematoma, which should be continued 24 hours postoperatively following a neuraxial block or upto 24 hours following catheter removal if patient is anticoagulated.[11] In a case of suspected cauda equina syndrome, the patient should be investigated and urgent decompression should be done on emergent basis to prevent permanent neurological sequelae.

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