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OLGU SUNUMU | CASE REPORT

Acute Transverse Myelitis Following Spinal Anesthesia: A Case with Systemic Lupus Erythematosus

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Abstract

Objective: Spinal anesthesia is a widely used and safe technique in surgical practice. However, although rare, it may cause serious neurological complications. One of these is acute transverse myelitis (ATM).

Materials and Methods: A 45-year-old woman with a known diagnosis of systemic lupus erythematosus (SLE) underwent a transobturator tape (TOT) procedure under spinal anesthesia.

Results: Twenty-four hours after the operation, she developed sensory loss starting at the T8 level and urinary retention. Spinal MRI revealed no pathological findings, and cerebrospinal fluid analysis was normal. Based on the clinical evaluation, autoimmune-related transverse myelitis was considered. The patient was treated with intravenous methylprednisolone (1 g/day for 10 days). Following steroid therapy, her symptoms significantly regressed.

Discussion and Conclusion: In this case report, the clinical presentation, diagnosis, and treatment process of acute transverse myelitis developing after spinal anesthesia in a patient with SLE are discussed.

Keywords: Spinal anesthesia, transverse myelitis, systemic lupus erythematosus, neurological complication

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Introduction

Spinal anesthesia is widely utilized as a safe and effective anesthetic method. However, it is associated with complications such as hypotension, nausea and vomiting, post-dural puncture headache (PDPH), and nerve injury. Neurological complications are observed more rarely in comparison [1]. Among neurological complications, spinal hematoma, infection, and neurotoxicity occur more frequently, whereas acute transverse myelitis (ATM) is exceedingly rare. Transverse myelitis is a clinical condition characterized by transverse inflammation of the spinal cord, leading to loss of motor, sensory, and autonomic functions. ATM is a rare, acquired neuroimmune spinal cord disorder that can present with rapid-onset weakness, sensory alterations, and bowel or bladder dysfunction. In 1948, British neurologist Dr. Suchett-Kaye, practicing at St. Charles Hospital in London, first coined the term "acute transverse myelitis" while reporting a case of rapidly progressing paraparesis at the thoracic sensory level occurring as a post-infectious complication of pneumonia [2].

ATM typically manifests as an independent disease, often as a post-infectious complication; however, it can also be associated with neuroinflammatory disorders such as acute disseminated encephalomyelitis (ADEM), multiple sclerosis (MS), myelin oligodendrocyte glycoprotein antibody-associated disease (MOGAD), neuromyelitis optica spectrum disorder (NMOSD), and systemic lupus erythematosus (SLE) [3]. Clinical features, diagnostic evaluations, and acute and chronic treatments vary among these forms of ATM. ATM may arise idiopathically or in association with certain infections, systemic inflammatory autoimmune diseases, and central nervous system disorders. SLE is a chronic autoimmune disease of unknown etiology that can affect nearly every organ in the body. Immunological abnormalities, particularly the production of a range of antinuclear

antibodies (ANA), are a hallmark of the disease. Myelitis is a rare but potentially fatal condition in SLE, occurring in approximately 1% to 2% of SLE patients in some cohorts. Patients typically present with bilateral, though not always symmetrical, acute or subacute paraparesis or quadriparesis, sensory disturbances localized to a spinal sensory level, and bowel or bladder dysfunction. In this article, a case of transverse myelitis developing after spinal anesthesia in a patient diagnosed with SLE is discussed.

Case Report

A 45-year-old female patient with a known diagnosis of systemic lupus erythematosus had a medical history of pituitary adenoma and mycosis fungoides. Her current medications included duloxetine 30 mg, nifedipine 30 mg, mycophenolate 500 mg, hydroxychloroquine 200 mg, and prednisolone 5 mg. The patient, who had been experiencing stress incontinence for one year, was scheduled for a transobturator tape (TOT) procedure by the urology clinic. Physical examination revealed bilateral normal breath sounds, and no pathology was detected on the posteroanterior (PA) chest X-ray. Electrocardiography showed sinus rhythm, and laboratory values were within normal limits.

Spinal anesthesia was performed for the TOT surgery. Spinal anesthesia was administered seamlessly in the sitting position at the L4-L5 interspace using a 25-gauge Quincke spinal needle (Egemen) on the first attempt without any complications. A dose of 15 mg of 0.5% hyperbaric bupivacaine was administered, and no pain or paresthesia occurred during needle placement or injection. Following a two-hour surgical procedure, the patient was transferred to the recovery room. After a 30-minute follow-up with stable hemodynamics and vital signs, she was transferred to the urology ward. Twenty-four hours postoperatively, the patient developed loss of sensation in the lower extremities, urinary retention, and fecal incontinence. Neurological examination revealed bilateral paresthesia starting from the T8 level.

To evaluate for potential etiologies such as spinal epidural hematoma, abscess, or other compressive lesions that could account for this clinical presentation, a contrast-enhanced MRI covering the entire spinal axis (cervical, thoracic, and lumbosacral) was performed postoperatively, which revealed no pathological findings. Simultaneously, a consultation was requested from the neurology clinic. In accordance with the consultation, a lumbar puncture (LP) was planned for diagnostic purposes. The LP was performed appropriately, and samples were collected. Analysis of the cerebrospinal fluid (CSF) showed no oligoclonal bands, leukocytes, or erythrocytes. CSF biochemistry was evaluated as follows: glucose 56 mg/dL, sodium 143 mmol/L, micro total protein 230 mg/L, potassium 2.88 mmol/L, and chloride 126 mmol/L; no significant findings were identified. Serum testing for aquaporin-4 antibodies (AQP4-IgG) was performed to rule out neuromyelitis optica spectrum disorder (NMOSD), and the result was negative. However, myelin oligodendrocyte glycoprotein antibody (MOG-IgG) testing could not be conducted due to institutional laboratory limitations.

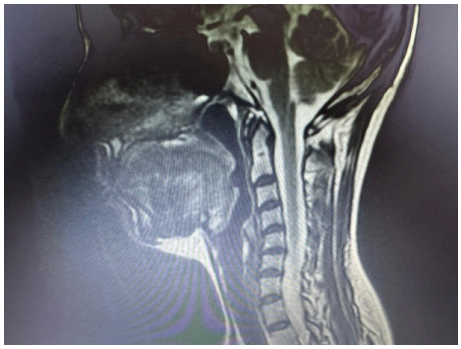

Figure 1. Cervical MRI: central involvement at the C4-C5 level.

Despite the absence of significant laboratory and imaging findings for a definitive diagnosis, intravenous methylprednisolone was initiated at a dose of 1 g/day for 5 days based on the clinical presentation. On the 5th day of treatment, a follow-up MRI scan revealed central linear enhancement at the C4-C5 level (Figure 1). The newly identified findings on MRI, combined with the patient's current clinical status, were evaluated in favor of ATM. The patient was then transferred to the neurology clinic for further investigation and treatment. Comprehensive diagnostic evaluations conducted by the neurology department, including extended autoantibody panels and infectious etiologies (viral and bacterial PCR assays, serological markers, and cultures), yielded no significant or pathological findings. Steroid therapy was completed to 10 days at 1 g/day. At the end of the 10-day treatment, urinary retention and fecal incontinence resolved. Although the hypoesthesia did not disappear completely, it significantly improved. The patient was discharged with these findings. In the follow-up examination one month later, it was observed that all symptoms had completely resolved.

Written informed consent was obtained from the patient for the publication of this case report and any accompanying images.

Discussion

Although ATM is extremely rare following spinal or epidural anesthesia, sensory deficits and sphincter dysfunction occurring within 24 hours may be observed, as seen in this case [4,5]. While SLE is an independent risk factor for myelitis, surgical stress or physical neuraxial trauma may serve as triggering factors. However, there is no evidence in the literature proving a direct effect of the administered local anesthetic agents. Given the patient's underlying systemic lupus erythematosus, a condition independently associated with inflammatory myelopathy, the clinical presentation should be interpreted as a temporal association rather than a proven causal effect of spinal anesthesia. Neurological findings developing after spinal anesthesia must be evaluated emergently. Compression should be promptly ruled out, and early lumbar puncture along with immunological assessment should be performed. Once hematoma and infection are excluded, the possibility of ATM development should be considered, particularly in patients with pre-existing autoimmune diseases. Early diagnosis and high-dose steroid therapy are of critical importance in preventing permanent sequelae [6].

In patients with most types of systemic autoimmune disorders, ATM episodes are managed similarly to acute idiopathic transverse myelitis (TM). Acute episodes of idiopathic TM are typically treated with short-term high-dose intravenous glucocorticoid therapy, with or without plasma exchange (PLEX). Intravenous glucocorticoids have long been recognized as the standard of care and first-line treatment for acute idiopathic TM. This treatment consists of methylprednisolone (from 30 mg/kg/day up to 1000 mg/day) or dexamethasone (120 to 200 mg/day for adults) for three to five days [3,7]. Longer or more aggressive glucocorticoid regimens may be required depending on clinical progression and radiological parameters. Furthermore, cyclophosphamide may be beneficial in severe cases of myelitis secondary to systemic lupus erythematosus [8].

The discrepancy between the T8 clinical sensory level and the C4-C5 lesion on follow-up MRI represents a clinical limitation of our study, which may be attributed to early disease evolution.

Conclusion

In conclusion, although ATM is a rare clinical entity following central blocks, it can cause severe permanent neurological complications. Therefore, it should be kept in mind that sensory loss, urinary retention, and fecal incontinence, especially in patients with autoimmune diseases such as SLE, may be the initial findings of ATM following central blocks. Initiating early steroid therapy in such patients is of high importance in preventing permanent neurological deficits.

Conflicts of Interest

The authors declare no conflicts of interest.

Ethics Statement

Written informed consent was obtained from the patient for the publication of this case report and any accompanying images.

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