



Regional Anaesthesia Management in a Patient with Leprosy: Rare Case with Rare Application

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Leprosy is a chronic infectious disease that is caused by *Mycobacterium leprae* and affects the skin and nerves. Patients with leprosy having related peripheral neuropathy and involvement of other organs may have cardiac, respiratory dysautonomia and autonomic dysfunctions. There are very few studies regarding anaesthetic management of patients suffering from leprosy. Moreover, very few studies concerning regional anaesthesia in patients with lepromatous leprosy have been reported. In this study, we aim to assess regional anaesthesia management with combined spinal epidural anaesthesia in a patient who had been followed up with a diagnosis of leprosy for a long time and was scheduled for operation because of a femoral neck fracture.

Keywords: Leprosy, anaesthesia, regional anaesthesia

Introduction

Leprosy is a chronic infectious disease caused by *Mycobacterium leprae* and affects the skin and nerves (1, 2). Patients with leprosy in which peripheral neuropathy and the involvement of other organs are observed may have dysautonomia in the heart and respiratory system and autonomic involvement. Dysautonomia and side effects of the drugs used for the treatment may lead to multiple organ failure (3).

There are relatively few references for the anaesthetic management of a patient with leprosy in the literature. Regional anaesthesia applications to patients with lepromatous leprosy have been reported very rarely (2). Neurological deficits may also be encountered after nerve blocks or regional anaesthesia (3). In this presentation, we aimed to present regional anaesthesia management performed with combined spinal epidural anaesthesia to a patient for whom surgery was planned because of a femur neck fracture and a leprosy diagnosis followed for a long time.

Case Presentaion

Written consent informing that the patient's clinical condition will be shared in a scientific journal was obtained from the patient and relatives. A 74-year-old patient (55 kg, 158 cm) was taken into emergency surgery with the diagnosis of a left femur neck fracture, which was the result of a fall. The patient was taking dapsone tablets 50 mg 3x1 and ketoconazole tablets 200 mg 1 x 1. The possibility of a difficult airway was considered because of the mouth and nose deformities in the preoperative examination. Other system examinations were normal, except for the deformities and sensation loss in bilateral hands and feet. After the patient was taken to the operating room, the monitoring of the electrocardiogram (ECG), pulse oximetry (SpO₂) and non-invasive blood pressure was performed before starting the anaesthesia process. Then, venous cannulation was achieved with a 16-gauge cannula in both arms. Perioperatively, 0.9% of NaCl (10 mL kg⁻¹) was administered. Difficult airway equipment, such as a fibre-optic bronchoscopy, laryngeal mask (LMA) and C-track, were made available to be used in case of difficult intubation.

The patient's preoperative non-invasive arterial pressure was 130/70 mmHg, the pulse was 76 beats min⁻¹ and SpO₂ was 99. The haemogram was within normal limits. In the biochemistry measurements, glucose was 118 mg dL⁻¹, creatinine was 1.44 mg dL⁻¹, blood urea nitrogen was 34 mg dL⁻¹, AST was 52 U L⁻¹ and ALT was 38 U L⁻¹. The atropine sulphate (0.5 mg) test was performed to eliminate autonomic neuropathy. Because the test result was positive, combined spinal epi-

dural anaesthesia was planned. In the attempt implemented with the patient under aseptic conditions in the right lateral position at the L3-4 level, the epidural space was identified entering with a 18-G Tuohy needle with the loss of resistance method. The subarachnoid space was entered by passing a 27-G Quincke tip spinal needle through the epidural needle. After detecting the flow of cerebrospinal fluid (CSF), 2 mL of 0.5% hyperbaric bupivacaine (10 mg) and 25 µg of fentanyl were administered. When the spinal block came to the level of T4-6 by controlling the sensory block level with a 'pin-prick' test, the operation was started with the patient under sedation with 1.5 mg of midazolam applied intravenously. After spinal anaesthesia, the blood pressure fell as far as 99/54 mmHg, 76/44 mmHg and 65/45 mmHg, respectively. A total of 30 mg of ephedrine, as 10 mg at each time, was intravenously administered. After the applications of ephedrine, the patient's blood pressure was raised to 119/66 mmHg. Blood pressure was stable with minimal changes throughout the surgery. The operation lasted 2 h, and approximately 300 ml of haemorrhage occurred during the surgery. The patient was taken to the postoperative recovery room without any problem.

Discussion

Leprosy is a multisystemic disease. It involves peripheral neuropathy and other organ involvement. Neuropathy leads to myopathy, which causes plantar ulceration with numbness, foot drop and joint deformities. It may also cause corneal ulcers and opacity, uveitis, cataracts or glaucoma in the eye. Patients with lepromatous leprosy have nodules and a plaque-like appearance on the skin. These patients can be taken into surgery because of leprosy complications, such as cataracts, joint deformity, plantar ulcers or elective and emergency interventions depending on the systemic diseases (3). Our patient had leprosy for more than 15 years. The patient had mouth and nose deformity, suggesting a difficult airway, blindness and bilateral hand and foot deformities, and was taken into emergency surgery because of the left femur neck fracture resulting from a fall.

A cardiovascular involvement of leprosy was mentioned in numerous reports. It may cause ECG changes, such as congestive heart failure (4) and ST and T wave changes, bundle branch block, extrasystoles and a prolonged QT interval (5). Orthostatic hypotension, baroreflex dysfunction and postprandial hypotension may occur because of the influence on autonomic function (6). It was reported that Valsalva manoeuvre, heart rate and disorders of the response to the standing blood pressure could develop in patients with lepromatous leprosy (7). As a result of degradation in the heart sympathetic function, an increase in heart rate may be prevented by the injection of high-dose atropine (4). Our patient did not have heart failure and ECG changes, and the atropine test performed to evaluate the heart's sympathetic function was also positive.

Hepatorenal failure, which develops depending on the form of leprosy, leads to a prolonged recovery from anaesthesia because of the delay in drug metabolism and clearance (3). The drugs used for treatment (dapsone, rifampicin, clofazimine) also have side effects that can affect many systems; for example, dapsone can cause haemolytic anaemia, methemoglobinemia, agranulocytosis, hepatitis, peripheral neuropathy, psychosis and leprosy reactions (8). There was a minimal deterioration in hepatic enzymes and the renal function tests of our patient. Our patient had been using dapsone for 15 years, but we could not identify any serious side effects.

Mitra et al. summarized the systemic changes and anaesthetic approach and proposed a checklist in patients of leprosy as follows: deterioration in dysautonomia myocardial contractility of the heart and changes such as ischaemia in the heart; a hyper-reactive heart rate and deterioration in blood pressure response, sudden cardiac death and cardiac function changes due to various drugs and possible intubation and extubation. In the respiratory system, dysautonomia, a reduced response to coughing, nasal obstruction and vocal cord involvement can be observed. These conditions may cause a delay in postoperative recovery, an increased risk of aspiration and infection and difficult intubation. Pulmonary function tests, indirect laryngoscopy and aspiration prophylaxis are recommended. The careful implementation of spinal and epidural anaesthesia is emphasized in patients with leprosy for a long time because of increased hypotension and the incidence of urinary retention (4). Neurologic deficits can be encountered after nerve blocks or regional anaesthesia as well (3). The use of regional anaesthesia is controversial in the case of bacteraemia and local infection. However, extradural anaesthesia has been used in the anaesthetic management of infected patients (9). Aseptic meningitis has been reported as a regional anaesthesia complication in caesarean with septicaemia and elective caesarean applications (10). Heppenstall et al. (2) reported a successful combined spinal epidural anaesthesia application for an emergency caesarean in a patient with lepromatous leprosy. We also applied combined spinal anaesthesia on the grounds that urinary retention, sexual impotence, orthostatic hypotension and the evaluation of autonomic function were considered normal, and our patient was thought to have a difficult airway. Anaesthesia management was realised without intraoperative and postoperative complications.

Conclusion

Appropriate assessment before anaesthesia and perioperative adequate monitoring and preparation are important in the management of anaesthesia of patients with leprosy because they may have heart and respiratory dysautonomia and autonomic involvement; in addition multiple organ failure may be seen and may be due to the side effects of the drugs used for treatment. We think that regional anaesthesia can be used as an alternative in leprosy patients without autonomic neuropathy and with a suspicion of systemic involvement and with difficult intubation.

Informed Consent: Written informed consent was obtained from patient who participated in this case.

Peer-review: Externally peer-reviewed.

Author Contributions: Concept - M.U.; Design - M.U., M.Ş.; Supervision - M.D.; Resources - A.S.Ö.; Materials - M.Ş.; Data Collection and/or Processing - D.D.; Analysis and/or Interpretation - M.U., M.Ş., M.A.E.; Literature Search - A.S.Ö., D.D.; Writing Manuscript - M.U., M.Ş.; Critical Review - M.A.E., M.D.; Other - M.U., D.D.

Conflict of Interest: No conflict of interest was declared by the authors.

Financial Disclosure: The authors declared that this study has received no financial support.

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