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Anaesthetic management of an obstetric patient with idiopathic acute transverse myelitis

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ABSTRACT
Idiopathic acute transverse myelitis is a rare focal inflammatory disorder of the spinal cord causing motor, sensory and autonomic dysfunction. We report the successful use of general anaesthesia for caesarean section in a patient with this disease. Potential anaesthetic concerns include autonomic dysreflexia and hyperkalaemia following the use of suxamethonium. Further complicating issues with this patient included psychotic depression and new-onset neuropathic pain on a background of chronic pain symptoms.

Keywords: Anaesthesia; Caesarean section; Transverse myelitis; Autonomic dysreflexia

Introduction

Idiopathic acute transverse myelitis (IATM) is a focal inflammatory disorder of the spinal cord with an annual incidence of only 1-2 cases per million population.[1] It causes acute and variable motor, sensory and autonomic dysfunction which may mimic the symptoms and signs of spinal cord transection.[2] The effects of anaesthesia on disease progression are unknown.

Although transverse myelitis has been described during pregnancy, there is little information about the choice of anaesthetic technique; one case report presented the use of epidural anaesthesia for non-elective caesarean section at 37 weeks of gestation in a parturient with transverse myelitis diagnosed at 20 weeks of gestation.[3] We report the successful use of general anaesthesia for a patient with new-onset idiopathic acute transverse myelitis requiring elective caesarean section.

Case report

A 30-year-old woman G7P2 presented to hospital at 32 weeks of gestation with a one-week history of generalised paraesthesia and weakness. Her symptoms initially involved both feet and then ascended symmetrically over the course of four days to involve her legs, trunk and arms. Bowel and bladder function was unaffected. Significant past medical history included psychotic depression, which was treated with fluoxetine and trifluoperazine, and chronic pain resulting from haematuria loin pain syndrome (previously requiring a right nephrectomy). Additional problems included asthma, obesity (body mass index 37.3 kg/m^2 when booking

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at 12 weeks of gestation), poor venous access and long-standing urinary retention requiring intermittent self catheterisation. Her obstetric history included two deliveries by caesarean section, both under single-shot spinal anaesthesia. These had been performed five and eight years previously. Although the patient had no drug allergies, she was intolerant of both non-steroidal anti-inflammatory agents, due to her asthma, and metoclopramide. On examination she was mildly pyrexial (37.6 °C), with a heart rate of 60 beats/min and blood pressure 120/70 mmHg. Neurological examination demonstrated increased upper limb tone although her lower limb tone was normal. Power was reduced bilaterally and symmetrically. Upper and lower limb power grades were 4/5 and 3/5, respectively, and the patient was unable to stand unsupported. She had a sensory deficit to pinprick and temperature bilaterally, the upper limit of which was determined to be at C4/5. Reflexes and cranial nerve examination were normal and there was no evidence of autonomic dysreflexia.

Blood results showed a haemoglobin of 10.6 g/dL, a mean corpuscular volume of 112 fL/cell (normal range 80-100 fL/cell) and a low vitamin B12 level of 130 ng/L (180-900 ng/L). White cell count, clotting profile, electrolytes, liver function tests and thyroid function tests were all normal. However magnetic resonance imaging (MRI) of the patient's brain and spinal cord revealed swelling in the posterior spinal cord from C2 to C5 (Fig. 1), which was thought to represent an area of inflammation. Further investigations, including syphilis, Cytomegalovirus and Borrelia serology, serum electrophoresis, immunoglobulin levels, complement levels and a plasma autoantibody screen, all proved negative. Additionally, no abnormality was found in the cerebrospinal fluid, therefore a diagnosis of idiopathic acute transverse myelitis was made. Initial treatment included oral methylprednisolone (1 g/day) and paracetamol (1 g/6 h), regular physiotherapy and deep vein thrombosis prophylaxis (subcutaneous heparin 5000 units/12 h). Although the low vitamin B12 level was not thought to be the cause of the MRI abnormality, vitamin B12 (oral 1 mg/day) was given due to macrocytosis.

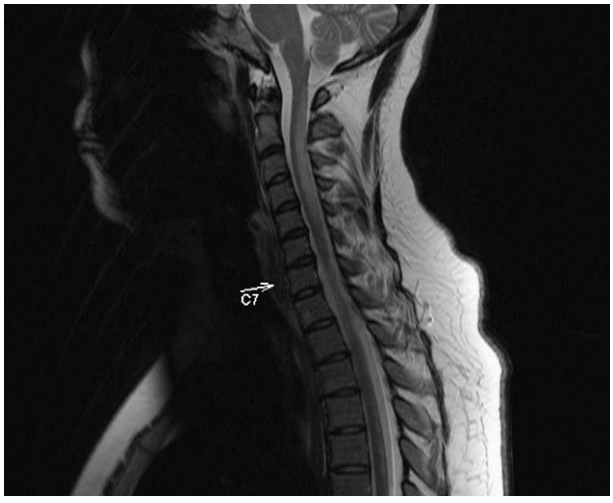

Fig. 1 Sagittal T2-weighted magnetic resonance image of the spine from C1 to T6. A high signal intensity lesion is seen in the posterior spinal cord extending from C2 to C5. A reference marker has been placed at the level of the seventh cervical vertebra.

After seven days, limb weakness worsened and the paraesthesia became painful, particularly in her hands and feet. Following transfer to a neurological tertiary referral centre, methylprednisolone was discontinued and a 5-day course of human normal immunoglobulin (i.v. 42 g/day) was started. The pain in her hands and feet was felt to be neuropathic so oral amitriptyline (25 mg/day) was prescribed together with regular tramadol (100 mg/6 h) and morphine sulphate (15 mg as required). This was ineffective and amitriptyline was discontinued in favour of oral gabapentin which was gradually increased to 1.8 g/day. Further motor deterioration was halted following the completed course of immunoglobulin, but neuropathic pain in all four limbs remained.

Elective caesarean section was planned at 37 weeks of gestation due to previous caesarean deliveries. Anaesthetic concerns included the risks of autonomic dysreflexia and hyperkalaemia after the administration of suxamethonium. Despite this, general anaesthesia was preferred due to concerns regarding neuraxial anaesthesia in a patient with recent onset neurology and the potential for exacerbation of IATM progression.

The patient received oral ranitidine (150 mg) on the day of delivery. A right internal jugular central line had been sited several days earlier due to difficulties in obtaining peripheral access. The patient was given oral 0.3 M sodium citrate (30 mL) and positioned supine with left lateral tilt. Monitoring was by pulse oximeter, electrocardiograph and automated non-invasive blood pressure set to record every minute. Gas analysis included inspired oxygen, end-tidal carbon dioxide, end-tidal nitrous oxide and end-tidal isoflurane. A peripheral nerve stimulator was also used. Following preoxygenation, a modified rapid sequence induction was performed using thiopental 450 mg and rocuronium 60 mg and a 7.0 mm cuffed endotracheal tube was placed. Anaesthesia was maintained with isoflurane and 50% nitrous oxide in oxygen. End tidal isoflurane levels were maintained between 1.0 and 1.2%; the lungs were ventilated with an end tidal carbon dioxide partial pressure between 4.0 and 5.0 kPa.

A live female infant was delivered 6 min after induction of anaesthesia. Oxytocin 5 units i.v. and an infusion of 40 units over 4 h was given. Analgesia were provided with i.v. morphine sulphate 10 mg. Estimated blood loss was 600 mL and a total of 1500 mL crystalloid i.v. was given. The patient was haemodynamically stable throughout surgery, with no evidence of autonomic dys-