Spinal anaesthesia for caesarean section in the presence of respiratory failure and spinal metastases from a soft tissue clear cell sarcoma

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ABSTRACT
Spinal metastases occur in up to 70% of all patients with cancer. However, only 10% are symptomatic. Before considering central neuraxial blockade in patients with malignancy, a history of back pain should be excluded. Anaesthetists should be aware that intrathecal and epidural injections could cause paraplegia if metastases are impinging on the spinal cord. Failure to achieve adequate sensory anaesthesia after central neuraxial blockade or presentation with postoperative paraplegia may indicate the presence of asymptomatic vertebral canal metastases. In this report, the anaesthetic management of a patient with respiratory failure and spinal metastases from a soft tissue sarcoma, requiring caesarean section is described. Sensory anaesthesia extending above a level of imminent cord compression was achieved despite loss of cerebrospinal fluid signal on magnetic resonance imaging.

Keywords: Caesarean section; Malignancy; Spinal metastases; Central neuraxial blockade; Paraplegia

Introduction

Clear cell sarcoma is a rare, aggressive malignant soft-tissue tumour. Chemo- and radiotherapy have not been shown to improve outcome and surgical resection remains the first-line treatment. Prognosis is poor with an overall 5-year survival rate of 47–68%.[1–3] We present the multidisciplinary management of an emergency caesarean section in a patient with respiratory failure and spinal metastases from a primary clear cell sarcoma. Spinal anaesthesia was performed despite cord compression on magnetic resonance imaging (MRI). Our rationale and the potential implications are discussed. Spinal anaesthesia for caesarean section in a patient with non-compressive vertebral metastases has been reported previously.[4] However, to our knowledge this is the first case in which sensory anaesthesia has extended above a level of cord compression where there is loss of cerebrospinal fluid (CSF) signal on MRI.

Case report

A 32-year-old nulliparous woman, presented at 33 + 2 weeks of gestation with acute pleuritic chest pain and dyspnoea. She reported a three-week history of back pain with significantly reduced mobility. She had been diagnosed with a clear cell sarcoma of her left knee two years before conception. Unfortunately, she had decided not to proceed with an above knee amputation or radiotherapy, despite a second opinion two months before conception. During her second trimester, radiofrequency ablation of the primary tumour was attempted in a hospital in China. She had no other relevant past medical history. Antenatal fetal ultrasound scans at 8, 20 and 28 weeks of gestation were performed at our institution.

On admission she had a respiratory rate of 24 breaths/min and arterial oxygen saturations (SpO_2) of 92%. Her heart rate was regular at 110 beats/min with a blood pressure of 124/80 mmHg. On examination she appeared cachectic; her booking body mass index (BMI) was 17 kg/m^2. She had normal heart sounds and bronchial breathing at the left lung base. Neurological examination was normal other than reduced power and areflexia in the left knee. There were no signs of cauda equina syndrome. A 12-lead electrocardiogram showed sinus tachycardia. She was hypoxic with type-1 respiratory failure (PO_2 8 kPa on room air). Chest X-ray showed a left basal consolidation. Blood results revealed a number of abnormalities: mild neutrophilia (9.0×10^9/L), raised C-reactive protein (91.1 mg/L), hypercalcaemia (corrected calcium 2.90 mmol/L) and hypoalbuminaemia (21 g/L). Echocardiography demonstrated good left ventricular function and normal valves.

The patient's initial care was provided in the obstetric high-dependency unit. She was treated with oxygen, intravenous fluids and antibiotics for pneumonia. Therapeutic enoxaparin was administered for a suspected pulmonary embolus (PE). Intravenous morphine patient-controlled analgesia was prescribed for her lower limb and back pain, and a thoraco-lumbar MRI scan

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was performed to diagnose presumed spinal metastases. Twice daily cardiotocography was normal. A computed tomography pulmonary angiography excluded a PE; however, it demonstrated bilateral pleural effusions, compressive atelectasis and multiple nodules consistent with pulmonary metastases (maximum diameter 2 cm). It also showed multi-level vertebral osteolytic lesions. The MRI confirmed diffuse metastatic infiltration of the vertebral column. This was most significant at T4, causing spinal cord compression with no CSF visualised at this level. There was no signal change within the cord to suggest myelopathy. Central canal narrowing was seen at T3 without spinal cord compression and at T7 with spinal cord compression in the presence of CSF (Fig. 1). For optimal fetal outcome, palliative radiotherapy was postponed until 34 weeks of gestation. It was sensitively explained to the patient that if she chose not to have radiotherapy she was likely to become paraplegic. She consented for a caesarean section in the event of extreme deterioration and the inability to communicate.

Forty-eight hours after presentation she became increasingly hypoxic (PO_2 9.8 kPa, FiO_2 80% via Vapotherm Precision Flow® 20 L/min). A detailed multidisciplinary discussion between the patient, her husband and the anaesthetic, obstetric, intensive and palliative care teams took place. The outcome was to proceed with emergency caesarean section in an attempt to improve her respiratory function by relieving diaphragmatic splinting. One dose of betamethasone 12 mg was administered for fetal lung maturation. The anaesthetic options were discussed with the patient. Central neuraxial blockade carried a significant risk of paraplegia in the presence of imminent spinal cord compression. We were also concerned adequate analgesia would not be achieved and that she would not tolerate a supine position due to respiratory compromise. If she underwent general anaesthesia there was a considerable risk of

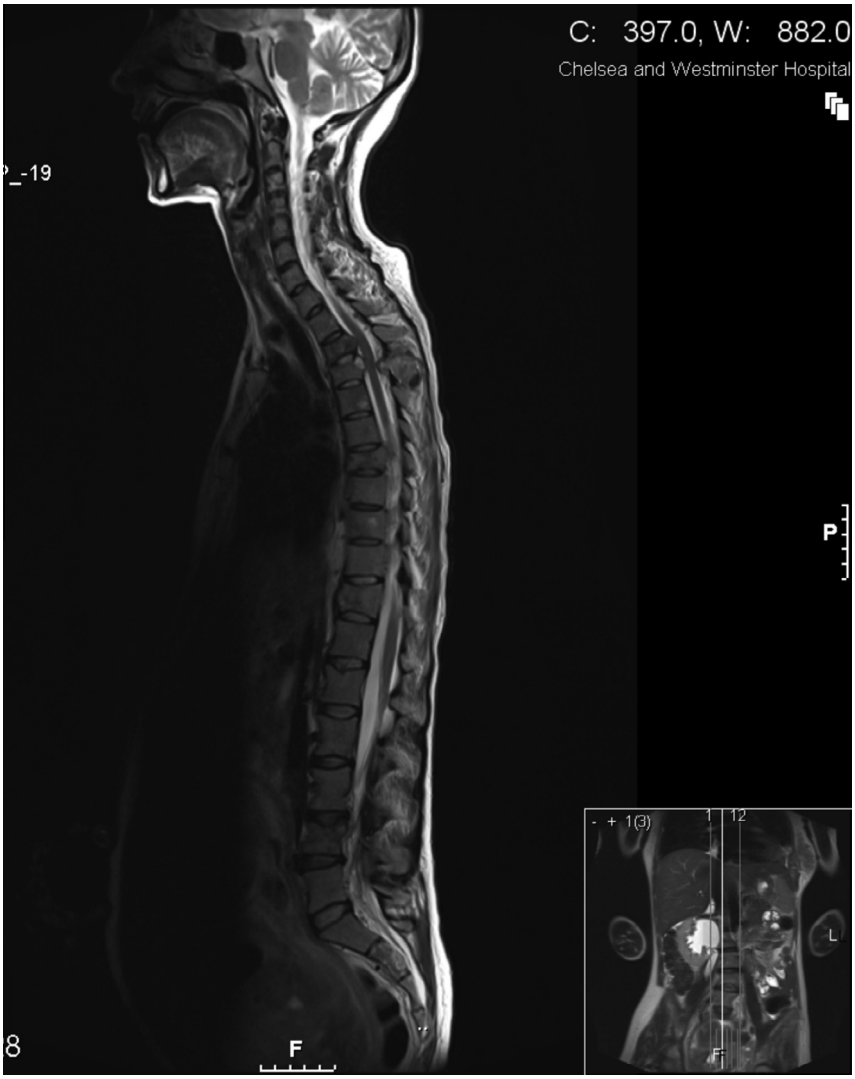

Fig. 1 T2 weighted whole spine MRI showing cord vertebral metastases and spinal cord compression at T3, T4 and T7.