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Neuraxial Anaesthesia in the Parturient with Multiple Sclerosis

ABSTRACT

Multiple Sclerosis (MS) is one of the most commonly acquired neurological diseases in young adults. Due to its pathological process, anaesthetic considerations in parturient women can be difficult and must include the safety of both the mother and foetus. This case report describes the management of pain relief during labour and subsequently a Category 2 caesarean section of a 30-year-old woman (pregnant for the first time or G1P0) with MS, with epidural anaesthesia. A multidisciplinary team approach, and early planning was essential for the success of this case. This case report indicates that epidural anaesthesia is safe in the parturient with MS during labour and that there is no association between epidural anaesthesia and relapse rates of MS in these individuals.

KEYWORDS

Multiple sclerosis, Epidural anaesthesia, Pregnancy

INTRODUCTION

Multiple Sclerosis (MS) is one of the most commonly acquired neurological diseases of the central nervous system (CNS), affecting young people.[1,2] It is an autoimmune disease which is characterised by inflammation and demyelination in the brain and spinal cord. MS affects women two to three times more than men[1-3] with the highest prevalence amongst young genetically susceptible individuals in the North of Scotland, Northern Europe, Northern United States, and Canada. Genome-wide associations studies have identified the human leukocyte antigen (HLA) gene cluster on chromosome 6p21 as the strongest locus for MS.[4] The average age of symptom onset is between 28 to 31 years. This has implications on significant life events, such as pregnancy, which can potentially become a real cause for concern in terms of the neurological, obstetric, and anaesthetic management throughout the course of pregnancy and the peripartum period.[4,5] This case was deemed important for dissemination because the choice of anaesthetic techniques, particularly spinal and epidural neuraxial anaesthesia in pregnant women with MS is still controversial and challenging.[1,3,6]

CASE PRESENTATION

We describe the management of pain relief during labour and subsequently a Category 2 caesarean section of a pregnant (pregnant for the first time or G1P0) 30-year-old women with MS, with epidural anaesthesia. The patient was in full remission throughout her pregnancy and was not on her regular MS medication as advised by her neurologist. An MRI performed during her third trimester showed stable appearance of her disease and no new lesions have been identified.

To ensure optimal anaesthetic management, multidisciplinary discussions involving anaesthetists, obstetricians and the patient's neurologist were undertaken, taking into consideration the patient's wishes for a normal vaginal delivery. The decision to proceed with an epidural anaesthetic technique was then discussed with the patient and it was agreed that this would provide both optimal pain management and a more favourable birthing experience.[7] An epidural was inserted uneventfully, early on during the first stage of labour to ensure that it was working appropriately in case of a category 1 caesarean section. Following the initial test dose of 3 ml of 0.25% bupivacaine and 6 ml of 0.125% bupivacaine were administered as a loading dose with good effect and no immediate or early complications. The patient spent 14 hours with the epidural catheter in situ, being administered a low-dose local anaesthetic and opiate infusion of 0.1% bupivacaine and 2 mcg/ml fentanyl at a rate of 8mls/hr into the epidural space as maintenance.

Low-concentration local anaesthetic mixtures were used to limit neuraxial dosing to the lowest dose possible in order to achieve adequate pain management in this patient with MS during labour and delivery as recommended by the literature.[1,5,8,9] This is due to the demyelinated neurones' increased susceptibility to the effects of local anaesthetics. Although high doses of local anaesthetics may increase the risk of relapse, stressful conditions such as surgery, delivery, and fatigue have been found to be more significant in increasing chances of MS

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relapse.[2] It is therefore very difficult to distinguish between the effects of these stress-inducing factors and local anaesthetic drugs. However, epidural anaesthesia is known to reduce stress and fatigue during the peripartum period and thus, possibly mitigate the harmful effects of these factors.[6] In addition, with an epidural technique the concentration of local anaesthetic in contact with the spinal cord is 3 to 4 times lower than in spinal or subarachnoid anaesthesia, thus diminishing the neurotoxic potential.[9]

Eventually, the patient underwent a category 2 caesarean section due to failure to progress. A mixture of low-dose epidural anaesthetic, i.e. lidocaine 340 mg, adrenaline 0.1 mg and sodium bicarbonate 168 mg, was administered via the epidural catheter prior to caesarean section. The top-up worked with a good effect, achieving a sensory block up to the T5 dermatomes bilaterally. The patient underwent an uneventful category 2 caesarean with the successful use of the epidural catheter inserted early in the first stage of labour. This planned method of anaesthesia allowed the patient and her partner to see and hold their newborn as per the patient's wishes.

Postoperatively, it was agreed with the obstetricians that the patient should remain in central delivery suite for one-to-one monitoring overnight, with transfer to a normal obstetric ward the following morning if well. The patient was prescribed adequate pain relief, including paracetamol, non-steroidal anti-inflammatory drugs (NSAIDs), and opiate patient-controlled analgesia (PCA) as per local protocol. The patient was reviewed in the days following her caesarean section with the anaesthetic team. She was pain-free, had sustained no complications following the epidural catheter insertion, and reported no new neurological symptoms of flare-ups of MS. She was also restarted on her MS medication immediately post-caesarean section by her neurologist. The patient was very satisfied with her anaesthetic care and was very pleased with the birthing experience and pain relief she was provided.

CONCLUSION

In conclusion, effective interspeciality communication and a multidisciplinary patient-centred approach, was of key importance in the management of this parturient with MS during labour and delivery of her child. Early planning was a key determinant in the success of this case, and regular communication and anaesthetic assessment of the patient throughout her labour was fundamental to ensure successful neuraxial anaesthesia and an optimal patient experience. This case report is in-keeping with the literary evidence which indicates that epidural anaesthesia is safe in the parturient with MS during labour and that there is no association between epidural anaesthesia and relapse rates of MS in these individuals.[6,10] It is hoped that this case report will encourage further research in the field of neuraxial anaesthesia in neurological diseases such as MS and improve family planning for these patients and their families.

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