



Obstetrics and Gynaecology Cases - Reviews

CASE REPORT

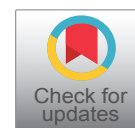
Managing Tetraplegia and its Associated Risks in Pregnancy and Labour- A Case Report

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Abstract

The management of tetraplegic women in pregnancy and labour is a rare event, with sporadic cases reported worldwide. These women often require increased medical input due to potentially life-threatening complications associated with their spinal cord injury. Of these, autonomic dysreflexia is the most widely feared. We present a case of a 37-year-old lady with tetraplegia in the United Kingdom who had been involved in a road traffic accident (RTA) 3 years prior to her pregnancy. We explore how early intervention in controlling pain and blood pressure can prove vital in avoidance of complications. By increasing awareness of the commonly encountered medical issues these women may face, we better prepare healthcare professionals and thus optimise the care we deliver to our future patients.

Keywords

Medical problems in pregnancy, Neurologic, Obstetric complications

Introduction

Managing women in labour with tetraplegia is an uncommon scenario, both in the UK and worldwide [1]. Very few cases have been previously described and in general, pregnancy in tetraplegic patients is rare, due to a variety of obstacles both psychological and physical [2]. The management of these women is dependent on the level of injury to the spine, as well as the severity of the injury. Published reports identify the complications to face these pregnancies as autonomic dysreflexia, recurrent and severe urinary tract infections (UTI) as well the increased risk of preterm delivery [1]. Tetraplegia, also known as quadriplegia, is defined as injury to the spinal cord above the

level of T1. Patients experience severely limited or no mobility and a reduced respiratory reserve which is further reduced with advancing pregnancy [1].

Autonomic dysreflexia is a clinical syndrome, attributed to spinal cord injury (SCI) at or above the sixth thoracic vertebral level, that results in acute and uncontrolled hypertension [3]. Autonomic dysreflexia causes an imbalanced reflex sympathetic discharge, which can lead to potentially life-threatening hypertension, if not recognised and treated immediately. In the case of non-treatment it can cause seizures, retinal hemorrhage, pulmonary edema, renal insufficiency, myocardial infarction, cerebral hemorrhage, and, even death [2]. Complications are a result of sustained and severe peripheral hypertension. The rare nature of these pregnancies, and resultant lack of experience, coupled with the poor understanding of the physiology of these pregnancies as described by Oshima, et al. [4], means that with advances in medical and surgical fields, this area will no doubt require further attention if we are to deliver the best possible care to our patients. Little literature exists exploring how to manage such cases, particularly in the UK and within the structure of the national health service (NHS). Here we present a rare case of a woman with tetraplegia in the UK and discuss the challenges that arose from pregnancy to post-partum and how we can be better prepared in dealing with such issues in future to provide the best care for our patients.

Case Report

This is the case of a 37-year-old primiparous tetra-



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plegic. Three years prior following involvement in a road traffic accident (RTA) she suffered a fracture at C6 and C7, multiple facial fractures, including a fractured jaw. Following the RTA, she had required considerable surgery to stabilise the multiple injuries. Remarkably she was able to mobilise with a walker and a wheelchair occasionally as she had retained some function in the upper limbs.

She presented in the antenatal clinic for routine booking at 13 weeks with a planned pregnancy and was booked under consultant care. A thorough review of her medication was undertaken in a multidisciplinary team setting involving the pharmacist, pain management team and obstetrician. Following a review of her medications at the booking visit, Tizanidine, previously taken for management of spasticity, was stopped as the effects on the foetus were unknown. She progressed through her pregnancy well and required little input until about 36 weeks.

During a growth scan at 36 weeks, the estimated foetal weight was found to have dropped from the 50th to the 5th centile. A plan was made to repeat the scan a week later and perform twice weekly CTG's (cardiotocography) in the interim. At the follow-up visit, growth plotted just below the 50th centile, her blood pressure (BP) was found to be 144/79, having been previously normal throughout pregnancy. A plan was made to monitor her BP twice weekly at home and this remained stable at around 130/75. She was booked for routine induction of labour (IOL) at 41 weeks gestation for post-dates.

Due to the perception of the patient being high risk, a decision was made to commence induction on the delivery suite, so that she would receive one to one care and observations from a midwife, with easy access to anaesthetic and obstetric staff. On admission, her observations, including blood pressure and CTG were normal. IOL using vaginal pessary was initiated. A management plan for labour listed concerns regarding the possibility of a 'silent labour', pain management and blood pressure control. Five hours after insertion of propess, the patient described discomfort and was starting to appear distressed and disoriented at times. A vaginal examination with consent revealed she was 4 cm dilated, and the pessary was removed.

An anaesthetic review was requested to explore the possibility of an epidural, during this, severe clonus of both legs began, giving the impression of a tonic clonic seizure, the only difference being that this was directly related to contractions and the patient was able to communicate that this was due to pain. As a result, her BP began to rise, reaching 185/115. It was clear that pain management was required but this was extremely difficult due to the clonic seizure-like activity. It was therefore agreed that it was necessary to reduce or stop contractions to gain control of the situation and manage

her blood pressure. Two doses of Terbutaline 0.25 mcg were administered 15 minutes apart. Contractions appeared to settle as did the clonus. A decision was made to insert an arterial line for optimal BP monitoring, and she was catheterised.

As it had been 2 hours since her last vaginal examination, she was re-examined prior to the insertion of a spinal anaesthetic. She was found to be fully dilated and a decision for transfer to the theatre was made for safe delivery. A spinal anaesthetic was inserted, and she had an easy forceps extraction of a healthy male infant weighing 2.58 kg. She recovered well postnatally, continuing with self-catheterisation, which she was performing prior to the pregnancy and experienced only a few episodes of urinary incontinence, which were normal for her. She was considered for post-partum thromboprophylaxis, but this was deemed clinically unnecessary, as the patient was in normal BMI range and was very motivated in her mobilisation. She was later discharged with follow up care by a health visitor in the community who checked her episiotomy wound regularly for appropriate healing.

Discussion

The management of tetraplegic pregnant women is an area of limited knowledge and historically not well understood by Obstetrics and Gynaecology trainees [4]. The last case series was in 2008 and published in Australia, to our knowledge, there has only been one similar reported case in the UK in the past 40 years.

We presented a case of a tetraplegic woman who had a planned pregnancy and successfully delivered a healthy baby. Pre-natal counselling is recommended, as all tetraplegic patients have complex medical needs pre-pregnancy. Management of medications is a potential difficulty, with poly-pharmacy and the issue of teratogenicity, being top of the agenda. The goal of ensuring minimal adverse effects to mother, whilst minimizing the potential fetal risks is a difficult balance and requires the input of senior pharmacists.

In the antenatal period, avoidance of triggers is key in prevention. Encouraging stool softeners and a high fibre diet to reduce constipation throughout pregnancy is advisable. Catheterisation, particularly if bladder dysfunction is present should be addressed early on in pregnancy and labour. It is widely accepted that women with spinal cord injuries are also more likely to suffer from recurrent UTIs due to incomplete bladder emptying [5]. In these women, this can lead to pyelonephritis, sepsis and preterm labour [6]. Antenatal management of these women should include regular urine testing and prompt antibiotic administration, and in some cases, prophylactic antibiotic use, such as in those women who have suffered from recurrent UTI's. Intermittent self-catheterisation should additionally be explored early on in pregnancy to reduced incomplete voiding as a culprit. A

low threshold for in-patient admission of these patients is needed not only as the risk of autonomic dysreflexia increases as pregnancy progresses but also due to the risk of preterm delivery, because of decreased or absent sensation, labour may go undetected by the patient, so regular monitoring of uterine tone is important.

The intrapartum obstetric management of these women is usually complex and must address an array of complications, of which autonomic dysreflexia is arguably the most concerning. Autonomic dysreflexia, as mentioned previously is usually associated with injuries of the spine above the level of T6 [3]. It represents an abnormal sympathetic response and can be precipitated by any stimulus below the lesion, for example, pressure increases in the abdomen or dilatation of pelvic organs such as the bladder or uterus, making labour particularly high risk. Symptoms of autonomic dysreflexia manifest as; nausea, a rise in blood pressure and increase in spasticity in the extremities [7]. These symptoms are synchronous to uterine contractions and usually completely resolve after delivery of baby and placenta [8].

Early epidural or spinal anaesthesia should be considered [5], which as demonstrated above, may preempt and reduce spasticity resulting from autonomic dysreflexia. Although our patient experienced peaks of high blood pressure, as mentioned above these were quickly recognised and promptly managed by removal of the trigger. By administering terbutaline to reduce or stop uterine contractions, the trigger can be quickly removed, with resulting cessation of clonus or seizure-like activity. The complexity of the case shares similarities with Eclampsia, in that the mother can present with seizure activity and raised blood pressure.

Prompt treatment of hypertension, as demonstrated in the case above, is important to prevent life-threatening complications. Commonly used drugs include those that have a rapid onset of action, for example Nifedipine, or other Ca⁺ channel antagonists. Glyceryl trinitrate is commonly used by spinal injury services to treat autonomic dysreflexia in non-pregnant patients, and could potentially be used safely in the pregnant population. Other effective agents include hydralazine and prazosin [3].

During labour there are several prophylactic measures that can be taken to increase chances of a safer delivery in the context of the multiple and complex medical issues that can arise. As demonstrated in the case above, maternal blood pressure can be closely and accurately monitored using an arterial line. Frequent or continuous maternal electrocardiogram and pulse oximetry is also advisable.

A further point to consider in the management of these women is that they commonly suffer from chronic pain and as a result may be subject to polypharmacy. As seen in this case, they may require extra input to safely discontinue medications that could be harmful during pregnancy. Involving the pain management team

and senior anaesthetists early on is also advisable as this allows the women to discuss in advance her wishes as well as allowing for safe assessment by anaesthetists.

Post-partum issues include; careful review of the perineum due to increased risk of infection in denervated areas. Consideration for thromboprophylaxis, and assistance with breast-feeding as required.

Being aware of the commonly encountered issues during pregnancy and labour of tetraplegic women, would better prepare healthcare professionals in their management. By allowing for early involvement of key members of the multidisciplinary team, including; obstetricians, spinal rehabilitation physicians, pharmacists, anaesthetists, midwives, physiotherapists, occupational therapists, breast-feeding consultants, paediatricians and neonatologists, we will be in a better position to provide the best care possible. Cohesive multidisciplinary team function is essential.

We report our experience of a safe pregnancy and childbirth in a tetraplegic primiparous lady. In accordance with other published case reports, our case was managed by a multidisciplinary team in a tertiary centre. She had an uncomplicated pregnancy to term and a forceps delivery of a healthy live male infant.

Disclosures

Verbal consent was sought and documented in the patient notes for presentation and publication of her case in the interest of furthering scientific knowledge.

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