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Successful continuous 32-day epidural analgesia in a pregnant woman with cervical cancer

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Summary

A 36-year-old pregnant lady was admitted at 26 weeks gestation with abdominal pain radiating to the groin and back. Physical examination, biopsy of the cervix and magnetic resonance imaging (MRI) confirmed cervical carcinoma. As the patient wished to continue with the pregnancy, a decision was made to perform elective caesarean section at 34 weeks. Due to persistent severe pain despite systemic analgesics, the decision to insert a tunnelled epidural catheter was made in order to provide long term analgesia. Repeated boluses of 0.2% ropivacaine or 0.2-0.25% bupivacaine with morphine, depending on numerical rating scale (NRS) values, were administered. Co-medication consisted of intravenous acetaminophen. Preterm delivery by caesarean section at 32 weeks gestation was performed because the patient went into labour. The epidural catheter was *in situ* for 32 days with no complications.

Introduction

Carcinoma of the cervix is one of the commonest malignancies in pregnancy, with an estimated incidence of 1 in 10 000 pregnancies [1]. A multidisciplinary approach is required to determine the best treatment, based on The International Federation of Gynaecology and Obstetrics (FIGO) staging, fetal gestational age and the mother's decision as to whether to continue versus terminate the pregnancy, as well as the method of termination. Delaying definitive treatment in order to improve fetal outcome may negatively influence tumour progression and overall prognosis.

Additionally, severe abdominal and pelvic pain requires adequate pain relief that may affect fetal development. The US Food and Drug Administration (FDA) classification of drugs during pregnancy places acetaminophen as category B throughout pregnancy, compared with non-steroidal anti-inflammatory drugs (NSAIDs) which are category B during 1st and 2nd trimester, and category D for the 3rd trimester. Opioids should be used with caution and only if the benefits are thought to outweigh the risks, placing them in category C [2]. Regional anaesthesia confers greater safety to the fetus and epidural analgesia is the treatment of choice for labour with no reported side effects for mother or child [3]. Continuous epidural analgesia with low concentration local anaesthetic and opioids administered through a tunnelled epidural catheter provides adequate analgesia for long periods of time with minimal risk of infection or displacement of the catheter [4].

Report

A 36-yr-old caucasian female, 67 kg in weight, 165 cm in height, gravida 3 para 2, was admitted at 26 weeks gestation with a lesion of the cervix. She had a history of vaginal discharge, pelvic and abdominal pain radiating to the groin and back that initially responded well to NSAIDs and acetaminophen. On admission, severe pain impeded gynaecological examination and required general anaesthesia using propofol and fentanyl. Rectovaginal examination demonstrated an ulcerative lesion on the cervix and vagina. Based on cytology, biopsy and MRI scan, clinical staging was a IIIB cervical cancer.

Her management was supervised by a team consisting of an obstetrician, gynaecologist and neonatologist. The patient's decision was to continue with the pregnancy and an elective caesarean section at 34 weeks gestation was planned.

The patient complained of abdominal and pelvic pain and she was treated with acetaminophen and NSAIDs. Pain induced by gynaecological procedures required additional doses of NSAIDs and tramadol. With increasing pain scores, on the 10th day the decision to introduce a tunnelled epidural catheter was taken. After obtaining informed

consent, in the operating room, a 20G epidural catheter (Perifix®, B Braun, Germany) was inserted through an 18G Tuohy needle at the L3/L4 level 5 cm into the epidural space and then tunnelled to the right hip above the iliac crest in the mid-axillary line. Analgesia was achieved using repeated boluses of 10 ml 0.2% ropivacaine with 10 mcg of sufentanil for the first 2 days, then 10 ml 0.2% ropivacaine with 1-2 mg morphine 2-4 times a day depending on the NRS value. On the 19th day, ropivacaine was replaced with 0.2% bupivacaine with good tolerance and reduced NRS values. On the 32nd day, the concentration of bupivacaine was increased to 0.25%. No motor weakness or adverse effects were observed.

At 32 weeks gestation the patient required caesarean delivery due to the early onset of labour. Spinal anaesthesia using 0.5% bupivacaine was performed using a 25G pencil point needle at L4/L5 lumbar level. Epidural analgesia was continued for 1 day after delivery and was *in situ* for 30 days in total. The newborn boy weighed 1980 g had good Apgar scores but required nasal CPAP (continuous positive airway pressure) ventilation for 5 days. No withdrawal symptoms were observed in the baby.

The patient's co-medication consisted of intravenous acetaminophen (1 g 6hrly). Before epidural placement and after its removal, intravenous ketoprofen was prescribed (50 mg 6-8hrly). Intravenous tramadol (100 mg) and metamizol (2.5 g) were prescribed for rescue analgesia. To avoid withdrawal symptoms after removal of the epidural catheter, subcutaneous morphine (5 mg 6hrly) was prescribed for 2 days, then changed to oral extended release morphine (20 mg 12hrly, then 10 mg 12hrly) for the next 5 days.

On the 46th day of hospitalisation the patient was referred to the radiotherapy and oncology specialists for further management.

Discussion

Cervical cancer treatment during pregnancy should be individualised and based on the staging, the woman's desire, or otherwise, to continue with the pregnancy, and the risks related to modifying or delaying appropriate therapy. Continuation of pregnancy with co-existing cancer pain is challenging for both gynaecologist and anaesthetist. Pain management of the pregnant woman requires special consideration with respect to the gestational age of the fetus, drug influence on the developing fetus and potential adverse effects on both mother and foetus. Additionally, a growing fetus may worsen the pain due to direct pressure on the tumour mass.

Epidural analgesia reduces labour pain and is associated with maternal satisfaction and minimal impact on the newborn [4]. Tunnelled epidural analgesia was successfully used in a group of non-pregnant cancer patients for long term treatment and provided adequate pain control [5]. Adoption of this modality during pregnancy is a promising therapy that deserves investigation. To our knowledge, this is the first description of long term tunnelled epidural analgesia during pregnancy.

Aside from displacement, the risk of infection is one of the most frequent complications of tunnelled catheters. Catheter tract infection rate ranges from 6% to 25% [5] with lower rates in fully internalised catheters that have no external elements. Although we did not use a fully internal catheter there were no local, clinical or laboratory signs of infection in our patient with a standard externalised tunnelled epidural catheter. This implies that appropriate fixation and strict asepsis with use of an appropriate antibacterial filter reduced the risk of infection.

While bupivacaine-induced adverse effects, including sensory deficits, motor weakness, urinary retention, constipation, hypotension or neurotoxicity have been reported, especially with higher doses of bupivacaine [6], our patient did not experience any of them except some episodes of constipation. We changed 0.2% ropivacaine to 0.2% bupivacaine due to patient discomfort. In the final stage of labour 0.25% bupivacaine was used with no motor weakness, nor any other adverse effects, and the patient was pain-free. Administration of epidural and spinal opioids always necessitates meticulous monitoring. According to reports, plasma levels of epidurally administered opioids are comparable to those after intragluteal injection. Morphine plasma levels increase rapidly, reaching their maximum 5 min following injection. Morphine concentrations remain several times higher in the cerebrospinal fluid (CSF) than in the plasma [7] and, because of their long duration of action, patient monitoring is mandatory until several hours after discontinuation. The analgesic effects of morphine administered by intrathecal or epidural injection is at both spinal and supraspinal sites allowing a reduction in the total dose administered. In the course of such lengthy treatment, we anticipated withdrawal symptoms after termination of epidural morphine, and therefore introduced subcutaneous injections of 20 mg morphine per day compared with a mean (SD) dose of 5.73 (±1.51) mg a day epidurally. We then converted to oral morphine (40 mg decreasing to 20 mg a day) over 5 days. We did not observe any withdrawal symptoms after stopping the morphine.

The patient's pain was assessed by NRS every 4 hours just before, and fifteen minutes after, the epidural dose. A summary of these values is shown in Figure 1. The overall mean (SD) NRS during the course of hospitalisation was 2.21 (0.49). Data obtained from our case suggest good tolerance for local anaesthetics in combination with morphine. According to reports in the literature, continuous infusion of local anaesthetic is safer due to lower rates of adverse effects and may provide improved pain relief compared with intermittent doses [6]. Combined with a patient controlled infusion pump, it might be most suitable for both long and short term epidural catheters in mobile patients. Unfortunately, we did not have the appropriate patient controlled infusion pump but our experience demonstrates the advantage of intermittent doses over a continuous epidural infusion. The caesarean section was an urgent procedure in which we needed to perform a spinal anaesthetic, but leaving the epidural catheter in place allowed postoperative continuation of epidural analgesia.

Neonatal respiratory insufficiency which appeared several minutes after birth required

nasal CPAP ventilation for 5 days. This may have been due to the respiratory depressive effect of morphine because opioids readily cross the placenta although a recent meta-analysis demonstrated that epidural/spinal opioids had no significant influence on neonatal outcomes in the first 24 hours. However no long term side effects of opioids have been assessed [8]. In our case report the baby did not present any clinical features of a withdrawal synfrome.

In conclusion, we describe a case of long term epidural catheter placement for pain management of a pregnant woman with carcinoma of the cervix. The patient's comfort and lack of side effects demonstrated that it was effective and relatively safe, but further randomised studies are needed.

Acknowledgements

Published with the written consent of the patient.

Competing Interests

No external funding and no competing interests declared.

Image

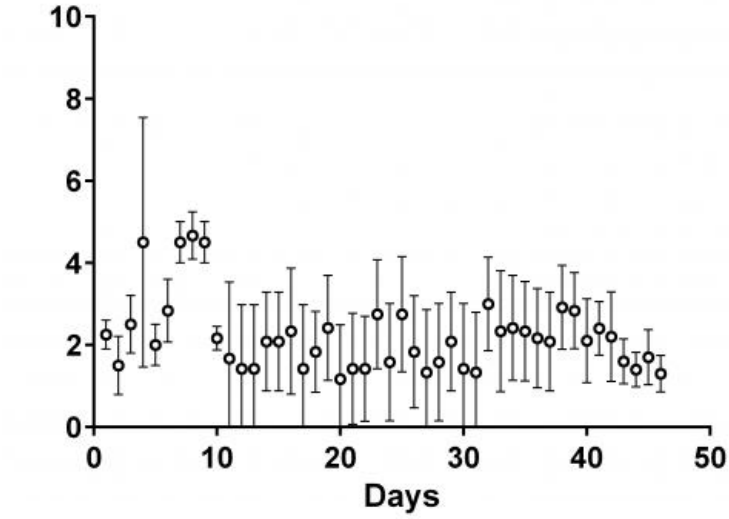

Figure 1. Daily NRS values during the course of the patients stay in hospital. Circle is mean, whiskers are SD.

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