Case Report

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Epidural Morphine Bupivacaine Combination for the Control of Autonomic Hyperreflexia during Labor

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Key Words

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Abstract

The improvement in rehabilitation of young women with spinal cord lesions, combined with the fact that libido, fertility and child bearing remain intact, enables more such patients to conceive. The obstetric team is therefore bound to meet with such patients. Among the various complications of this condition during pregnancy is an acute life-threatening syndrome called autonomic hyperreflexia (AH), caused by an uncontrolled massive sympathetic discharge, which occurs in response to stimuli that reach the spinal cord below the lesion. Most authors agree that the best method of controlling AH during labor is by an epidural block which impedes stimuli from reaching the spinal cord and thus provoking AH. Most authors could not completely abolish AH episodes using different medication epidurally. Herein we present a successful delivery using a combination of morphine bupivacaine epidurally.

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Introduction

Recent years have witnessed an improvement in the rehabilitation and survival of spinal-cord-damaged young patients. Since libido, fertility and child bearing remain the same, young females might become pregnant, and the obstetric team is therefore bound to meet with such patients.

The most severe and life-threatening of the obstetric problems seen in the paraplegic parturient is autonomic hyperreflexia (AH). This syndrome consists of a massive uncontrolled reflex sympathetic discharge, which occurs during labor in up to two-thirds of patients with high spinal cord lesions.

Herewith we report a success in the management of labor of such a patient, using the combination of morphine bupivacaine epidurally.

Case Report

A 32-year-old primipara, with a past medical history of a T-5 quadriplegia due to a swimming pool accident at 14 years of age.

Her prenatal care had been initiated at 32 weeks of gestation when she was examined in our day clinic because of a urinary tract infection. She was thereafter followed-up in our high-risk unit. Adequate drainage of the bladder was maintained with a catheter, and bowel function by biweekly mechanical desimpaction. Because she completely lacked uterine perception, she was monitored by home tokodynamometry.

She was admitted to the labor ward at 40 weeks of gestation because of repeated episodes of AH at home which were caused by even the slightest stimulus such as movement in bed.

On admission her blood pressure was 180/110, heart rate was 49, she was sweating and diaphoretic. The cervix was 2 cm dilated and the amniotic membranes were intact. The vertex was stationed at the level of S-2. The urine did not contain protein. After establishing an intravenous line and connecting her to a noninvasive heart rate and

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blood pressure monitor, an epidural catheter was inserted at L3_4 and 3 mg of morphine in 5 ml saline were injected epidurally. An intra-arterial line was placed for continuous blood pressure readings.

Within 20 min of the epidural injection the patient's blood pressure dropped to 120/80 and the heart rate increased to 80. The non-stress test revealed sporadic contractions. The membranes were ruptured, an intrauterine catheter and scalp electrode were placed, and a pitocin drip was initiated.

When uterine contractions reached an intensity of 50 cm H₂O, bupivacaine in a concentration of 0.25% in a volume of 10 ml of saline was added epidurally. An additional top up of bupivacaine was given every 90 min throughout labor. Blood pressure of 120/80 and heart rate of 80 persisted also after the bupivacaine injections.

The first stage of labor lasted 7 h and progressed uneventfully.

The second stage of labor was performed by outlet forceps, in order to minimize the strain and thus the eventual possibility of triggering an episode of AH. She delivered a male neonate weighing 3,000 g with apgar scores of 9 at 1 and 10 at 5 min.

She was discharged on the third postpartum day in a stable condition and without any further manifestations of AH.

Comment

Autonomic hyperreflexia occurs in the spinal-cord-damaged patient when afferent stimuli enter the isolated spinal cord, and initiate segmental reflexes that are neither modulated nor inhibited by higher centers. AH is characterized by severe paroxysmal hypertension, anxiety, sweating, piloerection and bradycardia. Furthermore, AH episodes carry the risk of mortality in up to 5.3% [1].

AH can be evoked by uterine contractions, vaginal inspections and cervical manipulations.

It is commonly accepted that the best method to control AH during labor is by an epidural block which

impends these stimuli from reaching the spinal cord [2-4]. The choice of the drug to administer epidurally, its concentration and its volume is not yet definitively determined, and most authors could not completely abolish the occurrence of AH during labor using different medications [5-7]. We tried this new regimen which consisted of epidurally administered morphine injections on admission to the labor ward (3 mg of morphine in 5 ml of saline). Similar dosage according to previous experience [8], effectively blocked the pain associated with uterine contractions of up to an intensity of 60 cm H₂O. Thereafter as uterine contractions increase in intensity, local anesthetics in low concentration can be administered through the epidural catheter.

The epidural morphine by blocking nociception at the spinal cord level, augments the effect of local anesthetics and enables one to reduce their concentration [8]. According to previous experience it also induces approximately 130 min of pain relief [8].

It seems advisable to administer repeated doses of epidural local anesthetics even earlier, every 90 min, to ensure continuous analgesia and prevent the appearance of pain capable of triggering AH, as was achieved in our patient.

We believe that a continuous drip of local anesthetic after the morphine administration can result in a similar effect, but the most important factor in preventing the AH attacks remains the early administration of the epidural block.

We have no doubt that more extensive studies are needed in order to establish the ideal management of autonomic hyperreflexia during labor.

References

- Johnson B, Thomason R, Pallares V, et al: Autonomic hyperreflexia: Review. *Milit Med* 1975;140:345-349.
- Nath M, Vivian MJ, Cherny BW: Autonomic hyperreflexia in pregnancy and labor: A case report. *Am J Obstet Gynecol* 1979;34:390-392.
- Bors E, Commar AE: *Neurological Urology*. Baltimore, University Park Press, 1971.
- Robertson DNS: Pregnancy and labor in the paraplegic. *Paraplegia* 1972;10:209-212.
- Abouleish E, Hanley E, Palmer S: Can epidural fentanyl control autonomic hyperreflexia in a quadriplegic parturient? *Anesthes Analg* 1989; 68:523-526.
- Schmauss C, Yaksh TL: In vitro studies on spinal opiate receptor system mediating antinociception. Pharmacological profiles suggesting a differential associated of mu, delta and kappa receptors with visceral chemical and cutaneous stimuli in the rat. *J Pharmacol Exp Ther* 1984; 228:1-11.
- Baraka A: Epidural meperidine for control of autonomic hyperreflexia in a paraplegic patient. *Anesthesiol* 1985;62:688-690.
- Niv D, Rudick V, Golan A, Chayen SM: Augmentation of bupivacaine analgesia in labor by epidural morphine. *Obstet Gynecol* 1986;67: 206-209.