

Autonomic dysreflexia in a parturient with spinal cord injury

S. L. OSGOOD and K. M. KUCZKOWSKI

Abstract : Autonomic dysreflexia (ADR) is a syndrome of imbalanced reflex sympathetic discharge occurring in patients with spinal cord injury (SCI) at or above the level of splanchnic sympathetic outflow (T6). We present the case of a 29 year-old, gravida 3, para 1 Caucasian female at 28 weeks gestation, with a history of T3 SCI secondary to a gunshot wound 9 years prior, who developed ADR during preterm labor and received epidural anesthesia during 6 days of labor followed by spinal anesthesia for cesarean section. Spinal anesthesia may be superior to epidural anesthesia for providing hemodynamic protection against ADR during cesarean section.

Key words : Pregnancy ; trauma ; spinal cord injury ; autonomic hyperreflexia ; autonomic dysreflexia ; obstetric anesthesia ; labor analgesia.

Autonomic dysreflexia (ADR) is a syndrome of imbalanced reflex sympathetic discharge occurring in patients with spinal cord injury (SCI) at or above the level of splanchnic sympathetic outflow (T6). Each year in the United States, approximately 1000 new spinal cord injuries are reported in women aged 16 to 30 years (1). Approximately 85% of patients with chronic SCI at T6 or above experience the syndrome of ADR (2). Autonomic dysreflexia occurs frequently in these patients during labor as visceral stimulation from uterine contractions causes (in the absence of descending central inhibition) extreme sympathetic hyperactivity and severe hypertension secondary to vasoconstriction below the level of spinal cord lesion (3). Life-threatening hypertension can result, with intracranial hemorrhage occurring in some cases.

In a study of 52 pregnancies in women with SCI, 9 of 12 patients with a lesion above T5 had symptoms of ADR, with a cesarean delivery rate of 47% (4). Anesthetic management includes early institution of regional anesthesia for prevention or treatment of ADR during labor and delivery. Case reports have noted successful administration of epidural anesthesia and spinal anesthesia in paraplegic parturients. We present the case of a parturient with a SCI who developed ADR during preterm labor and received epidural anesthesia during labor followed by spinal anesthesia for cesarean section.

CASE REPORT

A 29 year-old gravida 3, para 1 Caucasian female at 28 weeks gestation, with a history of T3 SCI secondary to a gunshot wound 9 years prior, presented to an outside hospital with a urinary tract infection, treated with intravenous ceftazidime. Uterine contractions were found on physical examination and magnesium sulfate therapy was instituted to treat preterm labor. Her ultrasound examination showed diamniotic-dichorionic twins, with fetus A at vertex presentation and fetus B at breech presentation. Subsequently, the patient developed new onset shortness of breath with pulse and blood pressure lability. The parturient was transferred to our university hospital for tertiary level of care.

Upon admission, her blood pressure was 140/88 mmHg with a pulse of 120 beats/minute, respiratory rate of 25 breaths/minute, and temperature 98.8°F. A radial arterial line was placed for continuous blood pressure monitoring. Betamethasone was administered for fetal lung maturation. Uterine contractions and cervical examinations were noted to be directly correlated with episodes of severe hypertension (170s/100s mmHg). While not actively contracting or being examined for progression of labor, blood pressures were within normal limits (110s/60s mmHg). Informed consent was obtained for continuous lumbar epidural anesthesia using a 20 gauge multi-orifice epidural catheter, which was inserted through the L3-4 interspace using an 18-gauge Tuohy-Schliff needle, 4 cm into the epidural space. The patient was placed

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on a continuous infusion of 8 ml/hr 0.1% bupivacaine with 2 mcg/ml fentanyl. Intermittent boluses of 6 ml of 0.25% bupivacaine were used to help control blood pressure during occasional episodes of severe hypertension (systolic blood pressure > 170 mmHg). After six days of hospitalization under continuous epidural anesthesia, the obstetrician elected to perform cesarean section for progression of preterm labor. Spinal anesthesia was administered for denser block quality and therefore better prophylaxis against ADR during cesarean section, where surgical stimulation and manual manipulation of the uterus could potentially trigger ADR. Spinal anesthesia was placed via the L3-4 interspace using a 25 gauge Pencan spinal needle with 1.5 ml of 0.75% bupivacaine, 0.2 mg morphine sulfate, and 10mcg of fentanyl. Blood pressures ranged from 90s-110s/50-60s mmHg intraoperatively. The twins were delivered in stable condition. No postoperative complications were reported.

DISCUSSION

Any parturient with SCI whose level of injury is at T6 or higher is at risk for acute ADR as a result of uterine contractions. Autonomic dysreflexia in patients with SCI may be mistaken for pregnancy induced hypertension (PIH) at presentation ; however, this syndrome can be distinguished from PIH by the correlation of severe hypertension with contractions in the setting of normal laboratory studies (liver and kidney function tests). Occurrence of preterm labor is not uncommon in SCI. Preterm delivery occurred in 19% of chronic spinal cord injury patients in one study (5). Vaginal delivery is preferred, although we have previously presented the case of an uncomplicated caesarean section under epidural anesthesia in a 17 year old parturient

at 36 weeks gestation with a C6-7 spinal cord transection secondary to a motor vehicle accident (6). Spinal anesthesia has effectively controlled blood pressure in paraplegic patients undergoing general surgical procedures (7, 8). There are case reports of successful combined spinal-epidural anesthesia for the purpose of prevention and treatment of autonomic dysreflexia during labor and delivery. However, there are few reports in the literature describing spinal anesthesia for caesarean section in these parturients. This case reinforces that early institution of labor anesthesia may ameliorate peripartum complications of ADR in laboring parturients with SCI ; furthermore, spinal anesthesia may be superior to epidural anesthesia for providing hemodynamic protection against ADR during caesarean section.

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