

EPIDURAL ANAESTHESIA FOR CESAREAN DELIVERY IN PANHYPOPITUITARISM: A CASE REPORT

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Gazi Medical Journal 1997; 8 : 162-165

SUMMARY :

Anaesthetic management of a pregnant woman with panhypopituitarism secondary to radiotherapy for nasopharyngeal cancer is presented. The course of epidural anaesthesia for the cesarean section of this case was completed without any serious complications by administering hydrocortisone to correct metabolic derangement.

Key Words: Anaesthesia; Epidural, Surgery; Cesarean Section, Pregnancy, Panhypopituitarism, Hydrocortisone.

INTRODUCTION

Adrenocortical insufficiency syndrome is a rare pathological condition with an incidence of 4-6/100000. Autoimmune disorders are responsible in 80 % of cases. In 20 % of cases, this syndrome is secondary to disseminated tuberculosis, metastasis, or radiotherapy (1).

Pregnancy in a patient with adrenocortical insufficiency without any substitutional medication is somewhat impossible unless full compensatory therapy is provided. Although pregnancy carries additional risks for the mother (preterm labor, electrolyte and cortisol imbalance, etc.) as well as for baby (antibodies, retardation, hypoglycemia, etc.), a successful labor could be induced without any complication by the aid of appropriate therapy (2).

Although pregnancy is not advised for a woman with panhypopituitarism due to the risks for both mother and fetus, pregnancy might be desired

because of social indications. In this article, anaesthetic approach, management and results of a 34-year-old pregnant woman with panhypopituitarism secondary to radiotherapy and chemotherapy for nasopharyngeal cancer and delivered by cesarean section was presented.

CASE REPORT

A 34-year-old pregnant woman, married for 13 years, was admitted to the obstetrics and gynecology clinic at 38 weeks of gestation. Her weight was 70 kg and height was 170 cm. She was operated on for nasopharyngeal cancer followed by radiotherapy and chemotherapy two years ago. She developed panhypopituitarism secondary to this treatment. Pregnancy was achieved by ovulation induction. When cesarean section was decided due to obstetric indications, extradural blockade was planned as the anesthetic technique. She had been receiving oral levothyroxine sodium (0.1 mg) once a day and methyl prednisolone (20 mg) twice a day.

The patient was prepared for the operation according to the hydrocortisone scheme shown in Table 1. Blood samples were collected from the mother at 4 different times in order to assess plasma cortisol, glucose, electrolytes (Na⁺ and K⁺), creatinine, and NPN levels during the operation day (Table 2). Extradural blockade was performed in the sitting position at L2-3 interspace via a 16 G tuohy needle by the hanging drop method. Prilocaine 350 mg (15 ml 2%) was administered into the epidural space via an epidural catheter which had been introduced formerly. Sympathetic and sensorial blockade were about at the level of T8-10 within 20-30 min. Oxygen therapy (4L/min) was administered to the mother via a face mask throughout the procedure. Cesarean section was successfully done and a healthy, female, 3500 g, and 52 cm baby was delivered. Changes in heart rate and blood pressure of the mother before and after extradural blockade were recorded. 1st and 5th min Apgar scores of the newborn determined by the pediatricians were 10/10. Methyl ergonovine maleat 0.2 mg (i m) and synthetic oxytocin 5 U (i v bolus) and 15 U (i v infusion) were administered as uterotonic.

Postoperative vital signs (heart rate, blood pressure and temperature) and urine output were recorded hourly. Plasma glucose, electrolytes and NPN levels were measured preoperatively, perioperatively and twice a day postoperatively. Parenteral hydrocortisone dose was gradually lowered and maintained orally according to the above mentioned scheme. As physical examination, vital signs, haemogram and blood chemistry values were considered to be normal, both the mother and the baby were discharged from the hospital at the 7th postoperative day.

DISCUSSION

Secondary adrenal insufficiency occurs when ACTH secretion is deficient, often because of a pituitary or hypothalamic tumour and rarely because of treatment of pituitary tumours by surgery or radiation, resulting in hypopituitarism like the case presented (3).

One of the most important points in the management of such a patient is the compensation of metabolic derangement, especially by hydrocortisone. If glucocorticoid-deficient patients are not stressed, they usually have no perioperative problems. However, acute adrenal

crisis could occur when even a minor stress, e.g. upper respiratory infection, is present. Since these patients cannot respond to stressful situations, it is traditionally recommended that hydrocortisone should be given as described in the literature (4). But it should be underlined that the normal adrenal response to surgery varies depending on the grade of surgical stress; that is, minor surgery is associated with increased cortisol release of 20-50 mg/kg/h and major surgery causes a total cortisol increase of 75-120 mg/24h (5). Since protein binding capacity is increased in pregnancy, higher doses of cortisol is necessary for replacement therapy (2).

Patients with any disorder of the hypothalamic-pituitary axis probably should not have elective surgery unless deficiencies are properly corrected with glucocorticoids and mineralocorticoids (5). The physiological significance of the adrenal cortex in response to a variety of stresses, including surgical trauma, has long been recognized. The plasma cortisol concentration increases rapidly after induction of anaesthesia and commencement of surgery and remains increased for a variable period (6). Considering above mentioned facts, we followed a special hydrocortisone regimen for the operation including preoperative, perioperative and postoperative periods which is similar to the literature as summarised in Table 1. We also controlled electrolyte levels perioperatively and twice a day postoperatively (Table 2).

The choice of the anaesthetic route is important as well. Perioperative stress is related to the degree of trauma and the depth of anaesthesia. Patients may withstand surgery if the adrenocortical responses are inhibited, for example by extradural blockade or by high dose opioid anaesthesia, apparently without clinical side effects (6). Metabolic responses to surgery such as hyperglycaemia, increased protein breakdown, sodium and water retention, may be produced in normal patients by the administration of cortisol. However, it has been shown, using extradural blockade, that the hyperglycaemic response to upper abdominal surgery may be inhibited in the presence of a normal cortisol response (5). Taking the region and possible duration of surgery as well as patient status into consideration, we performed extradural anaesthesia for this case. This route supplied the anaesthetic comfort both for the patient and the anaesthesiologist.

Day	Time	Drug and dose	Route
1 day before the operation	8.00 p.m.	20mg Methyl-Prednisolone Sodium Succinate (MPSS)	im
operation day	2 hours before the operation at the start of the operation	20mg MPSS	im
		20mg MPSS	iv infusion *
postoperative	8.00 a.m.	10 mg MPSS	im
1st & 2nd days	starting in the morning	5 mg MPSS	iv infusion *
postoperative	8.00 a.m.	20 mg MPSS	im
3rd & 4th days	8.00 a.m.	5mg Prednisolone	po
	12.00 a.m.	2.5mg Prednisolone	po
	8.00 p.m.	2.5mg Prednisolone	po

*: 60 mg Prednol-L in 1500 ml 5% glucose to be infused in 18 h and 20 mg prednol-L in 500 ml 09% saline to be infused in 6 h.

Table 1 : Preoperative and postoperative hydrocortisone administration scheme.

Sampling time	Cortisole (ug/dl) (normal range)	Sodium (mmol/L)	Potassium (mmol/L)	Glucose (mg/dl)	Creatinine (mg/dl)	NPN (mg/dl)
Before extradural blockade (a.m.)	8.74 (5.00-25.00)	136	4.3	113	1.0	13
After extradural blockade (a.m.)	5.00 (5.00-25.00)	137	4.0	136	1.1	15
Postoperative 6th hour (p.m.)	11.75 (2.5-12.5)	138	3.8	106	1.2	16
Postoperative 12th hour (p.m.)	11.70 (2.5-12.5)	140	4.1	110	1.0	14

Table 2 : Changes in plasma cortisole, glucose, electrolytes (sodium and potassium), creatinine, and NPN levels at different time intervals during the operation day.

The limitations of this case report may be the lack of evaluation of autoimmune antibody levels in the newborn following delivery and the detection of aldosterone levels throughout the procedure because of technical problems. However, many reports suggest the importance of the autoimmune antibodies only in the follow up of the newborn (1, 2). Also the levels of blood and urine sodium and potassium were maintained in normal range during

the procedure.

Lydic and Rebar (7) have presented expectant management of apparent craniopharyngioma case by avoiding the risks of panhypopituitarism, diabetes insipidus, and loss of vision. Pregnancy was avoided because of the unpredictability of the behaviour of the tumour during pregnancy. But there is only one report presenting a pregnant woman to whom craniotomy was performed

because of a craniopharyngioma at the 29 weeks of gestation (8). Today, women suffering from panhypopituitarism could have chance to have a baby without any complications with the appropriate medical support. However, our case had unfortunately additional disadvantages; previous operation for nasopharyngeal cancer, radiotherapy and chemotherapy. Consequently, we had to overcome all the troubles and deliver a healthy baby in spite of numerous disadvantages by a good cooperation of the patient and the physicians in this modern era.

5. Brussel T, Chernow B : Perioperative management of endocrine problems: Thyroid, adrenal cortex, pituitary: Anaesthetic management of patients with adrenocortical dysfunction: In. Barash PG (ed): ASA Refresher Courses. New York:ASA Inc, 1993 : 33-52.
6. Weatherill D, Spence AA : Anaesthesia and disorders of the adrenal cortex. Br J Anaesth 1984; 56 : 741-749.
7. Lydic ML, Rebar RW : Expectant management of a hypothalamic mass: A case report. Obstet and Gynecol 1995; 85 : 880-882.
8. Sachs BP, Smith SK, Cassar J : Rapid enlargement of a craniopharyngioma in pregnancy. Br J Obstet Gynaecol 1978; 85 : 537-538.

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REFERENCES

1. Schelling M, Schneider KTM : Komplikation nach Kaiserschnitt bei unbehandeltem M. Addison. Geburtshilfe und Frauenheilkunde 1993; 53 : 6 : 369-442.
2. Roth B, Kribs A, Kribs M, Solbach GH : Schwangerschaft bei Morbus Addison und Diabetes mellitus. Zeitschrift für Geburtshilfe und Perinatologie 1990;194 : 2 : 95-97.
3. Roizen MF : Pituitary Gland : Disease of the endocrine system: In. Kadis LB, Benumof JL, Katz J (eds): Anesthesia and Uncommon Disease.3rd ed. Philadelphia: WB Saunders, 1990 : 245-292.
4. Roizen MF : Adrenocortical malfunction: Anaesthetic implications of concurrent diseases: In. Miller RD (ed): Anaesthesia.4th ed.New York: Churchill Livingstone, 1994: 903-1014.