



Case report

Severe intraoperative hyponatremia associated with the absorption of irrigation fluid during hysteroscopic myomectomy: a case report[☆]

Young Cheol Woo MD (Professor), Hyun Kang MD (Assistant Professor), Su Man Cha MD (Clinical Fellow), Yong Hun Jung MD (Professor), Jin Yun Kim MD (Professor and Chairman), Gill Hoi Koo MD (Professor), Sun Gyo Park MD (Professor), Chong Wha Baek MD, PhD (Associate Professor)*

Department of Anesthesiology and Pain Medicine, College of Medicine, Chung-Ang University, Seoul, 156-755, Republic of Korea

Received 10 May 2010; revised 22 February 2011; accepted 2 March 2011

Keywords:

Continuous renal replacement therapy;
Hypertonic saline;
Hyponatremia;
Hysteroscopy;
Irrigation fluid

Abstract A case of severe hyponatremia with accompanying pulmonary edema and cardiovascular instability during a hysteroscopic myomectomy with general anesthesia is presented. The patient's sodium value decreased to 87 mmol/L. She was managed with aggressive maneuvers, including an infusion of 3% hypertonic saline. The patient's serum sodium increased to 113 mmol/L at the end of the operation, and it was increased up to 138 mmol/L at 48 hours. The patient recovered completely without neurologic sequelae.

© 2011 Elsevier Inc. All rights reserved.

1. Introduction

Hysteroscopic procedures require irrigation fluid for uterine distension and clearance of blood and debris. Such irrigation may result in systemic absorption of the fluid, leading to significant complications, including hyponatremia, fluid overload, and pulmonary or cerebral edema [1]. It is similar to what is seen in patients with transurethral resection of the prostate (TURP) syndrome. However, fluid

absorption is slightly more common during hysteroscopy than during TURP [2].

If this condition is left untreated, then respiratory distress, cardiovascular collapse, seizure, coma, and death may result. Menstruating women are at a high risk for the syndrome [3]. There has been debate about the optimal therapeutic approach because too rapid and excessive correction of the hyponatremia may cause a serious neurologic sequela called central pontine myelinolysis [4–8]. Moreover, the consequences of the irrigation fluid absorption may vary depending on the individual patient's response.

A patient who developed severe hyponatremia, pulmonary edema, and cardiovascular instability during hysteroscopic myomectomy is presented. She recovered completely without neurologic sequelae after we administered aggressive treatment.

[☆] Conflict of interest: The authors have no conflicts of interest to declare in relation to this paper.

* Correspondence: Chong Wha Baek, MD, PhD, Associate Professor, Department of Anesthesiology and Pain Medicine, Chung-Ang University College of Medicine, 224-1 Heukseok-dong, Dongjak-gu, Seoul, 156-755, Korea. Tel.: +82 2 6299 2571; fax: +82 2 6299 2575.

E-mail address: roman00@naver.com (C.W. Baek).

2. Case report

A 44 year old, 69 kg, 158 cm woman underwent a hysteroscopic procedure for resection of her uterine myoma during general anesthesia. There were no abnormal findings on the preoperative physical examination or laboratory values. Glycopyrrolate 0.2 mg was injected intramuscularly as premedication one hour before the operation. On arrival in the operating room (OR), standard monitors were attached, including electrocardiogram (ECG), noninvasive blood pressure (BP), and pulse oximeter. Anesthesia was induced with fentanyl 100 µg, thiopental sodium 300 mg, and succinylcholine 70 mg. After tracheal intubation, anesthesia was maintained with 50% oxygen, 50% nitrous oxide, and 5% - 7% desflurane with vecuronium; ventilation was controlled to maintain end-tidal carbon dioxide tension within the range of 32–38 mmHg. Intravenous (IV) lactated Ringer's solution was infused as maintenance fluid.

The patient was placed in the lithotomy position, and an indwelling urinary catheter was inserted. With the start of the hysteroscopic procedure, irrigation fluid containing 2.7% sorbitol and 0.54% mannitol was connected to a lateral port of the hysteroscope and infused by gravity with a bag of the irrigation fluid raised to about 150 to 200 cm above the patient. The irrigation fluid flowed out through the uterine orifice and some fell to the floor during the procedure. Blood pressure was maintained at a range of 100/60 - 130/80 mmHg.

One hour after the start of the procedure, peak airway pressure increased to 30 mmHg from an initial value of 18 mmHg, and pulse oximetry showed 91% oxygen saturation (SpO₂). Breath sounds were coarse with rales. Frothy pink sputum was suctioned from the endotracheal tube. First, IV furosemide 20 mg was injected and the Ringer's lactate solution was changed to 0.9% normal saline. Arterial blood gas (ABG) analysis showed pH 7.20, PaO₂ 73.9 mmHg, PaCO₂ 41.2 mmHg, SpO₂ 93.4%, and sodium 87 mmol/L (Table 1).

The surgery was converted to exploratory laparotomy because accidental uterine wall perforation was suspected.

A total of 24 L of irrigation fluid had been given up to this point. There was an intraperitoneal fluid deposit of about 200 - 300 mL. Thereafter, the patient's BP decreased to 60/30 mmHg. Heart rate was 60 beats per minute (bpm), and ECG showed normal sinus rhythm. Although dopamine was given at a rate of 5 µg/kg/min, it was not easy to maintain BP. Infusion of 3% hypertonic saline was started. After about 30 minutes, ABG analysis showed pH 7.24, PaO₂ 64.1 mmHg, PaCO₂ 45.2 mmHg, SpO₂ 87.9%, and sodium 100 mmol/L with inspired oxygen concentration (FIO₂) 100%.

At the end of the operation, ABG analysis showed pH 7.18, PaO₂ 82.1 mmHg, PaCO₂ 47.1 mmHg, SpO₂ 93.8%, and sodium 113 mmol/L. A total of 500 mL of 3% hypertonic saline, 800 mL of 0.9% normal saline, and 1,300 mL of lactated Ringer's solution were infused, and 5,500 mL of urine was collected during the 150-minute operation. Hydrocortisone and sodium bicarbonate also were injected. The patient's osmolality was not measured intraoperatively.

The patient was transported to the intensive care unit. She awoke from anesthesia sufficiently to obey commands, and she received sedation for mechanical ventilation. No abnormal findings were found on neurologic examination. Postoperative chest radiography confirmed pulmonary edema with bilateral peribronchovascular infiltration. After consultation with a nephrologist, continuous renal replacement therapy (CRRT) was initiated to remove the excess water. The CRRT modality was the continuous venovenous hemodiafiltration type, with a blood flow rate of 125 mL/min, a dialysate flow rate of 1,000 mL/hr, a replacement flow rate of 1,000 mL/hr, and a patient removal rate of 200 mL/hr.

The dialysate and replacement fluid had a composition of sodium 140 mmol/L, calcium 1.75 mmol/L, magnesium 0.75 mmol/L, chloride 105 mmol/L, lactate 40 mmol/L, and 287.5 mOsm/L osmolality. The CRRT was stopped after 11 hours because the patient's vital signs returned to preoperative values and ABG analysis improved to pH 7.40, PaO₂ 110 mmHg, PaCO₂ 32.3 mmHg, and SpO₂ 98.8% with FIO₂ 30%. At that time, the patient's serum sodium was 125 mmol/L. When she could follow commands, her

Table 1 Changes in the patient's hemodynamics, arterial blood gas, and electrolyte values during the hyponatremia

	Blood pressure (mmHg)	Heart rate (bpm)	pH	PaO ₂ (mmHg)/FIO ₂ (%)	Base excess (mEq/L)	Sodium (mmol/L)	Potassium (mmol/L)	Chloride (mmol/L)
Preoperative	120/80	69				137	4.3	107
Intraop 1 hr	115/65	72	7.20	73.9/50	- 11.1	87	3.6	67
Intraop 90 min	60/30	60	7.24	64.1/100	- 7.6	100	2.8	66
End of operation	105/60	76	7.18	82.1/100	- 9.9	113	2.8	87
Postop 1 hr	80/60	99	7.19	86.8/80	- 10.9	117	2.6	91
Postop 4 hrs	120/90	95	7.28	74.5/40	- 6.9	126	2.7	97
Postop 10 hrs	135/85	101	7.40	110/30	- 4.3	125	3.6	98
Postop 22 hrs	130/70	84	7.53	168/40	3.5	126	3.5	92
Postop 48 hrs	105/55	78				138	3.8	107

Intraop = intraoperative, Postop = postoperative.

Download English Version:

<https://daneshyari.com/en/article/2763321>

Download Persian Version:

<https://daneshyari.com/article/2763321>

[Daneshyari.com](https://daneshyari.com)