

## Intramyometrial vasopressin: A fear for anesthetist?

Sir,

Intramyometrial injection of vasopressin has been in use for more than 50 years to reduce bleeding during uterine myomectomy.<sup>[1-3]</sup> The systemic effects of vasopressin pose significant challenges for the anesthesiologist as it may cause bradycardia, hypotension and fatal cardiac complications such as arrhythmias and cardiac arrest.<sup>[4-6]</sup> We report a case of intramyometrial injection of vasopressin and further discuss adverse effects and complications related to it.

A 32-year-old nullipara, the American Society of Anesthesiologists Physical Status II, was scheduled for open uterine myomectomy. She had residual polio paralysis with limping in right leg. All investigations were normal. Two-dimensional echocardiogram (ECHO) showed ejection fraction (EF) of 60%. She was premedicated with tablet diazepam 10 mg at night. Her baseline pulse was 96 beats per minutes (bpm), blood pressure (BP) 130/70 mm Hg, oxygen saturation (SpO<sub>2</sub>) 99%, and normal sinus rhythm on electrocardiogram (ECG). Venous access was secured with 18-gauge cannula; 500 ml ringer lactate was preloaded. Combined spinal epidural anesthesia was given with epidural placement in T12–L1 interspace and spinal anesthesia at L3–L4 interspace with 3 ml of 0.5% heavy bupivacaine and 60 µg buprenorphine. After 25–30 min of induction, surgeon injected 40 ml normal saline containing 8 units of vasopressin (20 units diluted in 100 ml normal saline) into the myometrium after negative aspiration of blood. Immediately, patient's heart rate dropped to 25 bpm with fall in BP to 80/50 mm Hg. SpO<sub>2</sub> dropped to 76%. ECG was bizarre. There was intense facial pallor, radial pulse was feeble. Patient developed unconsciousness. Injection atropine 0.6 mg intravenous (iv) administered and repeated, 500 ml of ringer lactate was infused rapidly. About 100% oxygen was delivered using bair circuit and assisted ventilation provided. Injection ephedrine 6 mg iv was administered and repeated. The patient regained consciousness, pulse rate picked up to 176 bpm and BP to 200/120 mm Hg. SpO<sub>2</sub> was 92% with patient on spontaneous respiration with 100% oxygen. After 30 min, BP dropped to 60/44 mm Hg with no response to iv ephedrine or fluid rush. Five hundred milliliters of hexaethylstarch was infused followed by one pint whole blood transfusion. After transfusion, BP was 90/60 mm Hg with pulse of 126 bpm. Toward the end of surgery, noradrenaline infusion was started. Surgery was completed in 2 h and patient

was shifted to Intensive Care Unit (ICU). Intraoperative blood loss was 500 ml. After an hour of surgery, the patient was desaturating in ICU (fall in saturation to 86% with oxygen 6 L/min supplemented through face mask) and hence was intubated with cuffed endotracheal tube (size 7.5 mm ID) and put on volume control mode. Dopamine infusion was also started. The right subclavian vein was cannulated. Central venous pressure was 9 cm. Arterial blood gas analysis showed respiratory acidosis. Serum electrolytes were normal. Cardiac enzymes were mildly elevated with troponin-T at 0.213 ng/ml (normal range 0.010–0.100 ng/ml) and creatinine kinase-MB isoenzyme at 40 U/L (normal up to 24 U/L). Postoperative ECG showed ST segment depression in the anterior chest leads. X-ray was suggestive of pulmonary edema. ECHO was done 8 h after surgery and revealed EF of 43%, globally hypokinetic left ventricle.

Patient remained on ventilator support with no improvement in BP on inotropic support. Saturation was 68% with fraction of inspired oxygen 100%. Postoperative day 4, she died in ICU.

In this case, there is possibility that a large dose of vasopressin was accidentally absorbed into vessels.<sup>[4]</sup> Vasopressin at higher concentrations in circulation produces generalized constriction of blood vessels including coronaries.<sup>[1]</sup> This effect on the myocardium results in reduced cardiac output and heart rate, decreased coronary blood flow, altered sympathetic tone and potentiated baroreflex due to generalized vasoconstriction. These cardiac effects are potentiated in patients with coronary insufficiency.<sup>[1]</sup> In this case, after intramyometrial injection of vasopressin, patient had bradycardia, hypotension with documented myocardial event. This suggests the possibility of cardiac failure which may have resulted in her death. In conclusion, rare yet fatal complications should prompt the gynecologist to rethink about safety profile of vasopressin.

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### Conflicts of interest

There are no conflicts of interest.

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