

Bradycardia caused by position change

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To the Editor:

Decrease in heart rate has been reported in gynecological surgery. Bradycardia and cardiac arrhythmia caused during gynecological surgery were reported to result from sudden stretching of the peritoneum and electro-coagulation of the fallopian tubes [1]. However, I suggest that severe bradycardia may occur because of stretching of the peritoneum by a huge ovarian mass in the head-down position.

A healthy 22-year-old woman was scheduled for single-port laparoscopic left ovary cystectomy. She did not have any significant past medical history to consider. She was monitored with ECG, noninvasive blood pressure (BP) measurement, arterial oxygen saturation monitor, and capnogram. The initial vital signs were as follows: regular sinus rhythmic heart rate, 72 beats/min; oxygenation saturation, 98% in room air; and blood pressure, 118/73 mmHg. Anesthesia was induced and maintained with propofol (target blood concentration, 3.0–6.0 µg/ml) and remifentanyl (target blood concentration, 3.0–6.0 ng/ml), using a target-controlled infusion device (Orchestra, Fresenius Vial, France). The surgery began when the patient was in supine position. She was then positioned with head tilted down before trocar insertion. Suddenly, her heart rate dropped to 32 beats/min. The rhythm was

junctional bradycardia. I administered intravenous atropine (0.5 mg) and told the surgeon about the problem. The gynecologist and I decided to change her position to supine again. Her heart rate then increased to 52 beats/min, and after about 1 min, it returned to 72 beats/min. None of her vital signs except the heart rate had any change. Even though the surgeon restarted the surgery, bradycardia did not appear again in supine position. About 2,200 ml serous fluid was aspirated from the ovarian mass. After aspiration, the patient was repositioned to the head-down state. However, her heart rate did not decrease, and the operation was completed without any further problems. She recovered well, was transferred to the general ward, and was discharged 3 days after the operation.

In gynecological surgery, bradycardia may occur in response to sudden stretching of the peritoneum with CO₂ insufflation in laparoscopic surgery and with electrocoagulation of the fallopian tubes [1]. However, from this event, I believed that a huge ovarian mass (about 19.7 × 24 cm) covered by peritoneum may caused the peritoneum to be stretched as the patient's position is changed to the head-tilted-down state, similar to the way it is stretched in laparoscopic surgery.

The exact mechanism for this response is not yet known. However, it is believed that the vagus nerve initiates the drop in heart rate. Treatment includes interruption of insufflation, atropine administration, and deepening of anesthesia after recovery of the heart rate [1]. In this case, propofol and remifentanyl were possible causes of bradycardia. However, bradycardia developed immediately after the patient's head was tilted down and recovered soon after returning the patient to supine position. Thus, the first position change may have been the trigger of bradycardia in this case.

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Although the view of the pelvic organs is best in the head-down position, this position can be fatal to some patients who present with bradycardia. Therefore, doctors should consider the risk of bradycardia in the head-down position.

References

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