First report of a case of negative-pressure pulmonary edema during pregnancy

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Introduction

Negative-pressure pulmonary edema (NPPE) or postobstructive pulmonary edema (POPE) is a life-threatening condition in the perioperative and critical care settings. (1). Tsi et al.(2) reported NPPE as a relatively rare problem with an incidence rate of 0.019% among 85,561 patients receiving general anesthesia with endotracheal intubation. The most common cause of NPPE in adults is post-extubation laryngospasm (3), accounting for as much as 50% of adult cases. It has also been reported with choking (4), hanging (5), recurrent polychondritis, aspiration of foreign material, obstructive sleep apnea (6), epiglottitis and croup (especially in children), and biting of the endotracheal tube (7).

As far as the researchers of this study investigated, no study has reported NPPE in a pregnant woman so far. In this case report, we present NPPE in a 39-year-old pregnant woman undergoing transurethral lithotripsy.

Case presentation

A 39-year-old 31-week pregnant woman underwent general anesthesia with endotracheal intubation for transurethral lithotripsy on January 09, 2022. She was extubated and transferred to the recovery room. In the recovery room, she found respiratory distress about 10 minutes after extubation. Physical examination revealed tachycardia, tachypnea, and bilateral crackles. In pulse oximetry, SPO2 dropped to 70%. We prepared the patient for reintubation, but the SPO2 rose to 92% and the patient got better with supplemental oxygen and intravenous furosemide. Then, she was transferred to the intensive care unit (ICU) for further management. The portable anteroposterior chest radiography of the patient was consistent with pulmonary edema (Figure 1A). There was no pneumothorax or pleural effusion. ECG demonstrated sinus tachycardia without any sign of ischemia, infarction, or arrythmia.

Echocardiography was performed three times, which showed normal left ventricular size with ejection fraction 55-60%, no pericardial effusion, no valvular disease, and right ventricular systolic pressure (RVSP) of 35 mmHg.

The results of laboratory tests in the ICU were as follows: white blood cells count (WBC) 9400 cells/mcL, Hb 11.1g/dL, platelets 150000/mcL, total bilirubin 0.8 mg/dL, urea 27 mg/dL, creatinine 0.89 mg/dL, Na 138 mEq/mL, and potassium 3.2. mEq/mL. Calcium level was checked three times, which showed hypercalcemia with total calcium 2.5 mmol /dL (ionized 1.41 mmol/dL), 12.3 mg/dL (ionized 1.73 mmol/dL), and 12.1 mg/dL (ionized 1.5 mmol/dL). Magnesium level was 1.3 mg/dL (normal: 1.8-2.6), phosphorus 1.7 mg/dL (normal: 2.5-5), 25 dihydroxy Vitamin D 19 ng/mL, iPTH 314.9 Pg/mL (normal 12-65), and T4 10.7 mL, and TSH 2.34 micIU/mL(normal 0.3-5.5). Finally, primary hyperparathyroidism was diagnosed.

Follow-up CXR on January 12, 2022 showed decreased pulmonary edema (figure1B). We did not perform CT scan due to pregnancy. The patient was discharged from ICU on the 5th postoperative day without any complication. We also recommended her to continue pregnancy with follow-up for hyperparathyroidism.

Conclusion

We presented the first case of NPPE during pregnancy with good course. NPPE should be suspected and managed early in postoperative dyspneic pregnant patient to prevent unfavorable