

reported, none of them serious. The data available on these cases show how effective systemic or inhaled steroid treatment really is³; occasionally it will be necessary to resort to bronchoscopic techniques to maintain airway patency.^{9,10}

The case we presented here is unheard of due to its dramatic clinical presentation, to its exceptionality given the CAO occurred at the beginning of the IBD; and because it gave the medical team the opportunity to use ECMO allowing therapeutic rescue in a case whose outcome would have been dramatic in other circumstances. It is the first case ever reported of rescue with ECMO,³ without a prior diagnosis, with impossibility of ventilation, and obstructive shock with cardiac arrest.

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Near fatal bronchospasm and bradycardia after carbetocin administration



Broncoespasmo y bradicardia grave posterior a la administración de carbetocina

Dear Editor,

Uterotonics are widely used as prophylactic and therapeutic drugs for uterine atony, the major cause of direct maternal mortality due to postpartum hemorrhage.^{1,2} Carbetocin [1-deamino-1-carba-2-tyrosine-(0-methyl)-oxytocin], a synthetic oxytocin analogue effective for treating and preventing post-partum hemorrhage, increases intracellular calcium, stimulates myosin phosphorylation and contraction in uterine smooth muscle cells; has an onset of action of 2 min and a plasma half-life six to seven times longer than oxytocin. It can be administered by intravenous (IV) and intramuscular route. Despite its safety profile, chest tightness, palpitations and breathing discomfort are frequently reported after its administration,^{3,4,5} therefore prescription information and some reviews recommend caution when it is administered to patients with asthma or cardiovascular disease. Herein we report a case of near fatal bronchospasm and bradycardia after carbetocin administration.

A 22 years-old pregnant female, with a past history of a ruptured ectopic tubal pregnancy two years earlier and asthma diagnosed during the first trimester of her current pregnancy, was admitted with at 39-week pregnancy to the obstetric ward for an elective Cesarean-section, current medication were two puffs of dose metered inhaled albuterol on a per needed basis. Surgery was performed under regional anesthesia. Due to uterine hemorrhage after birth, a bolus of 100 mcg of intravenous carbetocine was administered by intravenous infusion over 60s, 2 min later, she presented sudden onset of dyspnea, wheezing, disseminated rash, hypotension and severe bradycardia – irresponsive to 1 mg of intravenous atropine – that progressed to a complete cardiac arrest; four minutes of advanced cardiopulmonary resuscitation which included 1 mg epinephrine was needed to restore pulse. After tracheal intubation severe wheezing and hypotension persisted, a single dose of 1.5 mg/kg IV methylprednisolone and a norepinephrine drip were initiated. Bleeding stopped, so surgery was finished and the patient was transferred to the Intensive Care Unit (ICU).

She was admitted to the ICU on mechanical ventilation, pulmonary mechanics reported high intrathoracic pressures with an auto-PEEP of 12 cm H₂O and a peak inspiratory pressure of 35 cm H₂O. Arterial blood gases reported: PCO₂ 91 mmHg, PaO₂ 224 mm Hg, pH 6.99, HCO₃ 19 meq/L, SaO₂ 93. An ECG was obtained in sinus rhythm, with a heart rate

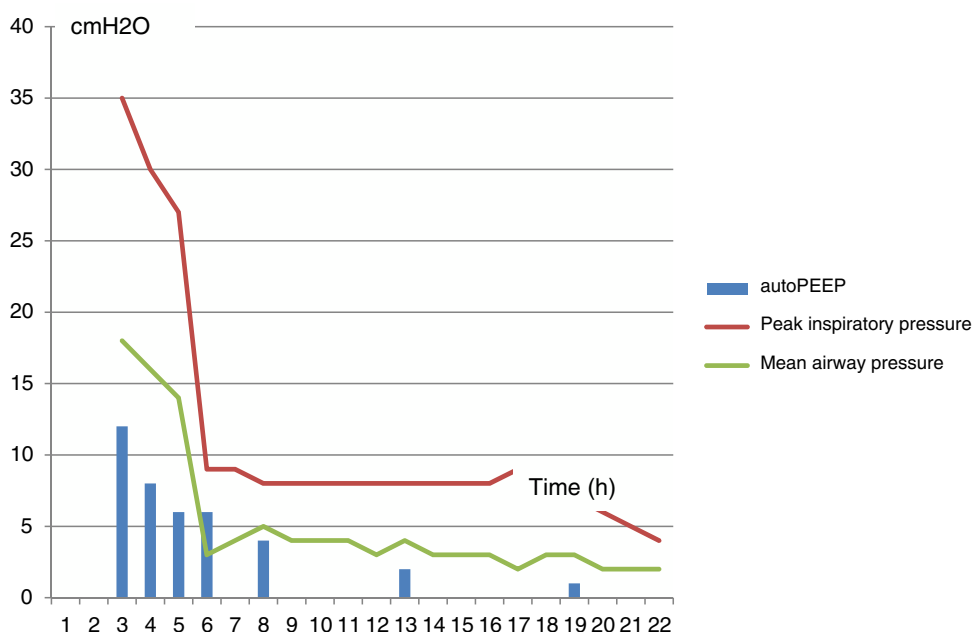


Figure 1 Pulmonary mechanics.

of 95 min without conduction abnormalities. The chest X-ray ruled out pneumothorax or hyperinflation. After analgesia, sedation, and paralysis with vecuronium, under controlled mechanical ventilation, ventilator settings were modified to reduce respiratory rate and increase expiratory time, which gradually lowered intrathoracic pressures and allowed us to stop vasopressors. Albuterol 2.5 mg and ipratropium bromide 500 mcg were nebulized every 20 min, hydrocortisone and a single dose of 2 g of intravenous magnesium sulphate were also needed to finally totally overcome bronchospasm 3 h after ICU admission. Sedation was stopped, the patient regained consciousness, and 20 h after admission she was extubated and then discharged from the ICU (Fig. 1).

Asthma is estimated to occur in approximately 4% of pregnancies, frequently as a pre-existing disease, although sometimes – like in this case –, asthma may initially present during pregnancy. Prospective studies show that about 28% of pregnant asthmatics improve, 33% remain unchanged and nearly 35% deteriorate usually between 24 and 36 weeks of gestation. During labor and delivery only 10% of asthmatics report symptoms and less than 5% require treatment.⁶⁻⁸ Arrhythmias are an infrequent adverse event; however, alterations such as QT interval prolongation have been reported. These electrocardiographic alterations appear to be time and dose dependent.⁹

Pulmonary mechanics at admission to the ICU and without neuromuscular blockade did not correlate with the severity of the clinical presentation, which could be related to the way we perform clinical measurements of gas trapping, which rely in the assumption that through all expiration, all of the airways remain in communication with the proximal airway; but frequently in severe bronchoconstriction, all of them may not be in communication with the proximal airway due to heterogeneous distribution of bronchial edema, secretions and mucus plugging; therefore, flow, pressure or gas volume cannot be accurately measured from

a noncommunicating airway. In addition, expiratory muscle contraction can elevate auto-PEEP without adding to dynamic hyperinflation, therefore for accurate measurements of auto-PEEP the patient should be relaxed.^{10,11}

Although we did not find severe bronchospasm reported after carbetocin administration in our medical literature search; profound reversible intraoperative bradycardia during cesarean section has been reported recently as a novel occurrence associated with the use of carbetocin.⁵

Carbetocin prescription should have a clear indication and should be carefully individualized, based on individual medical and obstetric risk factors like prolonged labor, previous oxytocin administration, multiparity, multiple pregnancies, macrosomy, general anesthesia, and any condition that overdistends the uterus or interfere with effective uterine contraction.

Clinical medicine is full of uncertainties, ambiguous data, unusual presentations, and atypical therapeutic responses as this case, until we gather more data, and based on the approximately 4% prevalence of asthma during pregnancy, it seems wise to avoid carbetocin in asthmatic pregnant women, as well as in those with a past medical history that suggest bronchial hyperreactivity.

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Conflict of interest

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