

Case Report,

Carbetocin: The New Preferred Treatment For Post Partum Hemorrhage

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Abstract:

Background: Postpartum hemorrhage defined as the condition blood loss more than 500 mL from the female genital tract after vaginal delivery of the fetus (or >1000 mL after cesarean section).

Case Presentation: Mrs. FA 31 year's old G2P1A0 40 weeks age gestation preeclampsia with main complaints dyspnea and swollen legs. Physical examination showed decreased saturation, increase blood pressure, rhonci, and pitting edema of the pedal. Cardiomegaly with pulmonary edema on x-ray, elevated liver enzymes, LEA value +3, perfectly compensated respiratory alkalosis and electrolyte imbalance on laboratory test. Four-hour post C-section she got postpartum hemorrhagic and given oxytocin due to maximizing use of uterotonic agent, MgSO₄ stopped and patient reported with postpartum eclampsia.

Conclusion: Many studies discuss other drugs to replace oxytocin, considering side effects to prevent postpartum hemorrhage. Carbetocin could be one potent agent of uterotonic agents with lower side effect.

Keywords: carbetocin, uterotonic agent, postpartum hemorrhage.

Introduction:

The maternal mortality rate in Indonesia is still high 305 per 100,000 births in 2015, the most important cause of maternal mortality in Indonesia is postpartum hemorrhage followed by preeclampsia and infection. ^(1,2) Postpartum hemorrhage is also the main cause of maternal death worldwide. ⁽³⁾ Postpartum hemorrhage is defined as the condition of blood loss of more than 500 mL from the female genital tract after vaginal delivery of the fetus (or >1000 mL after cesarean section) accompanied by impaired body hemostasis and hypovolemic conditions. ⁽⁴⁾

Uterine atony is the main cause of postpartum hemorrhage, clinically effective prevention and treatment are important to decrease maternal mortality and improve health care for

women. One of the efforts to overcome postpartum hemorrhage due to uterine atony is by increasing uterine contractions with a uterotonic agent. ^(5,6,7,8) The use of uterotonic to prevent postpartum hemorrhage must be accompanied by its preparedness for side effects because some of these agents have unexpected side effects and not all of them have the advantage of preventing postpartum hemorrhage.

Case Presentation:

Mrs. FA 31 years old G2P1A0 40 weeks age of gestation with preeclampsia, was referred to Hospital with complaints of dyspnea for 2 weeks and swollen legs, heavy when lying down and activities, heartburn (-), discharge (-), mucus (-) blood (-) active fetal movement (+) vaginal discharge (+). On physical examination, she

appeared dyspnea (RR 35x/minute), increased blood pressure (BP: 154/111mmHg), decreased oxygen saturation, and was given oxygen by NRM of 15lpm. There were rhonchi on lung examination and pitting edema of the pedal. On ultrasound examination, oligohydramnion was found. In the laboratory, there was an increase in liver enzymes (SGOT 33, SGPT 16), on urinalysis, the LEA value was +3. The patient was diagnosed with G2P1A0 40 weeks pregnant with unclear delivery, preeclampsia with a severe feature, pulmonary edema, oligohydramnion (ICA 5,8), UTI, single fetus, with cephalic presentation. The patient received oxygen therapy NRM 8 lpm, Furosemide, MgSO₄, Nifedipine 30 mg, NTG, Ceftriaxone 2 gr.



Figure1. Chest radiograph of the patient showed cardiomegaly with pulmonary edema

Patients were admitted to the HCU because the patient condition was shortness of breath with oxygen saturation of 87% NRM 15lpm. The chest radiograph showed cardiomegaly with pulmonary edema, the arterial blood gas examination revealed a perfectly compensated respiratory alkalosis and electrolyte imbalance.

The patient underwent an immediate cesarean section with a high risk; the baby was born on 5/5/2022 at 15:42 with a cesarean section with an indication of preeclampsia with severe feature pulmonary edema, UTI. The baby is male, the weight of birth 3710gr, length of body 51cm, APGAR score 9/9. The amount of amniotic fluid is 75cc, cloudy white, and the amount of bleeding is 300cc. The patient received postoperative therapy with Oxytocin 20 U, ketorolac, MgSO₄, NTG, furosemide, and ceftriaxone. In addition,

Spironolactone and Ramipril were given additional therapy.

Five hours after the cesarean section there was bleeding as much as 500 cc + blood clot, weak uterine contractions, and weak abdominal palpation, patient therapy was added with Methylergonovine 2 Ampul IV and Tranexamid acid 500 mg extra. the patient received additional therapy with misoprostol, and vitamin K. A few moments later the patient complained of blurry vision, itchy arms, and redness treated with Colloid infusion, starting with NE 0.05 mcg, transfusion 1 pack PRC, MgSO₄, NTG, and furosemide discontinued. HPP has been resolved. A few moments later, the patient seemed short of restless and the decrease in saturation was activated by code blue, suddenly the patient had a seizure for 30 seconds then was given 4 g of MgSO₄, continued with Lasix drip, NE then the condition improved and the patient was transferred to the usual ward.

Discussion:

Access to effective uterotonic agents is the key to preventing atony postpartum hemorrhage. Several studies have discussed the benefits of using Carbetocin for the prevention of postpartum hemorrhage.⁽⁹⁾ Carbetocin is an analog of oxytocin with agonist properties. The clinical and pharmacological properties of Carbetocin are similar to those of naturally occurring oxytocin.⁽¹⁰⁾ Carbetocin is available as an injectable solution of 100 mcg/mL and is a drug for hospital use that should be administered in a single dose of 100 mcg in both vaginal and cesarean deliveries.⁽¹¹⁾ A single dose of 100 µg of Carbetocin given with intravenous drip has been proven to be as effective as a 16-hour infusion of Oxytocin to prevent postpartum hemorrhage.⁽¹²⁾ Like oxytocin, Carbetocin binds to oxytocin receptors present in the smooth musculature of the uterus, resulting in rhythmic contractions of the uterus, increased frequency of existing contractions, and increased uterine tone. Same as oxytocin, Carbetocin is a uterotonic agent had comparable hemodynamic effects including heart rate, systolic/diastolic blood pressure, and total peripheral resistance, and demonstrated acceptable safety.⁽¹⁰⁾

Jin et al, in their study, found that women who received Carbetocin were less likely to progress to hypertension after vaginal delivery compared with Methylergonovine. A previous study

investigated Carbetocin versus oxytocin in women with severe pre-eclampsia following vaginal or cesarean delivery and found that Carbetocin was as effective as oxytocin in the prevention of PPH.⁽¹⁰⁾ The other fact about, Carbetocin is heat stable, thus lowering costs for transportation and storage of the drug, making it suitable for use in middle-income countries.⁽¹³⁾

Although Carbetocin seems to be an ideal agent compared to other uterotonic agents, some side effects, such as vomiting, nausea, are still a concern. But in their study Ai et al, suggested that Carbetocin might be considered an appropriate choice for pregnant women with vomiting intolerance for the prevention of PPH, because on their study demonstrated that the administration of Carbetocin in delivery is associated with a lower incidence of vomiting.⁽¹⁴⁾ Carbetocin should not be used in patients with a history of hypersensitivity to oxytocin or Carbetocin, patients with vascular disease, and Carbetocin are intended for use in children.⁽¹⁵⁾

Conclusion:

Carbetocin can be used as a uterotonic agent for controlling postpartum hemorrhage because of its efficiency and less of side effect its take. Good impact on maternal uterine contractions, less gastrointestinal side effects and and safety for hemodynamic changes on pregnancy. And also, considerations related to financing because Carbetocin is more stable and has a long duration of action than other options. Carbetocin must be considered in the management of post-partum hemorrhage.

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