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Short Communication

Obstetric Hemorrhage, Clinical Case and Review

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Abstract

Introduction: Obstetric hemorrhage is the second cause of maternal death in our country after preeclampsia and the first in some states of the republic.

Clinical Case: A 40-year-old woman, Gesta 4, Para 2, with a history of cesarean section 3 years ago, complicated by obstetric hemorrhage that required a transfusion of two packed red blood cells. Current pregnancy of 38.2 weeks, estimated product weight 3700 g, fetal heart rate 145 beats per minute. Maternal laboratory studies, hemoglobin 11 g/dl, platelets 150,000. The sporadic uterine activity begins with an adequate progression of labor and enters the expulsion area with complete effacement and dilation, Hodge plane IV presentation; a 4 kg baby is obtained. Active management of the third period of labor begins, with postpartum bleeding: 400 ml. Later she presented uterine atony, with profuse transvaginal hemorrhage. Uterotonics were started with no response, it was decided to place the Bakri balloon with no response, and transvaginal hemorrhage continued in moderate quantity. The patient presents clinical data of hypovolemic shock, globular packages are requested and she is taken to the operating room, an exploratory laparotomy is performed, finding uterine atony, and it is decided to escalate treatment to Hyman-type compressive suture to control uterine hemorrhage with adequate control of hemorrhage, and continued recovery in the intensive care unit.

Discussion: The REVITALIZE program of the American College of Obstetricians and Gynecologists, to standardize clinical definitions in obstetrics, defines postpartum hemorrhage as blood loss greater than or equal to 1,000 mL or blood loss with signs or symptoms of hypovolemia within 24 hours after delivery, either by cesarean section or vaginal delivery.

Conclusion: The presence of obstetric hemorrhage requires a rapid assessment of blood loss and the use of protocols to activate the emergency call and assemble the immediate response team to care for the patient and ensure a favorable outcome.

Keywords: Obstetric hemorrhage; Balón intrauterino de Bakri; Sutura de Hyman; Sutura compresiva B-Lynch

Clinical Presentation

A 40-year-old woman, Gesta 4, Para 2, with a history of cesarean section 3 years ago, complicated by obstetric hemorrhage that required a transfusion of two packed red blood cells. In the current pregnancy, she followed irregular prenatal control, taking folic acid and iron from the second month. Mother's weight is 70 Kg, height 158 cm, BMI: 28 kg/m^2, blood pressure 125/70 mm/Hg, heart rate 72 beats per minute, respiratory rate 18/min, afebrile. Current pregnancy of 38.2 weeks, estimated product weight 3700 g, fetal heart rate 145 beats per minute. Maternal laboratory studies, hemoglobin 11 g/dl, platelets 150,000.

The sporadic uterine activity begins with an adequate progression of labor and enters the expulsion area with complete effacement and dilation, Hodge plane IV presentation; a 4 kg baby is obtained. Active management of the third period of labor begins, with postpartum bleeding: 400 ml.

Later she presented uterine atony, with profuse transvaginal hemorrhage. Uterotonics were started with no response, it was decided to place the Bakri balloon with no response, and transvaginal hemorrhage continued in moderate quantity. Vital signs; blood pressure 90/59 mm/Hg, heart rate 100 beats per minute, respiratory rate 20 breaths per minute, temperature 36°C, approximate bleeding 1000 cc, blood gas with hemoglobin of 4.6 g/dl (the normal concentration at term reaches 12.5 g/dl), lactate 2 mmol/L (the concentration of 2.6 mmol/L is a good predictor in patients at risk). The patient presents clinical data of hypovolemic shock, globular packages are requested and she is taken to the operating room, an exploratory laparotomy is performed, finding uterine atony, and it is decided to escalate treatment to Hyman-type compressive suture to control uterine hemorrhage with adequate control of hemorrhage and vital signs, arterial blood gases, hemoglobin 4, lactate 2.1, vital signs blood pressure 90/50 mm/Hg, heart rate 122 beats per minute, respiratory rate 20 breaths per minute, temperature 36.6°C, continued recovery in the intensive care unit.

Discussion

The REVITALIZE program of the American College of Obstetricians and Gynecologists, to standardize clinical definitions in obstetrics, defines postpartum hemorrhage as blood loss greater than or equal to 1,000 mL or blood loss with signs or symptoms of hypovolemia within 24 hours after delivery, either by cesarean section or vaginal delivery [1]. Maternal death due to obstetric hemorrhage is preventable, hence its importance in timely diagnosis. The detection of risk factors during prenatal care is important; however, most pregnant women do not have identifiable risk factors.

Obstetric hemorrhage is the leading cause of maternal mortality in the world and Postpartum Hemorrhage (PPH) accounts for two-thirds of obstetric hemorrhage cases and about a quarter of all maternal deaths worldwide. Of postpartum deaths, 45% occur within the first 24 hours and the rest within the first week.

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The WOMAN study was a placebo-controlled trial conducted on 20,021 women in 21 countries. The impact of tranexamic acid, an antifibrinolytic drug, in women with PPH of >500 ml after vaginal delivery, or >1000 ml after cesarean section, was evaluated. The maternal mortality rate was 2.4% (n=483) with 72% (n=346) dying from hemorrhage. Administration of 1 g tranexamic acid resulted in an overall reduction in death from bleeding of 19% (RR 0.81; 0.65-1.00) which was only evident in women who received it within the initial 3 hours [2].

High income and middle income was 2.4 (0.0-5.2), p=0.008. The most common cause of hemorrhage was uterine atony.

In recent years, a decrease in maternal mortality has been reported, which has also led to the appearance of cases of "near-miss", defined as the survival of a life-threatening complication during pregnancy, childbirth, or within 42 days of termination of pregnancy, this along with maternal death are considered Severe Maternal Outcomes (SMOs).

Diagnosis of postpartum hemorrhage begins with recognition of excessive bleeding and careful examination to determine its cause. The "Four T's" mnemonic (Tone, Trauma, Tissue, and Thrombin) can be used to detect specific causes [3-5].

Tonus refers to atony, which is an insufficient contraction of the uterus during and after delivery of the placenta, resulting in extensive bleeding from the placental bed. Trauma refers mainly to lacerations of the cervix, vagina, and perineum. Genital tract injuries are classified as first to fourth-degree according to their depth and extent, but can also include vulvar and vaginal hematomas or uterine rupture, all of which will require surgical repair. The term tissue refers to the retained placenta or placental fragments that inhibit the contraction of the uterus. Thrombin refers to coagulopathies, which can be known defects before delivery or develop during or after delivery due to other complications such as placental abruption [6]. Uterine atony is the most frequent cause of PPH in 70%, trauma 20%, tissue 10%, and thrombin 1%.

Early recognition and management of obstetric hemorrhage provide a plan of action. Assessing blood loss remains a major challenge in the care of women in labor and delivery; lack of precision in quantification prevents adequate resuscitation and increases maternal mortality and morbidity.

Initial management with uterotonic agents decreases the risk of PPH, the current recommendation of the World Health Organization (WHO) is the application of 10 International Units (IU) of intramuscular or intravenous oxytocin [7,8].

When uterotonic management is ineffective, the use of intrauterine balloon tamponade is another alternative. It does not require extensive training or complex equipment and can be performed by nursing and medical personnel. In 2017, in a prospective observational study conducted in Mexico, the efficacy of using the Bakri intrauterine balloon (Cook Medical) was evaluated [9]. A positive response was considered when the hemorrhage was less than 150 ml-200 ml with the disappearance of signs of hypovolemia within 24 hours, and a negative response when the bleeding could not be controlled. The Bakri balloon had a favorable response, with a placement time between 5 min and 40 min, and a blood loss after postpartum application of 140 ml (± 82.1).

The use of compressive sutures used for more than 20 years has proven their effectiveness, the Hyman suture is a simplified variant of the B-Lynch compressive suture used in the uterus without segmental incision. A systematic review in 2020 by Kellie et al. [10] reviewed nine trials (n=944), comparing mechanical and surgical interventions in severe postpartum hemorrhage, concluding that there is currently insufficient evidence in randomized clinical trials to determine the relative effectiveness and safety of mechanical and surgical interventions. For the treatment of primary PPH. However, its use should be considered when other measures are not effective.

Pregnant women are generally healthy; however, the physiological changes during pregnancy at the cardiovascular level, such as an increase in blood volume greater than 45% (1,200 ml to 1,600 ml), reaching a maximum volume of 4,700 ml to 5,200 ml at week 32, leads to an increase in cardiac preload and cardiac output greater than 50% [11,12]. This makes it possible to withstand blood loss of up to 25% of the blood volume, making it difficult to diagnose shock.

Obstetric hemorrhage can lead to hypofibrinogenemia, and fibrinogen is an indicator of severity. To normalize the fibrinogen level, it is necessary to know the serum levels that allow hemostasis in pregnant women and labor. The normal blood concentration of fibrinogen in pregnant women in their third trimester increases to about 500 mg/dL, the minimum amount of fibrinogen needed for hemostasis is 40%-50% of normal [13]. Rapid detection of low fibrinogen levels with point-of-care testing allows early intervention and improves prognosis. Thromboelastography (TEG), ROTEM, and dry hematology are available in some places as devices that can assess global coagulation status including fibrinogen. They are capable of measuring the fibrinogen level in approximately 10 min to 20 min and correlate well with conventional fibrinogen quantification using the Clauss method [12].

In a 2018 meta-analysis by Gallos et al. [13], they included 140 randomized clinical trials, looking at the efficacy of uterotonics compared with each other and with a placebo in preventing PPH. The results showed that the combination of ergonovine plus oxytocin (OR 0.69, 95% CI: 0.57-0.83) in preventing PPH ≥ 500 mL is more effective than oxytocin alone. However, they found no significant differences in severe maternal morbidity and mortality [14].

As a result of this study, the WHO currently recommends the early use of intravenous tranexamic acid within 3 hours of birth, using the dose of 1 g (100 mg/ml) at 1 ml per minute (approximately 10 minutes), with the option of a second dose of 1g IV if bleeding continues after 30 minutes or if there is a re-bleeding within the first 24 hours after finishing the first dose. In addition to standard care for women with clinically diagnosed PPH [9].

Obstetric hemorrhage requires multidisciplinary management that includes a team made up of obstetricians, midwives, anesthesiologists, intensivists, and a blood bank. Initial management with uterotonic agents can prevent PPH, as currently recommended by the World Health Organization (WHO).

Conclusion

The presence of obstetric hemorrhage requires a rapid assessment of blood loss and the use of institutional protocols to activate the emergency call and assemble the immediate response team to care for the patient and ensure a favorable outcome.

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