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*Kulmatov G'anijon Otakhonovich,*
*Student, Urgench branch of Tashkent Medical Academy, Urgench, Uzbekistan*
*Matyakubov Bunyod Bakhramovich,*
*Doctor obstetrian gynecologist, Tashkent medical academy Urgench branch, department of obstetrics and gynecology, Urgench, Uzbekistan*

# PECULIARITIES OF TREATMENT OF WOMEN IN A RETROSPECTIVE GROUP DURING MASSIVE OBSTETRIC HEMORRHAGE

**Abstract.** The article describes the analysis of the causes of massive obstetric hemorrhage, treatment features, possible errors made by conservative and surgical treatment. The main causes of massive obstetric hemorrhage were postpartum atony of the uterus, detachment of a normally located placenta and placenta previa. The amount of lost blood averaged 2,410.45 ± 520.55 ml. Mistakes made during the clinical examination, surgical, conservative treatment and organizational issues led to 5 cases of maternal mortality and a deterioration in the quality of life of a woman in the study group.

**Keywords:** massive obstetric bleeding, placenta detachment, uterine atony, infusion-transfusion therapy, total hysterectomy.

**Introduction**

Bleeding, the most dramatic complication of obstetric practice, remains one of the main causes of maternal mortality worldwide in the 21st century. According to the 2017 World Health Organization, bleeding accounted for 30.0% of the causes of maternal mortality, and in Uzbekistan for 2013–2015 years – 25.8% [9,10,14,19].

It is known that only 62–65% of deliveries through the natural birth canal are accompanied by physiological blood loss, 1/3 of patients lose from 500 to 1000 ml of blood, and in 3–8% of cases, the volume of blood loss exceeds 2% of the woman's body weight or more than 30% CBV is considered massive obstetric bleeding (MOB), requiring transfusion of red blood cell mass and often removal of the uterus [2,11].

The main causes of bleeding are violations of the processes of separation of the placenta and placenta, detachment of the normally located placenta, placenta previa, sepsis, obstetric embolism, traumatic injuries of the birth canal, uterine rupture, decreased contractile activity of the myometrium (uterine atony) and disorders in the blood coagulation system, most of them accompanied by massive obstetric bleeding [1,7,8,20].

In our republic, according to the National Committee for the Confidential Investigation of Maternal Mortality (MM), massive blood loss was treated inappropriately and in 34% of cases it was associated with a delay in the onset of surgical hemostasis and technical difficulties during hysterectomy [9].

***Research objective:*** to evaluate the effectiveness of therapeutic measures for massive obstetric bleeding in a retrospective group.

**Material and methods**

Analysis and evaluation of treatment results for massive obstetric hemorrhage in the retrospective group was carried out from the period 2014 to 2017. The material was collected and analyzed on the basis of the perinatal center in the city of Urgench, studying the history of childbirth, clinical and laboratory

data, the appointment sheet and anesthesia card. Clinical and biochemical blood tests were studied, if necessary, hemostasiogram, urinalysis. The retrospective group included 178 pregnant women, women in childbirth and puerperas who underwent massive obstetric bleeding and total hysterectomy during labor and in the early postpartum period. The following methods were used to determine the amount of blood loss: visual; gravimetric – the operational material was weighed and the volume of blood loss was calculated using the Libov formula. An ultrasound examination of the fetus, abdominal cavity and, if necessary, computed tomography of the pelvic organs.

**Results**

During 4 years, from 2014 to 2017, 32,896 births occurred in the perinatal center in Urgench, and of these 178 cases ended in massive obstetric bleeding (MOB), which was 0.54%, and 5 were observed during this period (45, 4%) cases of maternal mortality from this pathology.

The concept of the term MOB is determined by the following criteria: it is blood loss of more than 150 ml / min, more than 50% of the CBV within 3 hours, more than 1500–2000 ml or the need for more than 10 doses of red blood cells within 24 hours, as well as a decrease in hematocrit by 10% in combination with hemodynamic disturbances (arterial hypotension) [2].

Of all 178 cases of MOB, 75 (42.1%) of bleeding occurred during pregnancy. Of these, against the background of detachment of a normally located placenta of mild and severe degree in 64 (35.9%) cases, placenta previa was 11 (6.1%). In the birth process and the earlier postpartum period, against the background of hypotension and atony of the uterus, 103 (57.8%) cases of MOB were observed, of which 44 (24.7%) cases were associated with cesarean section and its complication. Over the past decade in Uzbekistan, the average static rate of cesarean section surgery has reached 18.1%. According to WHO (2015), cases of surgical interventions during childbirth have become more frequent and it has reached more than 30%, these data are based on the results of two studies in the field of population reproduction under the auspices of UNDP, UNFPA, WHO and the World Bank. However, it should be noted that the safe frequency of use of the Cesarean section should be no more than 10% [4].

Basically, MOB was found up to 30 years in 97 (88.9%). The average age of the pregnant women was 26.8 ± 2.3 years. Among pregnant women with IAC, housewives were –46.8%, employees –28.3%, workers –14.6%, students-6.4% and medical workers-3.6%. By nationality, patients with MOB were: Uzbeks – 71.5%, Russians – 13.7%, Korean women – 6.4%, other nationalities – 5.5%, i.e. predominantly pregnant women of local nationality. Among pregnant women with MOB, pre-pregnant women –23.3%, pre-pregnant women –76.6%, and premature births –28.5% and urgent births –71.4% were met, of all the births induced –12 cases (6.7%) due to preeclampsia of mild severity. Thus, MOB occurs at any fertile age, mainly during repeated pregnancy, and no connection with the profession has been found.

From 178, 63 (35.3%) patients had metabolic syndrome i.e. morbid obesity, body mass index was more than 32, which today is considered as one of the risk factors for bleeding. When analyzing the anamnestic data, it was revealed that 3 (1.6%) women had uterine fibroids, one woman had previously undergone myomectomy. 67 (37.6%) patients had a history of inflammatory diseases of the uterus and appendages, which also plays a role in subsequent incorrect placentation during pregnancy [10]. Almost every third patient had a history of endometrial curettage, and the average number of procedures was 1.5 ± 0.5. 13 (7.3%) women in the previous birth had bleeding, about which they received transfusion of donor blood components (er.massa). Three patients had antenatal fetal death in a previous pregnancy in the third trimester.

The volume of bleeding in the retrospective group, in which there are ordinary placenta of mild

and severe degree, in 64 (35.9%) cases averaged 1890.0 ± 150.0 0.05) and against the background of placenta previa in 11 (6, 1%) of patients, on average 2450.0 ± 200.0 (p> 0.05). The volume of blood loss was significantly greater and reached 5000.0 ml. In the birth process and the earlier postpartum period, against the background of hypotension and atony of the uterus, the average amount of blood loss was 2050.0 ± 120.0 (p> 0.05) in 103 (57.8%) cases.

Thus, speaking about the volume of blood loss, it should be said that it varies from 1550.0 to 5000.0 ml depending on obstetric pathology and averages 2410.45 ± 520.55 ml. Interoperative blood loss in the amount of 750 ± 110.0 (p> 0.05), ml, observed in a patient in whom cesarean section was initially performed and, when the operation was expanded to extirpation of the uterus, blood loss increased to an average of 1650.0 ± 150.0 (p> 0.05), the duration of the operation before total hysterectomy is 144.0 ± 15.0 min (p> 0.05).

All patients with an industrial operation to remove the uterus have low ocular amputation of the uterus (subtotal hysterectomy) – in 14 (7.8%); uterine extirpation (total hysterectomy) – in 164 (92.1%). Total hysterectomy with severe DIC in the stage of hypocoagulation is accompanied by ligation of the internal artery – in 68 (38.2%) cases, it should be noted that in 41 (23.0%) patients, an organ-preserving operation was performed at the beginning as "ligation of three main vessels" and "Hemostatic sutures on the uterus of B-Lynch", however, due to the lack of effect for a little more than 30 minutes, the volume of operation expanded to extirpation of the uterus. During the operation of hysterectomy, in 6 (3.3%) cases, removal was performed due to hemorrhage and necrosis of the ovaries and in 14 (7.8%) cases of some appendages. I want to note that you have 32 (17.9%) surgical interventions performed on time, 26 (14.6%) operative help started one hour late, 112 (62.9%) two, 7 (3.9%) for three and y1 (0.5%) for 5 hours because of the survival of the tactical and because of the attempt of organ-preserving surgery.

The clinical picture with MOB is due to the loss of blood as a circulating plasma volume. A decrease in hemoglobin level (below 60 g / l) occurs with blood loss> 35–40.0% of CBV and causes the development of tissue organ hypoxia. A decrease in the concentration of components of the blood coagulation system occurs with blood loss> 50% of the CBV, which leads to depletion of the hemostatic system, the development of DIC – syndrome, hemorrhagic shock, aggravation of the state of the puerpera and often fatal outcome.

The analysis in the retrospective group, out of 178 cases, in 5 (2.8%), pregnancy and childbirth ended in maternal mortality. When we analyzed these 5 cases, only 3 (60.0%) were registered with an obstetrician-gynecologist, but 2 (40.0%) were not registered in the primary care. Of the three registered, a somatic disease was established such as UTI (chronic pyelonephritis), hepatitis, acute respiratory viral infections, and moderate iron deficiency anemia.

The gestational age of 37–40 weeks was observed in 4 (80.0%) of the dead and 1 (20.0%) gestational age of 35 weeks, and she died from central placenta previa accompanied by MOB, hemorrhagic shock, DIC, and multiple organ failure incompatible with life. The pregnant woman was admitted to the hospital in an extremely serious condition, with blood loss of more than 2000.0 ml, and at the final stage of the operation, total hysterectomy died on the operating table. In the structure of maternal mortality, 2 (40.0%) had a detachment of a normally located placenta of a severe degree, 1 (20.0%) uterine rupture, and 1 (20.0%) atonic postpartum hemorrhage. It should be noted that patients who died from uterine rupture with a central placenta previa were not registered in the primary care, as both were abroad and they arrived at home after 34 weeks of gestation.

In the traditional group, 178 patients with MOB underwent intensive therapy: infusion – transfusion, plasma, blood transfusion with the correction of DIC – syndrome i.e. multicomponent correction.

An analysis of the volumes and qualitative composition of infusion and transfusion therapy in the treatment of MOB showed that the volume of crystalloid solutions (0.9% sodium chloride) averaged 3350.50 ± 1050.40 ml (from 2000 to 5000 ml), the volume of the hydroxyethyl starch solution (HES) 6% of reformed, hecaton averaged 1800.0 ± 150.0 ml. The composition of the infusion media should be balanced and close to that of the blood plasma, however, the parameters presented to the infusion media are not applicable to a 0.9% aqueous solution of sodium chloride. Studies have shown that due to a 1.5-fold excess of the chloride content in physiological saline, compared with blood plasma, massive volemic support for this medium leads to hyperchloremia associated with a twofold increase in mortality. In the case of adequate intensive care that was started on time (in the first 10–30 min), the outcome in hemorrhagic shock is usually favorable [2]. However, the main intensive care with crystalloids was started late by 55.4 ± 10.6 min and 2.5 times more than expected.

With MOB, the volume of bleeding is significant, and coagulation and anti-coagulation factors are rapidly consumed. When the volume of blood loss is more than 30–35% of the CBV, you should start the rapid administration of donor freshly frozen plasma (FFP) in a volume of at least 20 ml / kg of mass [6]. On average, FFP was transfused in volumes of 1650.17 ± 384.83 ($p > 0.05$) the first day, second day 950.12 ± 150.20 ($p > 0.05$), until the DIC syndrome was completely corrected. Due to organizational issues, sometimes expectant tactics, they were late by plasma transfusion for 87.5 ± 10.2 minutes.

Before and during the operation, 38 (21.34%) patients with MOB underwent full infusion therapy with up to 15 mg / kg body weight of tranexamic acid (hemotran), repeating every 6–8 hours until complete hemostasis, but in 96 (53, 9%) in patients the administration of this drug was carried out in an insufficient dose of 500 mg once a day, and in 44 (24.7%) they were not used at all due to the lack of this drug. As a means of normalizing the fibrinolysis system, tranexamic acid (hemotran) is used – a synthetic amino acid that competitively inhibits plasminogen; its effectiveness is 15–20 times higher than aminocaproic acid (17.18). The action of tranexamic acid is carried out by inhibiting the lysine-binding sites of plasminogen, so that this proenzyme does not turn into plasmin and cannot bind to fibrin. Tranexamic acid (hemotran) also inhibits the production of kinins and other active peptides, which provides an anti-allergic and anti-inflammatory effect of this drug [18]. When using this antifibrinolytic agent, there was no increased risk of thrombotic complications.

To achieve the maximum effect of tranexamic acid (hemotran), it is necessary to select the appropriate dose of the drug. This antifibrinolytic is administered immediately before an incision on the anterior abdominal wall at a dose of 10–15 mg / kg of body weight intravenously drop by drop on saline (20–30 ml). Unfortunately, this drug for unknown reasons in the retrospective group with MOB in 44 (24.7%) patients did not use either a therapeutic or a prophylactic dose [13].

In 87 (48.7%) patients in an insufficient dose of 100–150 thousand. used proteolysis inhibitors, mainly aprotinin (contracal). Although there is no evidence base for the use of aprotinin for the treatment of MOB, however, there are many articles reflecting the effectiveness of this drug in the treatment of DIC syndrome, inhibiting the fibrinolytic activity of the blood and inhibiting the effect of fibrinolysis, thereby preventing the progression of intravascular coagulation [8,14].

It should be noted that in this group of 13 (7.3%) patients rFVIIa (Coagil) was administered at a rate of 90 μg / kg, with the development of severe hypocoagulation refractory to therapy using FFP and fibrinolysis inhibitors (15). The volume of blood loss averaged 2354.4 ± 465.4 ml. After the administration of rFVIIa (Coagil), a significant decrease in the speed and volume of bleeding was noted in these patients, which allowed them to perform a total hysterectomy with ligation of the internal iliac artery.

When discussing blood transfusion, it should be noted that transfusion of red blood cells containing blood components helps to restore the globular volume with MOB. Recently, a large positive role has been played by the procedure of apparatus intraoperative reinfusion of autoerythrocytes, which allows minimizing the use of donor red blood cells, and in some cases completely eliminating them, preventing possible blood transfusion complications and improving the outcome of surgery for MOB [12].

In the study group, transfusion of donor erythrocyte mass was performed for all 178 patients with MOB. It should be noted that a complete, timely and sufficient transfusion was performed only for 34 (19.1%), and 144 (80.8%) patients underwent this procedure from 1 to 5 hours late, and in insufficient quantities. 2 (1.1%) had a post-transfusion complication that required intensive care, and one of them was transferred to the hemodialysis ward.

Conservative treatment of MOB, such as pelvic arterial embolization, stepwise, stepwise uterine devascularization and / or ligation of the hypogastric artery, has become a reliable and effective alternative to hysterectomy. Although further long-term and subsequent studies are nevertheless necessary, and these procedures, according to foreign researchers, do not worsen subsequent fertility and pregnancy outcomes, these operations were not performed by the patient in the studied traditional group [15,16].

**Conclusion**

Thus, analyzing the 178 history of childbirth accompanied by MOB, in the period from 2014 to 2017 in the regional perinatal center in the city of Urgench we came to the following conclusion:

1. The frequency of massive obstetric bleeding in the studied retrospective group was 0.54%, and in the structure of maternal mortality 45.4%.

2. The main causes of massive obstetric bleeding were postpartum atony of the uterus in 103 (57.8%), detachment of the normally located placenta in 64 (35.9%) and placenta previa in 10 (6.1%). The amount of lost blood averaged 2,410.45 ± 520.55 ml.

3. The mistakes made during the clinical examination, surgical, conservative treatment and organizational issues led to 5 cases of maternal mortality and a deterioration in the quality of life of a woman in the study group.

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