Case Report

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Gross Hematuria Following Fetal Head Engagement in a Pregnant Woman with Glanzman Syndrome

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ABSTRACT

Glanzmann's thrombasthenia (GT) is a rare genetic platelet disorder that leads to bleeding problems in affected individuals. We present a 28-year-old woman with GT who experienced a rare symptom of painless gross hematuria in the last month of pregnancy. To provide the best care, an interdisciplinary approach was followed by a team of obstetricians and gynecologists, hematologists, neonatologists, and anesthesiologists. The IUGR fetus was delivered by cesarean section and had mild acidosis and thrombocytopenia at birth. Both the baby and the mother were carefully cared for and treated. Hematuria also improved spontaneously within two weeks after delivery.

Gross hematuria during pregnancy rarely occurs due to the pressure of the presenting part of the fetus on the mother's bladder (due to engagement). Aggravation of any clinical symptoms in pregnant women with GT should alert maternal and fetal health care providers to make individualized decisions.

Introduction

Glanzmann thrombocytopenia (GT) is a genetic disease of the AR (autosomal recessive disorder) associated with platelet dysfunction. Platelets are special non-nuclear cells that participate in complex reactions to prevent bleeding [1]. Point mutations, deletions, and genetic additions lead to defects in complex proteins encoded by the ITGA2B and ITGB3 genes.

Platelets naturally bind to von Willebrand and collagen beneath the endothelium of the vessel wall via surface glycoprotein 1b-IX-V and pass through the site of injury to the vessel. This activates platelets and also exposes the fibrinogen receptor GP IIb/IIIa. Platelets contain defective levels or small amounts of the GP IIb/IIIa glycoprotein in this rare inherited bleeding disorder. As a result, there is no fibrinogen bridge between one platelet and other platelets, and the bleeding time will be significantly longer.

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The clinical manifestation of GT is usually mucocutaneous bleeding, and gross hematuria is a rare manifestation (6-8%) [1,2].

Management of bleeding during labor is important in all pregnant women, but it is a big challenge among those with GT [3,4]. Various complications such as pre-eclampsia, uterine atony, etc., threaten pregnant women, but severe bleeding during childbirth in these patients can be irreversible and life-threatening [5]. This worries gynecologists and anesthesiologists.

Case presentation

At the age of 13, she experienced menarche with severe and prolonged bleeding, which led to a blood transfusion. Throughout her life, she was treated with ferrous sulfate, oral combined contraceptive pills, and tranexamic acid to prevent severe bleeding and treat iron deficiency. She did not have vaginal bleeding when she was admitted, and her vital signs were stable. She had no vaginal discharge, bleeding, or uterine contractions and was satisfied with the fetus' movements. Hematology, biochemistry, and primary electrolyte tests were normal, but the blood clotting time was abnormal: Hemoglobin = 13.6 g/dL, Platelet (PLT) = 149,000/µL, Creatinine = 0.7 mg/dL, Prothrombin Time = 11.4 s, Partial Thromboplastin Time = 27 s, INR (International Normalized Ratio) = 1.4, Fibrinogen = 247 mg/dL, Bleeding time = 3 min, Clotting time = 11 min. Urine culture was negative for the growth of microorganisms and was a standard urine test except for many red blood cells. In her peripheral blood smear (PBS), giant platelets without toxic granulation were reported.

Unfortunately, it was not possible to check anti-platelet antibodies in the patient's sample. Due to the lack of evidence of urinary tract infection, a single donor platelet injection was performed. Unfortunately, the patient's arbitrary consumption of oral tranexamic acid continued, and she suffered urinary obstruction due to the formation of a clot in her urine. Tranexamic acid was immediately discontinued, a urinary catheter was inserted, and the bladder was flushed. The kidneys, bladder wall, and urethra were normal on ultrasound, and only blood was reported in the bladder. According to the urologist, cystoscopy was unnecessary due to ultrasound and normal renal function.

A perinatologist performed an ultrasound to check the fetus's health, and termination of pregnancy was recommended due to the IUGR grade 1 fetus. At the mother's request (she was worried about intracerebral hemorrhage of the fetus), an elective cesarean section was planned.

The patient underwent general anesthesia and a midline cesarean section. The baby boy was born with an Apgar score of 9/10 and 10/10 in the first and fifth minutes. The placenta was calcified and small, and the amniotic fluid was impregnated with concentrated meconium. A peritoneal drain was implanted to assess and control possible bleeding after surgery.

Before and during surgery, single donor platelet transfusion, cryoprecipitate, and tranexamic acid were administered. After the cesarean section, misoprostol and oxytocin were used in high doses to prevent bleeding. In the first hours after delivery, she suffered from severe vaginal bleeding, which was controlled by administering 50 units of oxytocin and 400 micrograms of misoprostol. Fortunately, on the second day after the operation, the removed peritoneal drain showed no bleeding. A platelet transfusion was performed due to increased hematuria and clotting in the urine. A few days after surgery and the continuation of gross hematuria, a CT scan of the kidneys was performed with contrast, and there was no evidence of papillary necrosis. The patient underwent conservative management and was discharged on the 6th day after surgery with an excellent general condition and minor bleeding, less than menstruation, and brief hematuria. Low-dose progesterone was prescribed to prevent menstruation after the termination of pregnancy.

Hematuria resolved spontaneously two weeks after discharge, and irregular menstrual bleeding began two months after delivery. It is currently being treated with tranexamic acid and iron supplements due to iron deficiency.

Remarkably, a seemingly healthy baby was born with a favorable Apgar score and a pH of 7.27, BE = -4.8. At birth, the baby had normal coagulation tests, a platelet count of 28,000, and underwent a sepsis workup. In subsequent tests, the baby tested positive for COVID-19 polymerase chain reaction (PCR), while the mother's COVID-19 PCR test was negative. The neonatal intracranial ultrasound was normal and showed no evidence of internal or cutaneous bleeding. The infant was closely examined, and sepsis was ruled out. Autoimmune thrombocytopenia due to the mother's frequent consumption of blood products was reported as the cause of thrombocytopenia in the newborn. He was discharged from the hospital one week after birth with normal platelets and no evidence of bleeding.

Discussion

GT is a rare bleeding disorder with autosomal recessive inheritance. Studies have reported partially conflicting results on the prevalence of the disease among men and women. Still, in the study by Razjoo et al. in Iran, male patients were 16% higher than females [6,7].

The use of antifibrinolytics, recombinant human activated factor VII (rFVIIa), and platelet injection are therapeutic interventions that can even prevent postpartum hemorrhage in GT patients [8]. Despite the recommendation not to use antifibrinolytic drugs in hematuria patients, we used tranexamic acid due to the lack of access to rFVIIa to control bleeding during delivery [9]. Unfortunately, the patient had urinary obstruction due to blood clots in the urine, and we had to stop this medication.

A woman with GT is exposed to life-threatening bleeding throughout her life, one of which is during childbirth. A significant challenge is determining the method of delivery. During vaginal delivery, mucosal bleeding and hematoma of unknown origin are possible when the fetal head is pressed against the mother's pelvic organs and arteries. In addition, the risk of neonatal intracranial hemorrhage (in case of decreased fetal platelet count or dysfunction) is higher in vaginal delivery.

On the other hand, bleeding during cesarean delivery is more than vaginal delivery, and there is a possibility of hematoma in different layers of the abdominal wall.

In the case we presented, the patient exhibited gross hematuria due to the engagement of the fetal head inside the mother's pelvis in the last weeks of pregnancy, which is one of the rare symptoms among these patients. Due to grade 1 FGR (fetal growth restriction), termination of pregnancy was considered, and due to the patient's lack of consent to vaginal delivery, an elective cesarean section was performed. An incidental finding during the operation was the presence of amniotic fluid stained with thick meconium.

Maternal GT alone is not an indication for cesarean section, and uncomplicated instrumental delivery has been reported [10]. Due to the rarity of this disease, the possibility of fetal growth restriction, oligohydramnios, or amniotic meconium fluid in pregnant women with GT has not been investigated, and only a case report has been provided [10].

These patients often experience significant bleeding during or after childbirth, and the fetus is at risk of death or neonatal thrombocytopenia when the mother carries anti-platelet antibodies [5,11,12]. Selective and planned cesarean section to control bleeding with uterotonics and platelet injection is uncomplicated and can prevent intracranial hemorrhage in infants who are unaware of their coagulation status [4,13-15].

Finally, to determine the route of delivery in a pregnant woman with Glanzmann's thrombasthenia, in addition to consultation in a multidisciplinary team, the assessment of the condition of the mother and fetus by a gynecologist or perinatologist should be done individually to ensure the least risk for the mother and the baby. Sometimes a planned cesarean section in an equipped hospital may be safer than a vaginal delivery.

Ethical Considerations

Ethical Approval

This manuscript was introduced after the approval of the Ethical Committee of Isfahan University of Medical Sciences (IR.ARI.MUI.REC.1401.327) and after obtaining informed consent from the patient to participate in this study.

Compliance with ethical guidelines

There were no ethical considerations to be considered in this article.

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Conflict of Interests

The authors have no conflict of interest to declare.

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