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Timely Treatment And Management Of Placental Abruption: An Interesting Clinical Case And Short Review

Si Dung Chu [1*,2], Thu kim Thi tran[1], Minh Thi Tran[1], Huy Quang Doan [1,3], Giang Dinh Dang [4] , Xanh Thu Pham [5]

[1*] Department of Internal Medicine, Vietnam University of Traditional Medicine, Hanoi, Vietnam
[2] Board of Directors, Hai Phong - Vinh Bao International General Hospital
[3] Board of Directors, Vietnam University of Traditional Medicine, Hanoi, Vietnam
[4] Obstetrics Department, Hai Phong- Vinh Bao International General Hospital, Vietnam
[5] Board of Directors, Hai Phong International Obstetrics and Pediatrics General Hospital, Vietnam

ABSTRACT

Objective: Describe a clinical case in timely treatment and management of placental abruption and medical review. **Case report:** This record a 32-year-old female patient, who is 38 weeks pregnant woman, was admitted to the hospital when she experienced abdominal pain and vaginal bleeding, normal blood pressure examinations. Conducted vaginal examination shows a little thin dark red blood, Cervical dilation 3cm, bulging amniotic sac, cephalic position. Ultrasound results showed an image of a cephalic fetus weighing 3224 grams, fetal heart rate 159 cycles/minute, AFI 12.3cm, amniotic fluid being homogenous, placenta attached to the back of the uterus. Diagnosis is third labor and delivery, 38 weeks pregnant, cephalic position, occult placental abruption. The pregnant women was indicated for emergency surgery to cesarean section, and the surgery was successful; After surgery, the patient was stable. **Conclusion:** The progression of placental abruption is very rapid and dangerous, so it is necessary to closely monitor pregnant women, identify risk factors, and promptly detect situations of placental abruption for timely treatment. The hospital needs to be equip for obstetric operating rooms with modern equipment and well-trained surgical teams ready for obstetric emergencies. D-Dimer testing should be ordered early in suspected cases or where placental abruption needs to be ruled out.

Keywords: Placental abruption, hidden type, monitoring, management, treatment of placental abruption

INTRODUCTION

Placental abruption is a case where the placenta is in the correct position but peels off prematurely before the fetus comes out. The term placental abruption does not include cases of partial peeling of the lower pole of the placenta previa, i.e. cases where the placenta is located near or covering the opening of the cervix.[1-6] The incidence of placental abruption during pregnancy ranges from 0.4-1.0%.[7-15] In placental abruption, due to the placenta peeling off the lining, the oxygen exchange between mother and fetus is completely interrupted, leading to fetal distress in labor and very high mortality during labor. Placental abruption is classified into 4 different types depending on the severity and symptoms of this disease: hidden, mild, moderate, and severe placental abruption.[16,17]

Placental abruption was officially described and published in 1901 with Holmes's extensive survey including 199 cases.[18] DeLee was the one who described placental abruption due to rupture of vascular components in 1982.[19] Any agent that disrupts the way the placental blood vessels attach to the uterine wall causes placental abruption; Disease, external trauma, placental abnormalities, exposure to toxic chemicals during pregnancy, and rapid rupture of amniotic fluid can all be causes of placental abruption**.** Complications of placental abruption include shock due to blood loss, bleeding due to decreased fibrinogen, acute kidney failure, premature birth, and death of mother and child. Placental abruption is an obstetric emergency, its severe course threatens the life of the fetus and mother, and is the leading cause of maternal death (2-5%) and fetal death (10-15%).[16,17,20,21]

Perinatal mortality in placental abruption is very high and can be up to 25%. Importantly, even when revived, newborns can have serious brain sequelae, with 15-20% of survivors having later neurological sequelae[16,17], When placental abruption occurs, the development can be very rapid and unpredictable, requiring quick diagnosis, timely decisions, and treatment. Therefore, we report a clinical case of placental abruption with rapid and unpredictable progression from mild to severe at an International Hospital in Vietnam to share more clinical situations in placental abruption.

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CLINICAL CASE

This record appears to be a prenatal progress note for a 32-year-old female patient, who is 38 weeks pregnant woman, was admitted to the International General Hospital in Vietnam when she experienced abdominal pain and vaginal bleeding on June 1, 2022.

The pregnant woman's medical history: The report states that the woman has a history of two previous vaginal deliveries (in 2018 and 2020) with the heaviest baby weighing 3800 grams. She has no history of chronic medical conditions or bleeding disorders.

Medical history: The Pregnant woman is 38 weeks pregnant, and expected to give birth on June 15, 2022, healthy pregnancy, has normal blood pressure examinations, 10kg weight gain. On the day of admission, she had abdominal pain and light-dark red vaginal bleeding. There was no history of mechanical trauma, signs of pre-eclampsia, or previous invasive intervention procedures. When the pregnant woman was examined at the hospital, she was in stable condition, pulse of 80 cycles/minute, and blood pressure of 112/68 mmHg. The heart beats regularly, and the lungs murmur clearly. Uterus ovoid, intermediate position with increased basal tone.

Obstetric examination: Height of uterus/abdominal circumference: 32/100 cm. Fetal heart rate fluctuates narrowly at 155 - 160 times/minute lasting > 30 minutes, uterine contractions frequency 4-5, uterine muscle tone increases, vaginal examination shows a little thin dark red blood, Cervical dilation 3cm, bulging amniotic sac, cephalic position.

Ultrasound results showed an image of a cephalic fetus weighing 3224 grams, fetal heart rate 159 cycles/minute, AFI 12.3cm, amniotic fluid being homogenous, placenta attached to the back of the uterus, limiting assessment of the lower edge of the placenta due to get pregnant. Midbrain/umbilical RI index: 0.75/0.56

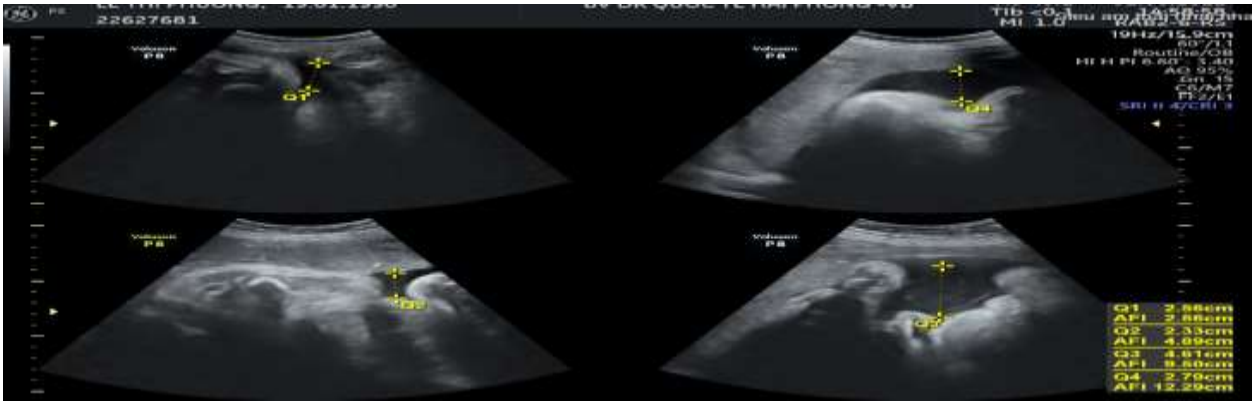

Figure 1: Ultrasound image of the fetus upon admission to the hospital

Obstetric monitoring: Fetal heart rate fluctuates at a narrow rhythm of 155 - 160 beats/min, uterine contractions frequency 4-5

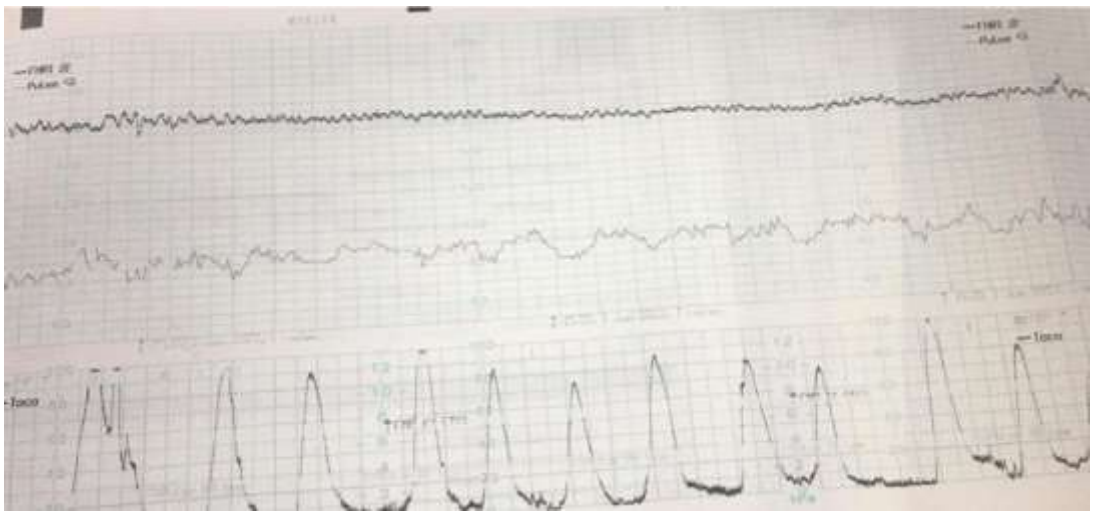

Figure 2: Monitoring images when entering the hospital

Basic blood tests: Within normal limits
Blood biochemical tests: Blood Glucose: 4.5, Urea/Creatinine: 3.21/60.9 mmol/l, GOT/GPT: 25.0/22.4 mmol/l, Total Protein: 74.9, Total Calcium: 2.32, serum iron measurement: 21.9 micromol/l, Na/K/Cl: 133.3/4.0/101 mmol/l. Blood test: Rh (D) positive blood type, B blood type. Fibrinogen: 4.91, PTs/PT%/INR: 10.0/130/0.87, APTTs/ APTTbc : 27.0/0.87. Other tests have not detected any abnormalities.
Initial diagnosis: Third labor, 38 weeks pregnant, head position, intense uterine contractions, need to rule out placental abruption.
Medical treatment: Have the pregnant woman lie with her head low, keep warm, breathe oxygen, catheterize, and monitor urine output to evaluate the effectiveness of resuscitation. Begin continuous fetal heart rate monitoring because the fetus is at risk of hypoxia and acidosis. Establish an intravenous line, assess and monitor vital signs (pulse, blood pressure, respiratory rate, and blood loss), and monitor if the woman has signs of moderate or severe placental abruption such as bleeding from the midline. moderate to severe, hypotension, uterine hyperactivity, strong and rapid uterine contractions, blood clotting disorders or abnormal fetal heart rate. Administer crystalloids, preferably Ringer Lactate, to maintain urine output above 30 ml /hour. This pregnant woman does not have to treat other groups of symptoms if any (high blood pressure, anuria, blood clotting disorders, antibiotic treatment).
For gestational age 38 weeks, which is the group > 36 weeks, termination of pregnancy is indicated in all cases of suspected acute placental abruption at week ≥ 36 of pregnancy. Vaginal birth can be considered when there is a seizure. strong uterine contraction or response to amniocentesis and use of oxytocin to promote labor if there are no contraindications to mandatory cesarean section (abnormal fetal position with previous cesarean section).
During the initial monitoring process, the progress was rapid, suddenly the fetal bradycardia appeared. On Monitoring, the fetal heart rate suddenly decreased to oscillation of 100 cycles/minute, and the examination showed signs of fetal distress. Diagnosis: Third labor, 38 weeks pregnant, head position - Fetal distress - Intense uterine contractions, thought to be placental abruption. Treatment: Emergency cesarean section.
Developments during cesarean section: Make a horizontal skin incision on the abdomen into the abdomen. The front of the uterus had many dark purple infarcts. Horizontal surgery on the lower part of the uterus took out a baby boy weighing 3100g, APGAR 9-10 VND. Amniotic fluid mixed with blood. The placenta was attached to the front of the uterus, with about 100 mg of blood clots behind the placenta. Check the 2 normal appendages. During and after surgery, it was stable.

Figure 3: Image of the uterus seen from the outside

Figure 4: Image of adherent blood clots spreading to create dark cell clusters in case of placental abruption

Diagnosis after surgery: Third labor and delivery, 38 weeks pregnant, cephalic position, occult placental abruption.
The patient received postoperative care using broad-spectrum antibiotics and was discharged from the hospital 5 days later, recovery after surgery was good, re-examination after 07 days of discharge was stable.

DISCUSSION

Placental abruption is an obstetric emergency that often leads to many serious consequences that threaten the lives of mother and fetus. To date, the diagnosis of placental abruption is usually a sudden onset of abdominal pain, vaginal bleeding, and an episode of [1,-5] Hypertonic or basal uterine contractions, which may be accompanied by fetal distress or stillbirth. In this clinical case, the patient has a sudden onset of abdominal pain, accompanied by a little vaginal bleeding, and strong uterine contractions, so from the beginning it is necessary to immediately think about this situation with the diagnosis. Diagnosis of placental abruption requires quick monitoring and accurate diagnosis and timely treatment. Clinical symptoms of placental abruption are very variable. Diagnosing severe placental abruption is often easy due to obvious symptoms; However, the diagnosis of occultation of mild placental abruption is often difficult and uncertain; Therefore, placental abruption is a diagnosis of exclusion. Proteinuria may be positive in some cases of pregnant women with accompanying preeclampsia and eclampsia. Blood formula: may have decreased red blood cells, decreased hemoglobin, decreased platelets... [1-3.18]

Blood clotting function: Fibrinogen concentration in the blood is related to blood loss. According to Yinka Oyelese and colleagues (2018), Fibrinogen concentration ≤200 mg/dL has a positive predictive value of 100% for postpartum hemorrhage. Meanwhile, if Fibrinogen concentration ≥ 400 mg/dL has a negative predictive value of 79.0%. [14,18] In another study, it was shown that in cases of severe placental abruption affecting the fetus, the Fibrinogen concentration in the blood was < 150 mg/dL. Besides, an increase in D-Dimer concentration in the blood is also a suggestion for diagnosis. [7,18,22,23,24]

An increase in D-Dimer levels may also suggest the diagnosis. Coagulation disorder in placental abruption is firstly increased consumption followed by increased fibrinolysis. The formation of a retroplacental hematoma leads to the consumption of large amounts of clotting factors. In addition, Thromboplastin from the decidua and placenta is released into the maternal blood causing DIC, reducing procoagulant factors, and increasing consumption. Immediately after that, DIC will activate Plasminogen to Plasmin, Plasmin lyses Fibrin, which means fibrinolysis, creating Fibrin degradation products, these products have anticoagulant effects. [7,18,22,23,24]

Coagulopathy in placental abruption is first increased consumption, followed by fibrinolysis: Formation of hematoma behind the placenta leads to consumption of large amounts of coagulation factors. In addition, Thromboplastins from the decidua and placenta released into the maternal circulation will initiate Disseminated Intravascular Coagulation (DIC), resulting in a decrease in procoagulant factors due to increased consumption. Immediately afterward, DIC will cause the activation of plasminogen to plasmin. Plasmin causes fibrinolysis, which means fibrinolysis, creating fibrin degradation products, which have anticoagulant effects. Coagulation disorders are more likely to occur in placental abruption and occult hemorrhage, because the hematoma behind the placenta increases the pressure between the intraplacental spaces, thereby promoting the release of thromboplastin from the cake. placenta into the maternal circulation. [7,18,22,23,24] .

Ultrasound has very limited value in diagnosing placental abruption. Up to now, there is still no clinical or laboratory method to accurately diagnose placental abruption. The value of ultrasound in diagnosing placental abruption is very limited. The sensitivity of ultrasound in diagnosing placental abruption is very low, only 24.0%, because the echogenicity of the placenta and fresh hematoma are similar. Therefore, an ultrasound that does not show a retroplacental hematoma does not help rule out the diagnosis of placental abruption, however, ultrasound helps confirm the presence or absence of placenta previa - a common differential diagnosis of placental abruption. [19.25]

Due to advances in ultrasound resolution[19.25] , ultrasound imaging and interpretation have recently begun to determine the diagnostic accuracy of targeted ultrasound in detecting placental abruption in patients with vaginal bleeding. These authors found that the sensitivity, specificity, positive predictive value, and negative predictive value of ultrasound were 24.0%, 96.0%, 88.0%, and 53%, respectively.

Magnetic resonance imaging (MRI) in diagnosing placental abruption has a sensitivity and specificity of up to 100% but is rarely used. Compared with ultrasound, MRI is more sensitive in determining diagnosis but hardly changes the follow-up attitude for this group of pregnant women while the cost is high. MRI should only be performed when ultrasound is negative and the diagnosis of placental abruption changes the follow-up and treatment process. [25,26]

Couvelaire uterus: Blood from the hematoma will seep into the uterine muscle wall. Hematoma is widespread in the muscle layer and below the serosa. In severe cases, this gonococcal impregnation may spread to the serosa of the fallopian tube, broad ligament, ovary, and adjacent loose tissue.

Because of the rapid progression from occult placental abruption to a severe form with signs of fetal distress, the progression is very rapid and can quickly lead to interruption of placental circulation. This is a fetal emergency, so it must be Rapid emergency treatment to end the pregnancy as quickly as possible, so the appointment of a cesarean section in this case is completely reasonable.

Treatment of placental abruption includes parallel treatment of three issues: medical treatment, obstetric treatment, and treatment of complications.

Medical treatment and treatment of complications: The purpose of medical treatment is to treat the patient's hypovolemic shock by restoring lost blood volume with crystalloids and blood, treating management of DIC and secondary thrombolysis if present, and medical complications of hypovolemic shock and of DIC-fibrinolysis.
Obstetric treatment: Obstetric treatment of placental abruption depends on the patient's clinical condition, gestational age, and amount of blood loss. Except for cases where the amount of blood lost to the hematoma is very small, in most cases of placental abruption it is usually necessary to deliver as soon as possible. The earlier the diagnosis and the more urgent the treatment, the better for the mother and fetus.
Delaying birth may be beneficial only in very rare cases with premature gestational age, mild, self-limited placental abruption, permissive maternal and fetal conditions, and emergency facilities available. always ready.
Early amniocentesis is always beneficial in placental abruption, and should be performed in all cases. Amniocentesis helps reduce inter chorionic pressure, helps reduce postplacental bleeding, and reduces thromboplastin release into the maternal circulation.
Furthemore, early amniocentesis can also promote faster labor. Deciding on measures depends on the condition of mother and fetus. In situations where the placenta is abrupt and the fetus is viable and cannot afford a quick vaginal birth. A cesarean section can help save the life of a threatened fetus. The time between the decision to delivered is an important factor in improving perinatal outcomes. Studies suggest this time should not exceed 20 minutes.[1,2,3,4]
Research by Salma I Kayani (2003) surveyed 33 singleton pregnancies with placental abruption and fetal bradycardia: 15/22 cases with birth time less than 20 minutes had live fetuses without complications on the brain, while there were In 8/11 cases where the birth time was more than 20 minutes, the fetus died or had brain sequelae later. [27] In this case of placental abruption, although there was no time to have a D-Dimer test for the patient, early detection of placental abruption as well as timely detection of signs of fetal distress helped the physician quickly diagnose the condition. Deciding to prescribe cesarean section[8,19,23,24,25], the advantage here is that the hospital facility already has an obstetrics department, an obstetrics operating room and an obstetrics surgery team that helps prescribe surgery. Caesarean section surgery is performed quickly and promptly to avoid complications of placental abruption, ensuring safety for both mother and baby.
When approaching a case of placental abruption, the most important point to remember is that in placental abruption there is no mechanism or measure to limit the development of retroplacental hematoma. A rule of thumb is that the longer the placenta separates, the more blood is lost and DIC appears. The later it is detected, the further DIC-fibrinolysis progresses. Therefore, adequate treatment of placental abruption does not aim to limit or terminate retroplacental hematoma formation. The goal of comprehensive treatment of placental abruption is to limit the severity of placental abruption, avoid complications, and preserve the life of the pregnant woman and fetus. [8,19,23,24,25]
Patients with minimal placental separation and initially stable general conditions may rapidly deteriorate if placental abruption progresses. The clinical picture may also be worsened by comorbid conditions, such as preeclampsia, cocaine use, or trauma. The management plan for patients with placental abruption must take into account the condition of both mother and fetus. Initial assessment and stabilization of the patient should be discussed, along with assessment of maternal hemostasis, development of an adequate treatment plan, and postpartum care. [1-5,7,8]

CONCLUSION

It is necessary to carry out the work of communication, education, and birth planning and protection of reproductive health. Propagate and organize correct and complete examination and management of pregnancy at grassroots medical levels and family doctors.
For medical facilities that do not have specialized obstetric surgery, it is necessary to be referred to a higher level for examination, monitoring and delivery in cases where the pregnancy is at risk or has favorable factors that can easily lead to placental abruption. Pregnant women with symptoms of placental abruption should be evaluated promptly to establish a diagnosis, evaluate the condition of the mother and fetus, and institute appropriate management measures.
For specialized medical facilities with obstetric surgery, it is always necessary to prevent serious complications of placental abruption. Early diagnosis and correct classification of clinical forms of placental abruption allow for quick, appropriate, and aggressive treatment from the beginning. It is necessary to have a specialized intensive care unit with full facilities such as machinery, medicine, infusion fluids, blood reserves, and human resources for emergency treatment.
In addition to basic tests, D-Dimer testing should be performed by obstetricians at fetal monitoring facilities and should be ordered early in suspected cases or where placental abruption needs to be ruled out.

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