CASE REPORT

A Vaginal Stillbirth after Aortic Surgery of Type B Aortic Dissection in a Pregnant Woman

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Summary

Acute aortic dissection occurring during pregnancy poses great danger to both the mother and fetus. Cesareans are usually performed before or after the aortic repair depending on the conditions of the mother and fetus. Here we report our experience in treating a 32-week pregnant woman with a type B aortic dissection, whose baby had died before admission. A cesarean section was initially arranged after emergency aortic repair. However, the patient started to deliver the fetus vaginally after the aortic surgery and the stillborn baby was delivered vaginally. This case report provides new insight into the method of delivery in a pregnant woman with an aortic dissection.

Key words: Thoracic aortic aneurysm and pregnancy, Stillborn, Treatment

Acute aortic dissection occurring during pregnancy poses a great danger to both the mother and fetus. Without timely management, more than 50% of the patients will die within 48 hours.1 The maternal and fetal mortality rates from acute aortic dissection remain high. The fetal mortality rate of type B dissection has been reported to be higher than that of type A, which is ascribed to the involvement of the internal iliac arteries.2,3 Cesareans are usually performed before or after the aortic repair depending on the conditions of the mother and fetus, while there are few reports in the literature on vaginal delivery of a stillborn baby in pregnant women with an aortic dissection. Here we report our experience in treating a 32-week pregnant woman with a ruptured type B aortic dissection, whose baby had died before admission. A cesarean section was initially planned after an emergent aortic repair. However, the patient started her vaginal stillborn delivery immediately after aortic surgery and the stillborn baby was delivered vaginally. This case report provides new insight into the method of delivery in a pregnant woman with an aortic dissection, showing that vaginal stillborn delivery can be started under such conditions.

Case Report

A 30-year-old G3P2 pregnant woman at 32 weeks gestation, diagnosed with an acute type B aortic dissection, came to our emergency department after sudden tearing pain which radiated into her chest and back. She was diagnosed with a “stomachache” in a rural community hospital. The pain did not weaken even after she took analgesics and antispasmodics. She went to a larger hospital and lost conscious for several minutes upon arriving at the hospital. Norepinephrine was used to increase her blood pressure. After that she felt no movement in her fetus, which was 24 hours after the initial pain. Fetal heart sounds were absent. Ultrasound scanning confirmed that the baby had died (Figure 1). Another CT showed that she had a type B aortic dissection, which had ruptured into the thorax and the true lumen was severely compressed (Figure 2). She was then transferred to our hospital about 40 hours after onset of the pain.

At admission she exhibited dyspnea and anuria. On examination her vital signs were unstable. She was tachycardic with a heart rate of 130 bpm, BP of 156/82 mmHg, respiratory rate of 30 breaths/min, and oxygen saturation of 90%. Pelvic examination revealed the cervix was closed. Uterine contractions were not palpable. Arterial blood gas showed hyperkalemia of 6.96 mmol/L, BE -19.3 mmol/L, and Lac 6.68 mmol/L. Chest radiography showed bilateral pleural effusion, a widened upper mediastinum, and the trachea and mediastinum were compressed to the right. Heart ultrasound scanning results were normal except for left ventricle hypertrophy. Abdominal ultrasound scanning showed there was a single dead fetus without a heartbeat. Laboratory studies showed hemoglobin 82 g/L, creatinine 380.0 μmol/L, and urea ni-
trogen 11.89 mmol/L, indicating acute kidney failure. Use of norepinephrine was discontinued because of her high blood pressure. She received medications (calcium, high concentration glucose, insulin and sodium bicarbonate) to maintain her systolic blood pressure at 100-120 mmHg and to adjust her electrolyte imbalance. A multidisciplinary medical team was set up to make plans for her treatment. Based on the mother’s acute aortic dissection rupture into the thorax and the stillbirth, it was decided an emergent aortic repair should be performed first. The cesarean section was to be performed when her condition returned to normal ranges after emergency aortic surgery.

The emergency aortic surgery was very successful and lasted for 5 hours. General anesthesia was performed and a stent-graft was implanted into the descending aorta through a median sternotomy. Cardiopulmonary bypass (CPB) lasted for 62 minutes and the circulatory arrest time was 16 minutes under moderate hypothermia of 28°C. When the patient was transferred to the ICU with intubation, we noticed that the amniotic sac was outside the vagina. An obstetrician confirmed the vaginal delivery of a stillborn fetus had started. The vital signs of the woman were stable with a heart rate of about 90 to 100 bpm and blood pressure of about 130/75 mmHg during the course of delivery, with the transfusion and use of dopamine. The stillbirth delivery occurred over a period of 1.5 hours with the help of a midwife. There was little bleeding and the uterine cavity was packed with gauze in case of hemorrhage. The gauze was removed 24 hours after the delivery. The woman was extubated on the first day after the operation. She received continuous renal replacement therapy (CRRT) for 70 hours for her kidney failure until her urine volume returned to a normal level.

The postoperative course was uneventful and she was discharged in a healthy condition, with the exception that her creatinine was 307 μmol/L.

Discussion

Half of acute aortic dissections in women under the age of 40 occur during pregnancy or peripartum period. The third trimester, the delivery, and the early postpartum period are the riskiest periods for acute aortic dissection. Approximately 50% of aortic dissections in pregnant women occur during the third trimester. An acute aortic dissection poses great danger to both the mother and the fetus. Management should take the health of both the mother and fetus into consideration.

The main predisposing factor for aortic dissection is degeneration of the collagen and elastin in the intima media, such as is seen in Marfan syndrome and other genetic disorders. Hemodynamic and hormonal changes in the peripartum period have also been reported to play a role in the increased risk. In our case, the woman had no sign of systemic aortitis or Marfan syndrome. The most likely risk factor for the aortic dissection was hypertension, which had been reported.

The fetal mortality rate was reported to be as high as 35% in type B aortic dissections. The reason for such a high fetal mortality may be that the extension of dissections affecting the internal iliac arteries results in uterine and placental hypoperfusion which leads to intrauterine fetal death. Timely diagnosis and management are the keys to decrease fetal mortality. In our case, the pregnant woman had an acute aortic dissection that ruptured into the thorax and she had hemorrhagic shock, which caused the fetal death.

For a pregnant woman with an aortic dissection, a better outcome is obtained when aortic surgery is concomitant to caesarean section. However, when the fetus is confirmed dead, the aortic surgery should be performed first for the sake of the mother’s health, particularly for a woman with unstable signs. In our case, emergent aortic surgery was performed to guarantee the mother’s safety.

The woman in our case started vaginal labor of her stillborn fetus immediately after surgery. This provides us a new insight into the delivery mode of stillborn babies in
pregnant women with acute aortic dissections by showing us that vaginal stillbirth delivery can be started in this situation. It has been reported that 80% to 90% women will spontaneously go into labor within 2 weeks of fetal demise. They are unlikely to experience any physical harm if they delay labor for a short period of time. Furthermore, patients who have undergone aortic surgery would normally recover within 2 weeks. Therefore, a waiting time of 2 weeks would be safe and appropriate for the patient. Closely monitoring of disseminated intravascular coagulation (DIC) and other complications would be required during the waiting interval. Labor induction or caesarean section will be considered based on the mother’s conditions if natural labor has not started within this period.

In our case, the woman had not recovered from general anesthesia when the vaginal delivery started, so she was safe in a stable hemodynamic state. If patients who are not under general anesthesia start vaginal delivery after aortic surgery, painless labor and careful monitoring of hemodynamics are required in order to assure the safety of the patient and decrease the potential risks, such as aortic rupture. In conclusion, an aortic dissection during pregnancy is a rare, underdiagnosed disease. Prompt and timely diagnosis of an aortic dissection in a pregnant woman is of great significance, which can win time for both the mother and the fetus. In addition to cesarean section, vaginal stillborn delivery can be considered as another option for the removal of a stillborn fetus. Treatment of a pregnant woman with an aortic dissection requires multidisciplinary cooperation and the delivery method should be adjusted based on the gestational age, and the conditions of the mother and fetus.

Disclosures

Conflicts of interest: We have no conflicts of interest to declare.

References