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A Case Report of Placental Chorioangioma with Adverse Maternal and Perinatal Outcomes

Kawsar Diab[1], Ghinwa Shehab[2], Jihad Al Hasan[1,3,4], Hassan Ajami[5], Marwan Saliba[6], and Kariman Ghazal[1,4,7*]

[1]*Obstetrics and Gynecology Department, Al Zahraa Hospital University Medical Centre, Beirut, Lebanon*

[2]*Maternal Fetal Medicine Obstetrics and Gynecology Department, Al Zahraa Hospital University Medical Centre, Beirut, Lebanon*

[3]*Obstetrics and Gynecology Department, Lebanese University, Beirut, Lebanon*

[4]*Obstetrics and Gynecology Department, Rafik Hariri Hospital University Medical Center, Beirut, Lebanon*

[5]*Reproductive Medicine Obstetrics and Gynecology Department, Al Zahraa Hospital University Medical Centre, Beirut, Lebanon*

[6]*Surgical Pathology and Cytology Department, Al Zahraa Hospital University Medical Centre, Beirut, Lebanon*

[7]*Obstetrics and Gynecology Department, Makassed Hospital University Medical Center, Beirut, Lebanon*

Correspondence should be addressed to Kariman Ghazal, MD, Obstetrics and Gynecology Department, Lebanese University Beirut, Lebanon

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ABSTRACT

Chorioangioma also known as placental hemangioma is a common, non-trophoblastic benign vascular placental tumor of primitive chorionic mesenchyme. The size of the tumor is important. Smaller tumors are clinically insignificant. Giant chorioangioma more than 5 cm are associated with maternal and fetal complications. Imaging techniques help in early diagnosis. Placental lesions detected on sonography necessitate close surveillance of these pregnancies because for the outcome of pregnancy. We present a 38-years multigravida with placental chorioangioma who went in premature delivery for fetal distress delivered a male baby. The baby died after 3 months for respiratory distress. The histopathological examination of placenta helped in the diagnosis of placental chorioangioma.

KEYWORDS

Chorioangioma; Ultrasonography; Placenta; Pregnancy; Preterm baby

INTRODUCTION

Trophoblastic and non-trophoblastic tumors are the two types of placental tumors. The most frequent non-trophoblastic tumor is chorioangioma. These tumors belong to a widespread primary benign category. Chorioangiomas typically have an incidence between 0.5% and 1%. [1,2]. Large chorioangiomas are tumors that are larger than 5 cm in size. According to several research

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studies, the frequency ranges between 1/9000 and 50000 pregnancies and 1/2000 to 3500 births [3-7]. Large chorioangiomas are uncommon, nevertheless. In the majority of studies, increased prevalence were observed in first-time mothers, female sex fetuses, twin pregnancies, older mothers, and other maternal morbidities such as diabetes and hypertension [4,8].

Uncertainty exists regarding the pathophysiology of this benign tumor [8]. Some studies include genetics and hypoxia as contributing variables [9-11]. These tumors are divided into cellular, angiomatous, and degenerative categories histologically. The most prevalent type is angioma. Prenatal difficulties result from placenta vascular system expansion, abnormal vascularization, arteriovenous shunts, malformation, and improper vascularization [8]. Unless a routine histological examination of the placentae is done, small chorioangiomas are typically not identified. Small chorioangiomas are usually asymptomatic and have no negative effects on the mother or the fetus. Larger chorioangiomas >5 cm, on the other hand, are frequently detected on a standard antenatal ultrasound scan and are typically observed as a hypoechoic mass with anechoic cystic gaps in between. Using MRI imaging, the correctness of the diagnosis may be verified. Due to aberrant arterial shunts and vascular perfusions, these big tumors are vulnerable to maternal problems and poor fetal outcomes. Premature labor, polyhydramnios, abruption placenta, preeclampsia, eclampsia, and postpartum hemorrhage are examples of maternal complications [1,8,12].

Preterm delivery, intrauterine growth restriction, fetal congestive heart failure, fetal hydrops, fetal anemia, fetal thrombocytopenia, and intrauterine fetal death [1,8,12,13]. are a few examples of fetal problems. Several studies [8,14,15] have described these vascular placental tumors and their connection to chromosomal abnormalities and fetal deformities. 30%-40% perinatal mortality has been recorded [3,12]. The size of the tumor, the severity of the vascular shunts, and maternal and fetal problems all affect prognosis [6,12]. Small-sized and asymptomatic tumors are often treated conservatively with regular ultrasonography monitoring and evaluation. In contrast, regular ultrasounds, Doppler tests to evaluate vascular shunts, the vascularity of the tumors, and the middle cerebral artery, fetal cordocentesis, and fetal echocardiography to evaluate fetal problems are required for large tumors [3,4].

The purpose of this presentation is to describe a case of a big chorioangioma and the results for the mother and fetus.

CASE REPORT

A 38-years-old multigravida, nulliparous patient who was previously healthy had no history of surgery and was on iron, multivitamins, and aspirin daily. At 20 weeks, a morphology scan was performed; it revealed nothing unusual. According to reports, the placenta was not low-lying, and no bulk was mentioned. At 33 weeks gestation, a male fetus was discovered, with a cephalic presentation, AFI of 5 cm, EFW of 1800 g, and p10 (10^{th} percentile) fetal morphology. The anterior placenta also contained a 6 cm × 6 cm × (7.7) cm hypoechoic, well-localized placental mass with positive Doppler, which suggested a placental chorioangioma (Figure 1 - Figure 4). With no indications of fetal anemia or hydrops, the readings of the MCA and umbilical doppler are normal.

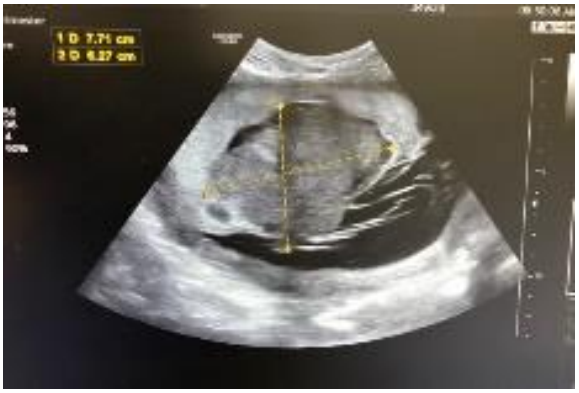

Figure 1: Ultrasound image of chorioangioma.

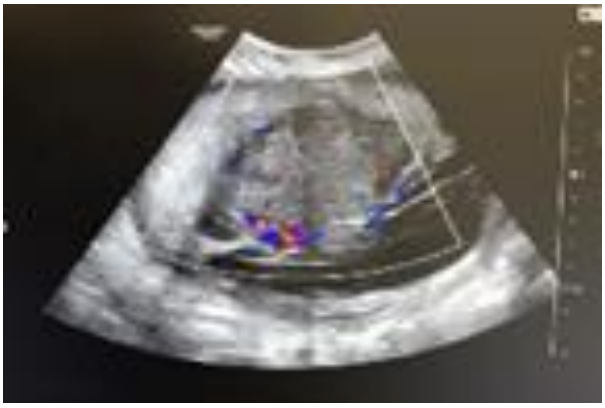

Figure 2: Ultrasound image of chorioangioma near the cord insertion.

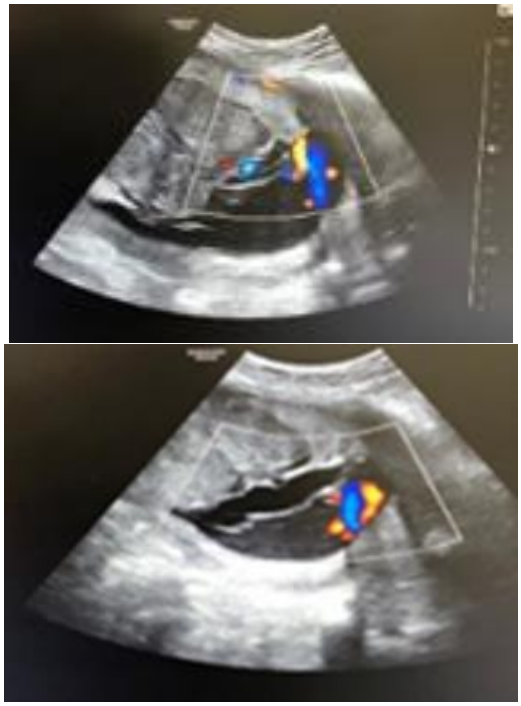

Figure 3: Ultrasound image of chorioangioma showing the origin from the placenta.

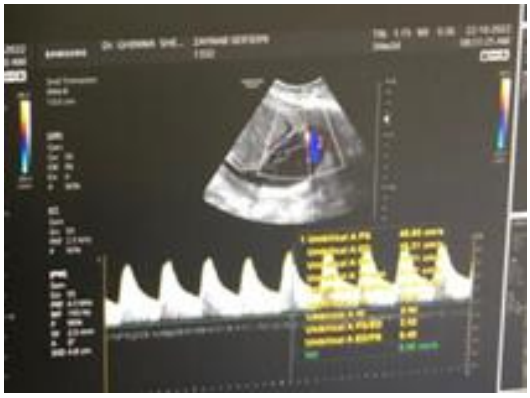

Figure 4: Umbilical artery doppler flow.

The clinical circumstances, any potential fetal morbidity, and the need for close monitoring before deciding whether to deliver were all explained to the patient. For fetal pulmonary maturation, steroids were administered. The patient was advised to undergo NST, BPP, and Doppler investigations twice weekly. She went to the hospital for prenatal monitoring at 34 weeks because she was experiencing decreased fetal movement. Despite receiving all resuscitative procedures, NST displayed persistent category II tracing (NRFHR) for 2 hours to 3 hours. Cervical closure was examined physically. The decision to perform an immediate cesarean delivery was then made. Although the birth went without a hitch, the amniotic fluid was heavily meconium colored. She gave birth to a live baby boy; his APGAR score was 9-10 at 1 and 5 minutes with the insertion of a velamentous cord.

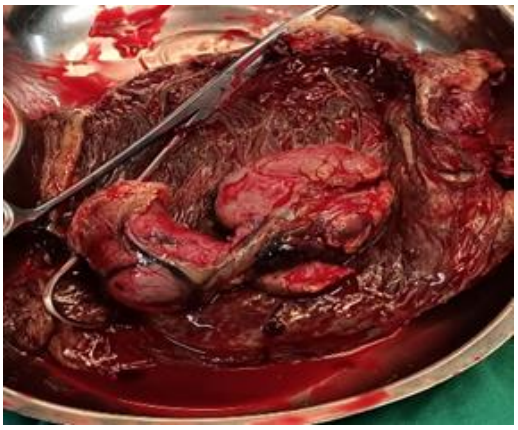

Figure 5: Polypoidal mass on the fetal surface, near the umbilical cord insertion site.

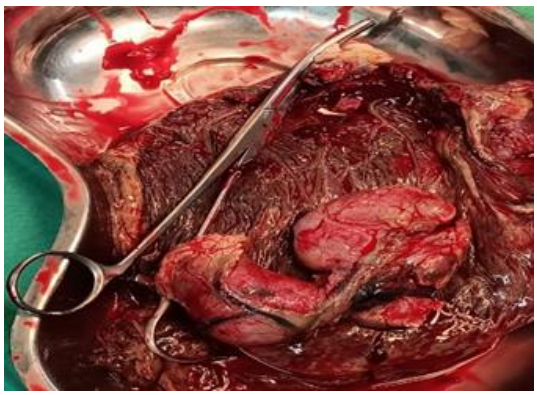

Figure 6: Cut section of the mass was gray reddish, solid with few large cystic areas.

The placenta is spontaneously delivered and sent to pathology along with a 6 cm × 6 cm × 7 cm placental mass. The placenta was 17 cm × 17 cm × 8 cm, with 6 cm × 6 cm × 7 cm firm, polypoidal mass on the fetal surface, near the umbilical cord insertion site (Figure 5). The weight of the placenta was 900 g. Rest of the placenta, membranes, and umbilical cord were unremarkable. Cut section of the mass was gray reddish, solid with few large cystic areas (Figure 6). Sections from placenta showed chorionic villi along with areas of calcification. The sections from the polypoidal mass showed proliferation of endothelial cells with numerous capillaries, and cavernous blood-filled spaces lined by flattened endothelium and separated by fibro myxoid stroma. The diagnosis of placental chorioangioma was made.

The diagnosis of benign chorioangioma is supported by the pathology report Figure 7 and Figure 8.

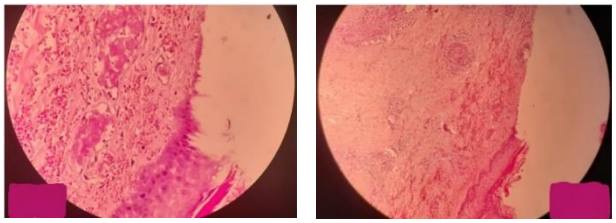

Figure 7 & 8: Histology of coriangioma.

For reasons of prematurity and low birth weight, the infant was admitted to ICN (1700g).

The HB was 14 g/dl when the patient was admitted to ICN. The infant quickly developed tachypnea, and an auscultated cardiac murmur led to an echocardiogram, which revealed a tiny PDA with a big VSD. The infant then began receiving medicinal treatment (Lasix, captopril, etc.) while awaiting surgical repair.

After receiving 1 unit of packed RBCs for the newborn's acute hemoglobin decline that reached 7.8 g/dl five days later, the baby was eventually sent home in a stable condition.

The infant was readmitted to ICN 2 weeks after being released due to vomiting, poor feeding, and lethargy, and it was discovered that she had anemia (HB of 7.8 g/dl). for which 1ul of pRBCs were administered, and the patient was sent home.

One week later, he was readmitted to ICN with respiratory problems and a fever. He was eventually diagnosed with influenza A and pulmonary congestion and received the necessary medical care. He was also given another unit of pRBCs and sent home on oxygen therapy after it was discovered that he had anemia (HB 7.8 g/dl)

The infant experienced respiratory arrest a week later and passed away.

DISCUSSION

Placental chorioangioma is a benign placental vascular tumor which has an incidence of approximately 1% in all pregnancies. Pathogenesis of chorioangioma of placenta has many hypotheses like high altitude, hypoxia, elevated RBC, vascular growth factors, arteriovenous shunting and sequestration of RBCs and platelets which can lead to hemolysis, microangiopathic anemia and hydrops.

Vascular tumors were first described by Clarke in 1798. These tumors have abnormal proliferation of vessels arising from the chorionic tissue. In this case the chorioangioma was 6 cm × 5 cm × 6 cm and patient presented with gestational hypertension, polyhydramnios and intrauterine fetal death polyhydramnios is due to amniotic fluid exudate from walls of abnormal tumor vessels and mechanical obstruction of umbilical vein due to tumor. Grossly these angiomas are nodular, fleshy lesions attached to the chorionic plate and often bulge from the fetal surface of placenta [16,17].

In our case the mass was 6 cm × 6 cm × 7 cm and was found within the substance of placenta However, it was typically located near the insertion of cord. Nidhi Kataria et al. [8]

reported a mass of 8 cm × 7 cm × 8 cm in placenta. Serpil Aydogmus et al. [18] also reported a mass of 7 cm × 6 cm × 7 cm in placenta with adverse fetal outcome [5].

Most of the cases were below 30 years in previous studies Kataria et al. [8], Abdalla et al. [6], Manju Yadav et al. [20], Galimberte et al. [19]. Our patient was of 38-years of age.

The diagnosis of the tumor is usually by US after the second trimester [7,16] was mostly between 25 weeks to 30 weeks in previous studies [2,10,11,13]. In our case, chorioangioma was diagnosed at 33 weeks.

It is presumed that this tumor starts to form around the 16^{th} - 17^{th} day of the evolution of the fetus [21]. The vascularity changes and the pulsatile flow of colour doppler in umbilical circulation and MRI are the other imaging modalities used to give the additional information of fetal circulation and to confirm the diagnosis. These imaging methods also help to diagnose the complications and differentiate this condition from the other similar conditions, such as placental teratoma, retroplacental clots and myomas.

A report by Asokan et al. [30] confirmed the importance of color Doppler to differentiate chorioangiomas from other pathologies, such as hematomas.

Presenting symptoms are frequently related to the size of the tumor and most of the small tumors are asymptomatic. A study showed that all the cases of small chorioangiomas were asymptomatic [23]. Small chorioangiomas (less than 5 cm in diameter) are inconsequential. Small asymptomatic tumors are managed expectantly, every month for small tumors and every 1 week -2 weeks for larger ones 1 common presentations of a large tumor >5 cm are abdominal distension, abdominal pain, antepartum hemorrhage and preterm labor [2,7,17]. Chorioangioma more than 5cm has adverse maternal and fetal outcome. All the previous studies report masses above 5 cm similar to our patient who has a chorioangioma mass of 6 cm × 6 cm × 7 cm. Chorioangioma has a sex predilection for female babies which could be seen in previous case reports [9,10,13] and in our case male fetus. Our case is not associated with gestational hypertension which was earlier reported in a case study by Galimberte et al. [19]. Bashiri et al. [24] found a correlation between chorioangioma and the risk of preterm delivery [20]. Our case was asymptomatic throughout her pregnancy even though the size of her tumor was considerably large. Her antenatal period was uneventful. The fetus did not have any morbidities and showed no sign of adverse events or abnormalities during pregnancy. Modes of delivery in cases of placental chorioangioma were mostly emergency caesarean section to prevent adverse maternal and fetal outcome. Our case emergency cs for non-reassuring fetal heart at 34 weeks decrease fetal movement and prematurity causes deterioration condition of the baby. Any time fetus can get distress and anytime fetal hydrops and congestive cardiac failure can occur No postpartum hemorrhage which had been reported previously in a case report by Manju Yadav et al. [20]; no bleeding during operation in our case. Postpartum hemorrhage is due to rupture of tumor sinusoids causing sudden deterioration.

Fetal ECHO detecting cardiomegaly is also important during the antenatal period. Early detection could prevent subsequent major complications, such as fetal death by antenatal interventions like in utero fetal blood transfusion and early delivery at a reasonable gestational age. Arteriovenous shunts in large chorioangiomas can impair the fetal circulation by increasing the venous return to the heart, causing tachycardia, cardiomegaly and hypervolemia [12]. As a result, there is the possibility of high output cardiac failure, oedema, hydrops, stillbirth and intrauterine growth retardation. Anaemia, thrombocytopaenia, congenital anomalies or congestive cardiac failure may be seen in a neonate [5].

In our case, the newborn had hemoglobin [14] at delivery with time the baby was admitted for decreased hemoglobin, (anemia was related to prematurity consequences), the newborn was born premature transferred to ICU, with time the newborn develops anemia with repeat transfusions and cardiac deterioration interventricular defect DIV and small PDA with large VSD. Then the baby started on medical management (Lasix, captopril)

Arteriovenous shunts in GC cause impairment of the pl fetal circulation. There is an increase in the venous return to the heart which leads to hypervolemia, tachycardia, cardiomegaly, and congestive heart failure [1-8]. Preterm birth coincides with a key developmental window of cardiac growth and maturation, and thus has the potential to influence long-term cardiac function. Individuals born preterm have structural cardiac remodeling and altered cardiac growth and function by early adulthood [25,26].

The fetal red cells can be traumatized while traversing the labyrinthine of newly formed and deformed vascular channels. This can be a cause of microangiopathic hemolytic anemia. Sequestration of blood in the vascular mass can also be the reason for anemia and thrombocytopenia [1,8]. Neonatal anemia, defined as a hemoglobin (Hb) or hematocrit (Hct) concentration of >2 standard deviations below the mean for postnatal age, is a major problem encountered in neonatal intensive care units (NICUs). Ninety percent of extremely low birth weight infants receiving at least one red blood cell (RBC) transfusion during their stay in the NICU [27]. A low Hb level at birth is considered as a risk factor for mortality [28]. The preterm was born with delicate conditions but we loss the baby for respiratory distress after 3 months postpartum.

Definitive treatment includes endoscopic surgical devascularization like ligation or clipping, fetoscopic laser ablation, embolization, chemo sclerosis with absolute alcohol injection and radiofrequency ablation of tumor vessels [14]. Therapy is contemplated only when there are USG features of fetal compromise and gestation is nonviable.

CONCLUSION

Placental chorioangioma a rare tumor is associated with complications affecting the outcome of pregnancy. It is of utmost importance to correctly diagnose it.

To effectively handle the complications, it should be picked up early. Regular monitoring of the patient by serial ultrasound, surveillance by Doppler, and fetal echocardiography is recommended.

Placental morphology detected should be examined, and suspicious lesions should be confirmed histologically. Pediatricians should be aware of this condition for the proper treatment.

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