Placental tumor (chorioangioma) as a cause of polyhydramnios: a case report

Nabil Abdalla
Michal Bachanek
Seweryn Trojanowski
Krzysztof Cendrowski
Wlodzimierz Sawicki

Chair and Clinic of Obstetrics, Gynecology and Oncology, Second Faculty of Medicine, Medical University of Warsaw, Warsaw, Poland

Abstract: Placental chorioangioma is the most common type of placental tumor. It is usually symptomless and may be associated with serious maternal and fetal complication when it reaches a large size. We presented a case of an angiomatous type of placental hemangioma diagnosed in the second trimester of pregnancy in a patient with polyhydramnios. A normal volume of amniotic fluid was successfully achieved by three amnioreductions with conservative management. The size of the placental tumor remained the same from the time of diagnosis to the end of pregnancy. A term labor was uncomplicated and a healthy newborn was delivered. Macroscopic and microscopic examination of the placenta confirmed the diagnosis. Despite the rarity of placental tumors, they should be considered as differential diagnosis in cases of polyhydramnios.

Keywords: amnioreduction, pregnancy disorders, ultrasonography placental tumor, chorioangioma

Background

The primary neoplastic diseases of the placenta include a wide range of conditions that can be classified into two main groups: trophoblastic and nontrophoblastic diseases. Nontrophoblastic diseases occur more frequently, always with benign courses. Chorioangioma and teratoma belong to this group of disorders. The pathogenesis of these neoplasms is controversial; however, they can originate from any part of the placenta excluding the trophoblastic tissues.1–3 Chorioangioma is the most common histological type of placental tumors.4 It can be detected in pathomorphological examination in 0.6%–1% of placentas. An increased incidence rate of chorioangioma is associated with maternal age, hypertension, diabetes, female sex of the newborn, premature labors, first delivery and multiple pregnancies.5,6 From a histological point of view, chorioangiomas can be classified into angiomatous (capillary), cellular, and degenerative types. The capillary type is the most common histological subtype.7 Chorioangiomas are usually symptomless, often overlooked during routine ultrasound examination. Abnormalities found elsewhere may arouse suspicion of placental structural abnormalities. Small chorioangiomas are usually not diagnosed, usually without fetal or maternal complications. They can be discovered sometimes postnatally.8 Larger masses, especially those more than 5 cm, are more easily diagnosed by ultrasound scan, and they may cause complications.9 Maternal complications include polyhydramnios which can cause: premature uterine contractions; cervical incompetence; premature labor; placental abruption due to sudden fall of the intrauterine
pressure after membrane rupture; malpresentation; increased
risk of cesarean section performance; and postpartum hemo-
rrhage.\textsuperscript{10} Fetal complications include fetal heart failure,
thrombocytopenia, nonimmunologic fetal hydrops, hemos-
lytic anemia, intrauterine growth restriction, brain infarction,
umbilical vein thrombosis, fetal cerebral embolism, and
intrauterine fetal and neonatal death.\textsuperscript{9–12} Doppler ultrasound
examination is the gold standard in primary diagnosis of
hemangioma. Magnetic resonance imaging is used only in
suspicous cases, while the computed tomography technique
has a limited role in the diagnosis of the placental angioma,
mainly because of the high radiation risk and poor tissue
differentiation. Use of computed tomography to detect
metastases is also not indicated since hemangioma are
always benign.\textsuperscript{1}

Doppler ultrasound examination may estimate the degree
of vascularity of the placental tumor. Intense vascularity of
the placental mass may indicate more possible risk of fetal com-
plication. Doppler ultrasound with fetal echocardiography can
diagnose the fetal cardiac failure. Fetal cordocentesis can be
used as diagnostic method to confirm anemia and to diagnose
genetic disorders, and at the same time blood transfusion to
the fetus can be done to correct fetal anemia.\textsuperscript{16} Fetomaternal
hemorrhage can be diagnosed by demonstrating the elevated
level of fetal hemoglobin in the maternal circulation.\textsuperscript{17} Serum
and/ or amniotic fluid levels of alpha-fetoprotein (AFP) can be
increased in cases of placental angioma. Increased serum
levels of AFP is not pathognomonic for placental angioma
since AFP is increased physiologically during pregnancy and
a pathological increase of its level may attributed to other fetal
and maternal medical conditions.\textsuperscript{18–19}

\textbf{Case presentation}

A 26-year-old Caucasian woman gravid at the 28th week of
gestation was admitted to the hospital because of premature
uterine contraction. She had a successful in vitro fertilization
and embryo transfer, and the course of the pregnancy was
uneventful apart from anemia and one incidence of one-
sided renal colic. The oral glucose tolerance test made at the
24th week of gestation was negative. At admission, the vital
signs were in normal range. She experienced an intense pain
in the lower abdomen. She was feeling the fetal movements
well. The uterus was enlarged to a size corresponding to
34 weeks of gestation. By speculum examination, there was
no evidence of premature rupture of membranes or vaginal
bleeding. By vaginal examination, the cervix was short-
ened and closed. Ultrasound examination revealed normal
fetal growth regarding gestational age. Neither structural

Figure 1 A gray-scale ultrasound image shows a well-defined circumscribed ovoid
heteroehogenic placental mass with a 4.99 cm diameter.
\textbf{Note:} The mass protrudes from the fetal surface of the placenta and is in contact
with the amniotic cavity.
Placental tumor (chorioangioma) as a cause of polyhydramnios

Gradual increase of the amniotic fluid volume and the AFI reached 43 cm. The middle cerebral artery peak systolic flow was 49.9 cm/s, which was 1.1 multiple of the median for the gestational age. The cervical length was reduced to 9 mm and the internal cervical os was closed. No change of the size or character of the placental tumor or fetal abnormalities were confirmed. Twelve days after the second amnioreduction, the third one was done, aspirating 1,200 mL of clear amniotic fluid and resulting in clinical improvement. Within 1 month, a spontaneous gradual decrease of the AFI was noticed reaching a normal level for the gestational age at the 36th week of gestation along with gradual cessation of the premature uterine contractions. The size of the placental tumor remained unchanged, with an increasing relative ratio of the placental surface to the placental mass. No fetal abnormalities were confirmed in the ultrasound examinations.

After uncomplicated vaginal delivery at the 38th week of gestation, the placenta was delivered completely. A healthy female 3,010 g baby was born with an Apgar score of 10. In macroscopic assessment of the placenta, a single well-circumscribed 5 cm diameter mass was found on the fetal surface of the placenta, with pale yellowish color and with a firm consistency near the edge of the placenta (Figures 3 and 4). The overall placental mass was 600 g. Microscopic examination showed histological features of angiomatous type of chorioangioma. Six weeks after delivery, serum level of AFP was decreased to the normal level of 2.07 IU/mL.

Discussion
Ultrasound examination is the gold standard in the diagnosis of placental chorioangioma during pregnancy. In the presented case, the placental tumor was diagnosed during searches for causes of polyhydramnios in a patient with signs and symptoms of premature labor. According to the ultrasound documentations, the tumor was not diagnosed earlier. It might not be diagnosed earlier due to its small size or may the tumor was not found at all. No earlier ultrasound photo documentations were available. Management of chorioangioma is usually conservative. No specific treatment is needed in case of asymptomatic cases; however, a careful monitoring with serial ultrasound examinations is needed to predict early complications. In our case, because of the premature uterine contractions along with clinical and ultrasonographical sings of cervical incompetence, a steroid administration was performed to induce fetal lung maturation. In the presented case, the amnioreduction procedures were helpful in reducing the amount of the amniotic fluid, resulting in decreases in intrauterine pressure, risk of the premature uterine contractions, and risk of premature labor. Fetoscopic...
laser ablation of the feeding vessel is considered as a method of successful treatment of even large chorioangiomas. In our case the amnioreduction procedures were able to reduce the symptoms, and the ultrasound examination showed a complex structure of multiple feeding vessels entering the mass from different sites. The fetoscopic laser ablation of the feeding vessels in our case has a theoretical risk of injuring the non pathological vessels leading to placental insufficiency. Also, embolizing the feeding vessels with microcoils or with glue material such as Enbucrilate and intratumoral alcohol injection have been reported. In cases of Enbucrilate and alcohol, the procedure is not associated with fetal toxicity.20–22

Polyhydramnios can be defined as an increased volume of the amniotic fluid regarding the gestational age, and it can be mild, moderate, or severe according to the AFI relative to the gestational age.23 In our case, the polyhydramnios diagnosed in the second trimester of pregnancy was classified as moderate type. Common causes of polyhydramnios such as diabetes mellitus, congenital fetal abnormalities, and multiple pregnancy were excluded; thus, placental tumor was the only reason for polyhydramnios. The mechanism of polyhydramnios formation in cases of placental chorioangioma is not completely understood and several theories have been postulated to explain this phenomenon. Increased intravascular pressure caused by obstruction of the blood flow by the tumor near the umbilical cord insertion may increase transudation into the amniotic cavity, which is in intimate contact with the tumor. The large surface area of the enlarged vessels of the angioma may also predispose to the increased transudation. Polyhydramnios also can be explained by the partial placental insufficiency caused by shunting of the fetal blood into the vessels of the chorioangioma.24 In our case, the polyhydramnios resolved after conservative therapy combined with three amnioreductions. The overall mass of the placenta was increasing throughout pregnancy without changes of the size of hemangioma; therefore, the relative surface of the placental tumor to the overall surface of the placenta was decreasing, and this may decrease the transudation process and at the same time increase the absorption rate of the amniotic fluid by the more viable placenta.

The placenta was expelled spontaneously. The mass was not seen from the maternal side (Figure 5). Expert microscopic examination was needed to confirm the diagnosis and to exclude other more rare malignant conditions. A few cases of rare choriangiocarcinoma have been reported and are characterized by proliferation of atypical trophoblast with high mitotic activity. In these cases, follow-up of the mother and the infant is needed to exclude malignancy.25

We present a rare case of placental tumor causing polyhydramnios treated successfully by amnioreductions. Although the placental tumors are rare, they should be investigated and considered in cases of polyhydramnios. Ultrasound scan is the method of choice to detect placental tumors. Serial ultrasound scans were necessary to monitor the amount of the amniotic fluid and to detect possible complication. Histological examination confirmed the benign form of the placental tumor and no more investigations are needed for the mother.

Disclosure

The authors report no conflicts of interest in this work.

References


