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Case Series

Diverse feto-maternal presentations of chorioangioma: a case series

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ABSTRACT

Placental chorioangioma is the most common benign non-trophoblastic tumor of the placenta, originating from primitive chorionic mesenchyme and typically being vascular. It has an incidence of 0.6-1% among all pregnancies. The size of the lesion remains the most important factor in prognosis, with small tumors often going unnoticed through the pregnancy without any fetal or maternal complications. Larger lesions (more than 4-5 cm) usually present early in pregnancy and can lead to significant maternal and fetal issues. Late presentation allows more time for fetal maturity and is associated with a lower perinatal mortality rate. Ultrasonography and color Doppler imaging are the main diagnostic tools for placental chorioangioma, showing hypo- and hyper-echoic lesions with vasculature connected to the fetal vascular system. Fetal complications, if they occur, may require intrauterine interventions. We present a series of four cases presenting at different gestational ages with diverse fetal and maternal clinical features and outcomes.

Keywords: Chorioangioma, intrauterine blood transfusion, fetal growth restriction

INTRODUCTION

Chorioangioma is the most common benign placental tumor, with an incidence of 0.6-1% in all pregnancies.[1] It is a non-trophoblastic vascular tumor caused by abnormal proliferation of vessels in the fibrous stroma of placental tissue. Small chorioangiomas are more common and often remain unnoticed throughout pregnancy. Tumors larger than four cm have a lower incidence of 0.11% to 0.29%, but frequently cause significant complications to the mother and fetus.[1] Ultrasonography (USG) is the most commonly used modality for diagnosing placental chorioangioma. A distinct hypo- or hyperechoic well-circumscribed lesion is a characteristic appearance. The presence of anechoic cystic lesions and fibrous septae is variable.[2] Progressive necrosis in the mass lesion during the course of pregnancy can cause features suggestive of degeneration and calcification.[2] Placental chorioangioma is commonly located under the chorionic plate and peeks into the amniotic cavity. Color Doppler imaging (CDI) is an essential tool in differentiating placental chorioangioma from other lesions, such as fibroids, hydatidiform moles, and teratomas. CDI identifies continuity of chorioangioma vessels with the fetal vascular system, thus distinguishing it from other lesions.[3]

Though most placental chorioangiomas remain clinically insignificant, these tumors can be associated with arteriovenous shunting, which, if it persists, causes high-output fetal cardiac failure and traps erythrocytes and thrombocytes within the tumor mass causing maternal and fetal complications such as polyhydramnios, preterm labor, preeclampsia, and adverse fetal outcomes like growth restriction, fetal anemia, cardiomegaly, non-immune fetal hydrops, thrombocytopenia and even intrauterine fetal demise.[4,5]

We report a series of four cases with chorioangioma detected antenatally and having varied pregnancy outcomes. The summary of all four cases is enumerated in Table 1.

Table 1: Summary of key features of all cases.

		Case 1	Case 2	Case 3	Case 4
Age (years)		21	26	27	35
Obstetric history		G1P0[1]	G4P0030[1]	G1P0[1]	G2P1001[1]
Gestational age (GA) at diagnosis (weeks)		34	19	33	19
Measurements of mass at diagnosis (cm)		6×4.8	11.5×6	5.8×5.7	3.4×5.8
Fetal growth		Normal	Restricted	Normal	Normal
GA at delivery (weeks)		37	26	39	31
Mode of delivery		VD[2]	VD[2]	LSCS[3]	VD[2]
Gender of fetus		Female	Female	Male	Female
Birth weight (grams)		2025	559	3400	1699
Perinatal mortality		No	Yes	No	Yes
Specifications of the placenta	Weight (grams)	584	530	580	680
	Measurements (cm)	17×12×4	16×13×4	18×13×3	17×16×5

[1]G: Gravida, P: Para, [2]VD: Normal Vaginal Delivery, [3]LSCS: Lower Segment Caesarean Section

CASE SERIES

Case 1

A 21-year-old primigravida at 34 weeks of gestation was referred to our center due to fetal growth restriction identified at the primary care center. However, her antenatal course had been uncomplicated thus far. A follow-up scan at 34 weeks revealed fetal growth restriction below the 3rd percentile for gestational age and an amniotic fluid index (AFI) of 17 cm (normal range 8-25 cm). It also detected a placental mass measuring 6×4.8 cm, partially protruding into the amniotic cavity (Figure 1A). The patient was monitored closely, and delivery was induced at 37 weeks due to fetal growth restriction. She delivered a live baby girl weighing 2025 grams, with APGAR scores of eight and nine at one and five minutes, respectively via normal vaginal delivery. The placenta measured 17×12×4 cm and weighed 584 grams (Figure 1B).

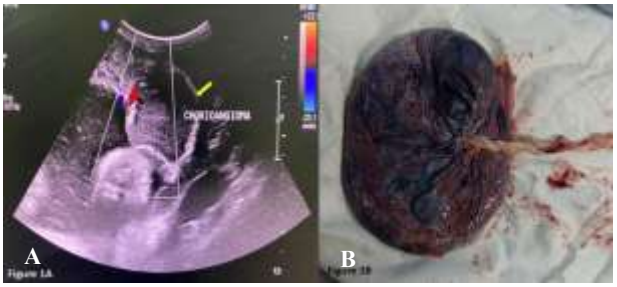

Figure 1: USG and gross photograph of placental chorioangioma; (A) USG showing a well-circumscribed lesion with hypo- and hyper-echoic echotexture and (B) gross photograph of placenta after delivery.

The histopathology revealed a well-circumscribed mass lesion showing proliferation of capillary blood vessels with congestion and degenerative changes, with the central part showing areas of calcification, and overall features suggestive of placental chorioangioma.

Case 2

A 26-year-old woman, gravida four, para three, with three previous abortions (G4P0030), presented to our center at 26 weeks of gestation with preterm prelabor rupture of membranes and vaginal bleeding for one day. She had a history of a placental mass measuring 11.5×6 cm noted during the anomaly scan at 19 weeks and was under observation for it at the primary care center. The woman experienced preterm labor at 26 weeks and delivered a stillborn baby girl weighing 559 grams. The baby exhibited generalized skin edema, indicating fetal hydrops. A retroplacental clot of approximately 200 cc was observed on examination. The placenta measured 16×13×4 cm, weighed 530 grams, and had a cavitatory lesion of 2.8×2.5 cm on the maternal side. Histopathological analysis was consistent with a placental chorioangioma.

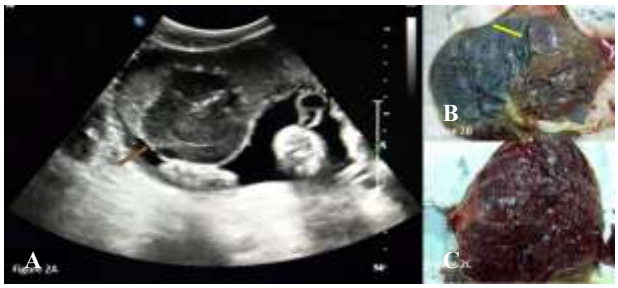

Figure 2: USG and clinical photographs of placental chorioangioma mass; (A) USG scan showing a well-circumscribed mass lesion with hypo- and hyper-echoic lesions within the mass; (B) clinical photograph of placenta after delivery, note the mass lesion visible (yellow arrows) and (C) clinical photograph of placental chorioangioma visible on the placenta.

Case 3

A 27-year-old primigravida presented at 33 weeks of gestation after being diagnosed with a placental chorioangioma at the primary care center. It was a

spontaneous conception, and her antenatal period was uncomplicated. An anomaly scan at 19 weeks was routine. She was diagnosed with a placental lesion measuring 5.8×5.7 cm during a routine growth scan at 33 weeks of gestation. The lesion was located away from the cord insertion site and was partly protruding into the amniotic cavity. She was managed conservatively until she went into spontaneous labor at 39 weeks. An emergency lower segment cesarean section (LSCS) was performed due to fetal distress, and she delivered a live-born baby weighing 3400 grams with an APGAR of eight and nine at one and five minutes. After delivery, the placenta measured 18×13×3 cm, weighed 580 g, and a mass lesion was noted on the periphery, more prominent on the fetal surface. The cut surface showed a gelatinous area with areas of congestion. Histopathology revealed a well-circumscribed mass with proliferated capillary vessels and myeloid changes in focal areas. The features were suggestive of a chorioangioma.

Case 4

A 35-year-old G2P1001 presented to our center at 29 weeks of gestation. She was diagnosed with placental chorioangioma and fetal pericardial effusion at the primary care center. The chorioangioma was diagnosed during an anomaly scan at 19 weeks, measuring 3.4×5.8 cm; an anterior wall fibroid measuring 3×2 cm was also noted. She was kept under observation at the primary center. She underwent a growth scan at 28 weeks, which showed a large placental mass of 11.5×10 cm with echogenic internal septations and a few cystic spaces, arising from the upper end of the placenta near the cord insertion site, and partly protruding into the amniotic cavity (Figure 3A and 3B). It also revealed polyhydramnios with an AFI of 28 cm (normal range 10.5-18.9 cm) and fetal pericardial effusion. There was no growth restriction of the fetus. After extensive counseling about all available intervention options, with a multidisciplinary approach, percutaneous glue embolization of the feeding vessel was done at our institute by the interventional radiologist at 29 weeks of gestation. Fetal anemia was detected after four days, with a raised middle cerebral artery peak systolic velocity (MCA-PSV) of 1.6 multiples of the median (MoM) or 62.3 cm/s (Figure 3C), for which she received two intra-uterine blood transfusions in the same week. She went into preterm labor at 31 weeks and delivered a liveborn baby girl weighing 1699 grams, with an APGAR of eight and nine at one and five minutes via vaginal delivery. The placenta measured 17×16×5 cm, weighing 680 grams, with an attached mass measuring 13×11×5 cm. The cut surface of the attached mass was homogeneous, brown, and soft in consistency, with no areas of calcification or necrosis. It was a well-circumscribed mass showing proliferation of capillary-sized vessels in a fibrocollagenous background, suggestive of a placental chorioangioma. The baby was kept in the neonatal intensive care unit for two days, but died on day three of life due to prematurity and congestive heart failure.

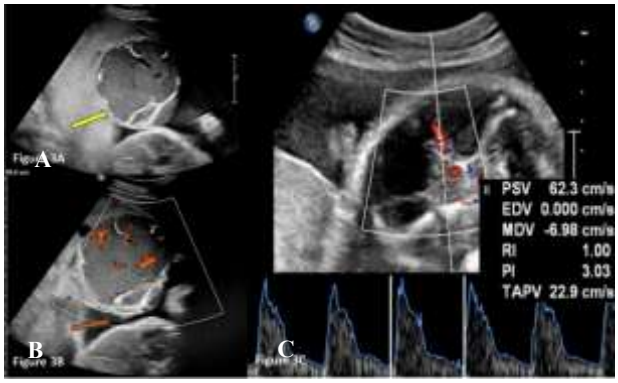

Figure 3: USG and Doppler imaging of case 4; (A) USG image showing a well-circumscribed mass lesion with internal septations and hypo- and hyper-echoic texture; (B) color Doppler image showing vasculature within the substance of the mass lesion, aiding in differentiation of chorioangioma from other lesions and (C) color Doppler image showing raised MCA-PSV indicating fetal anemia.

DISCUSSION

Chorioangioma is the most common non-trophoblastic placental vascular tumor with an incidence of 0.6-1% of all pregnancies.[1] The probable cause is abnormal growth of the placental vessels during the differentiation of the chorionic tissue.[6] The risk factors for the development of chorioangioma include advanced maternal age, maternal hypertension, multiple pregnancy, female fetus, high altitude (hypoxia), environmental influences, and possible genetic predisposition.[7] In our series, three out of four were female fetuses, and two patients were multigravida.

Large chorioangiomas (more than four cm) have higher chances of maternal and fetal complications and present during the early part of pregnancy.[1] Tumors presenting in the later part of pregnancy have better fetal outcomes due to the attainment of maturity by the fetus. This likely explains the favorable outcomes in cases one and three. Cases two and four were diagnosed at 19 weeks of gestation and underwent premature delivery at 26 and 31 weeks, respectively, resulting in perinatal mortality.

Understanding the significance of prenatal diagnosis of chorioangioma hinges on its possible association with adverse perinatal outcomes. The International Society of Ultrasound in Obstetrics and Gynecology advises that during routine anomaly scans, clinicians should describe the placenta's location, its relation to the internal cervical os, and its appearance to identify any abnormal findings, such as hemorrhage, multiple cysts, or placental masses like chorioangioma.[8]

Ultrasonography remains the mainstay in the diagnosis of chorioangiomas, seen as well-circumscribed solid masses with fibrous septa and variable echogenicity compared to the placenta. The presence of significant blood flow on color doppler imaging rules out avascular differentials

such as placental lake, hemorrhage, and hematoma, as well as other placental masses like myomas or teratomas.[2]

Small chorioangiomas often go unnoticed and require only a six-weekly follow-up and observation. However, larger masses pose treatment challenges due to the lack of definitive guidelines in the literature.

Larger masses should be closely monitored with serial ultrasounds every 1-2 weeks to catch early signs of fetal issues. However, if there is any feto-maternal hemodynamic impact, intrauterine intervention is required, regardless of size. Persistent hyperdynamic circulation caused by placental tumors can lead to fetal death and abnormal neurodevelopment in childhood.[9]

The management of symptomatic placental chorioangioma is predominantly determined by fetal status and gestational age. Complications often occur early in pregnancy and require interventions to address fetal hemodynamic issues caused by large chorioangiomas. The most common procedures are intrauterine blood transfusion for fetal anemia and amniotic fluid drainage for polyhydramnios.[10,11] The arteriovenous shunting within the chorioangioma mass is the primary pathology, which can be treated with tissue glue embolization, endoscopic laser coagulation, and interstitial laser therapy.[12,13] If complications develop late in pregnancy, delivery should be strongly considered.

CONCLUSION

A meticulous USG scan during early pregnancy is vital for early diagnosis of placental chorioangioma. Smaller lesions often require only observation, while larger lesions (more than 4-5 cm) are more commonly associated with fetal and maternal complications requiring multidisciplinary management with intrauterine interventions.

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