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Case Report

Massive subchorionic thrombohematoma: a case report demonstrating serial sonographic changes

Alim Swarray-Deen*, Jerry Coleman, Joseph D. Seffah, Jeff Osei Agyapong, Kwaku Doffour Dapaah, Patrick Anum, Alex Kofi Boateng, Perez Sepenu

Department of Obstetrics and Gynaecology, Korle Bu Teaching Hospital, P.O. Box 77 Korle Bu, Accra, Ghana

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***Correspondence:**
Dr. Alim Swarray-Deen,
E-mail: asdeen8@gmail.com

ABSTRACT

Massive subchorionic thrombohematoma (MST) is the presence of a large hematoma or thrombus confined to the subchorionic space. Sonographic findings vary and include placenta descriptions such as heterogeneous, homogeneous, hypoechogenic, or jelly-like mass, which can be differentiated from the normal placenta. Our case report highlights the serial sonographic features observed in a singleton pregnancy from 13 to 29 weeks of gestation. Ultrasound findings of the placenta changed from a 65 ml subchorionic hematoma at 16 weeks to a well-defined placental mass with cystic areas at 20 weeks to an amorphous gelatinous mass at 23 weeks which became primarily replaced by an anechoic lesion with internal septations at 27 weeks. She delivered a live female at 29 weeks. MST usually has a dramatic initial presentation, but these findings may be compatible with a favourable outcome. Serial ultrasound assessment of the placenta is helpful to define the perinatal prognosis and may demonstrate gradual changes and eventual resolution.

Keywords: Placental pathology, Antepartum haemorrhage, Subchorionic hematoma, Premature labour

INTRODUCTION

There are various types of placental hematomas described in the literature. These include subchorionic, subamniotic, retroplacental and marginal hematomas.[1,2] Subchorionic hematomas are commonly seen during the first and second trimesters and are a frequent cause of bleeding. In most cases, the hematoma size is <50 ml and gradually decreases in size and can resolve over 1-2 weeks.[3] The presence of a large hematoma or thrombus confined to the subchorionic space is referred to as a Massive Subchorionic Thrombohematoma (MST). There is no universal definition of MST, but a critical pathological finding of a placental mass with a thickness of more than 1cm has been used.[4]

The sonographic findings of MST are highly varied, and the condition is not always easy to distinguish from the normal placental tissue or other placental pathologies. Descriptions for MST in the literature range from heterogenous, homogenous, or hypoechogenic mass, differentiated from the normal placenta.[1,5] Other descriptions in the literature include bulbous (jelly-like) placenta and a fluid-fluid level appearance within the placental tissue.[6] The one feature common to all is that the placental mass/thrombus should be >1 cm. In our case report, we were fortunate to observe the different sonographic features in a single case whilst monitoring from 13 to 29 weeks of gestation. This observation may suggest that the various ultrasound features of MST may represent the different phases of thrombus formation and resolution.

CASE REPORT

A 28-year-old (gravida 3 para 1+1) first presented at 13 weeks gestation with a history of painless vaginal bleeding. Her initial evaluation was normal, and a diagnosis of threatened miscarriage was made. She was managed conservatively, and the vaginal bleeding

subsequently resolved after a few days. However, at her follow-up visit three weeks later, an ultrasound scan identified a posterior low-lying placenta covering the internal cervical os and a subchorionic hematoma measuring 65 ml along the lower edge of the placenta. She had no vaginal bleeding but experienced mild lower abdominal pain and was admitted to the maternity unit for observation.

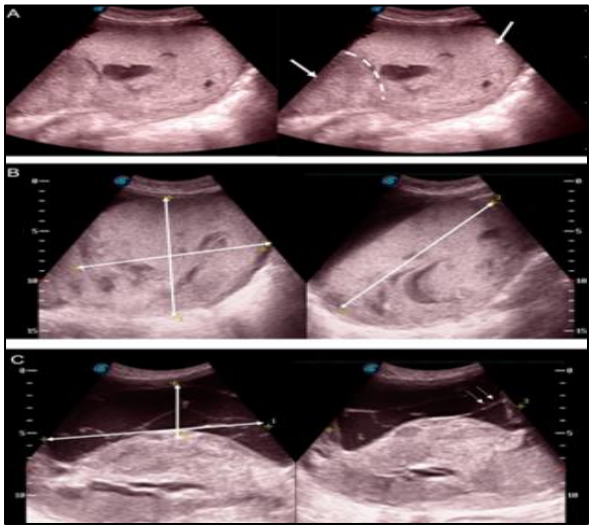

Figure 1: (A) Ultrasound at 20 weeks demonstrating a normal placenta tissue on the left of demarcation and the MST on the right. (B) Ultrasound at 23 weeks of gestation showing a hyperechoic placental mass (Vol=1100mls) with anechoic cystic spaces. (C) Same placenta mass at 27 weeks. Smaller in size (Vol=256mls) with an anechoic layer that has reticulate sonolucent areas.

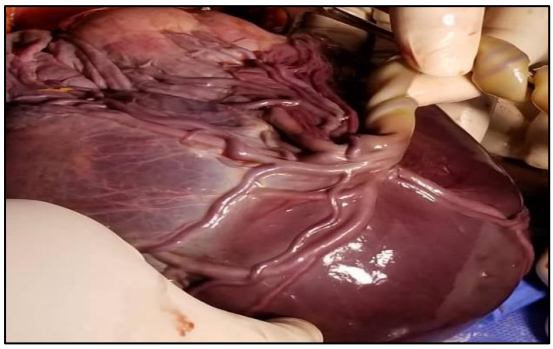

Figure 2: Massive bulge seen at lower pole of placenta containing the MST.

On admission, serial ultrasound assessments of the placenta demonstrated progressive morphological changes that were not accompanied by any clinical sign or event. At 20 weeks, the hematoma appeared as a well-defined mass with a similar echotexture to the normal placental tissue but with a central cystic area (Figure 1A). At the subsequent scan at 23 weeks, the placental mass had increased in size (1100 ml) and appeared as an amorphous gelatinous mass located posteriorly at the lower placental edge (Figure 1B). It demonstrated no internal flow on the colour doppler. An impression of a massive subchorionic hematoma was made at this stage. No gross foetal structural anomalies were seen, and an amniocentesis confirmed a 46 XX karyotype.

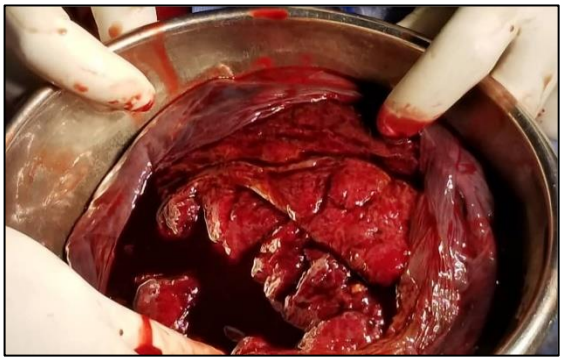

Figure 3: Autolyzed blood behind placenta and membranes.

Over the subsequent four weeks, the ultrasound findings remained the same, with no increase in the size of the hematoma and no evidence of fetal compromise. The patient was given antenatal corticosteroids for lung maturation at 26 weeks.

A follow-up scan at 27 weeks demonstrated that the placental mass had reduced in size significantly (now 256 ml) and was now mostly anechoic with multiple internal septations (Figure 1C). However, the fetal growth and liquor volumes were normal throughout this period. In addition, there was no evidence of abnormal umbilical artery dopplers, and the middle cerebral artery doppler values were within normal limits.

At 29 weeks, the patient experienced contractions and a significant antepartum haemorrhage which required an emergency caesarean section under general anaesthesia. She delivered a female infant weighing 1,270 grams, APGAR scores 6 and 7 at 1 and 5 minutes, respectively. The placenta was posterior with an irregular surface containing several blebs, the largest one seen along the lower pole of the placenta (Figure 2). Once incised, it had approximately 200 ml of autolysed blood between the chorion and deciduae. (Figure 3)

The baby was admitted to the neonatal intensive care unit for six weeks, during which she suffered from complications of prematurity (respiratory distress syndrome, neonatal jaundice, and necrotising enterocolitis). However, she was discharged in good health and subsequently had a normal developmental progress. Histopathology analysis of the placenta demonstrated extensive areas of haemorrhage and placental infarction. In addition, sections showed a mixture of ghost villi and normal chorionic villi with thickened hyaline membranes, fibrin deposition, and avascular chorionic villi.

Table 1: Ultrasound features used to make the diagnosis of MST in the past 20 years.

References	Case #	Age (yrs)	Gravida/parity	GA at diagnosis	GA at delivery	Key sonographic features at diagnosis	Progressive sonographic changes	Neonatal outcome	Other comments
Miyagi et al (2019)	1	17	G1P0	21	22	A large placental mass with mixed high and low echogenicity		SB	
Wang et al (2018)	1	30	G1P0	23	29	Fluid level		LB	
Yanagisawa et al (2019)	1	40	G2P1	23	27	Placentomagaly	Day 8- Heterogenous Day 10- Fluid level	LB	Gestational thrombocytopenia
Szlachetka et al (2017)	2			18 17	19	Multiple cystic spaces nonvascular, heterogeneous collection on the fetal surface	More cystic components		Hx of subchorionic hematoma at 6wks
El-agwany (2017)	1	30	G2P0	28	32	Homogenous mass		SB	DCDA TWINS
Reiners et al (2016)	1	22	G2P0	21	?	Heterogenous subchorionic venous lake inferior to the lower margin of		TOP	
Himoto et al (2012)	1	30	G4P2	26	32	Inhomogeneous mass, with echolucent cystic lesions near the mass	Reduced and collapsed over time		
Asada et al (2011)	1	-	G1P0	25	27	Homogeneous mass protruding into the amniotic cavity	Oligohydramnios and absent umbilical artery end-diastolic flow were observed. Estimated	LB	Extensive areas of old peripheral subchorionic hemorrhage were confirmed histologically.
Windrim et al (2011)	2	34 30	G3P2 G2P0	20 16	32 37	Heterogenous with loculated appearance (laminated retro-chorionic blood)	Clot resolution in both cases	LB in both	
Fung et al (2010)	10					2 placentomegaly 1 homogemous mass 2 hypodense area 1 hypoechoic cystic area 2 heterogemouc collection 2 N/A		SA and ND TOP LB LB SGA -	

Continued.

References	Case #	Age (yrs)	Gravida/parity	GA at diagnosis	GA at delivery	Key sonographic features at diagnosis	Progressive sonographic changes	Neonatal outcome	Other comments
Gupta et al (2007)	1	19	G1P0	31	32	Mixed homogeneous with brightly hyperechoic regoins and hypoechoic and heterogeneous areas		LB	
Kocak et al (2006)	1	22	G1P0	27	28	Multiple coiled masses in the amniotic cavity, with normal fetus and placenta			
Lee et al (2006)	1	26	G1P0	18	34	Hyperechoic homogenous mass		LB	Enoxaparin for atrial fibrillation
Loi et al (2006)	1	26	G1P0	25	32	Irregular multiloculated structure on the surface of the placenta	Hematoma diminished in size over time		
Matsudera et al (2006)	1	26	G1P0	21	25	Intraplacental fluid-fluid level		IUFD	
Nishijima et al (2005)	1	29	G1P0	25	26	Enlarged placenta with intra-placenta fluid–fluid level,		IUFD	
Usta et al (2004)	2	20 23	G2P1 G1P0	26	34	Large cystic lesions containing echogenic material	Echogenicity had increased in several areas, especially at the chorionic plate,		Lesions noticed after streptokinase treatment for thrombosed mitral valve
Fisteag-Kiprono et al (2005)	1	35	G1P0	19	23	Globular placenta			
Nishida et al (2001)		28	G1P0	22	33	Large homogenous mass with hyperechoic zones		LB	
Kojima et al (2001)	1	25	G1P0	28	32	Small echo-sparse regions		IUFD	Severe IUGR Hematoma widely formed beneath the insertion of the umbilical cord

DISCUSSION

Massive subchorionic thrombohematoma (MST) was first described as a 'Breus' mole' in 1892.[7] This was before the era of ultrasound and was identified during histopathological assessments of the placental tissue from stillbirths. The term 'Breus' mole has been abandoned since the condition is not related to a hydatidiform mole. Further studies by Shanklin and Scott argued that the term 'thrombohematoma' was more appropriate because the trophoblast-lined intervillous space is equivalent to a vessel; thus, the clot formed within this space fits the criteria of a thrombus.[8] They also postulated that the clot might dissect beyond the confines of the intervillous space and between the chorionic plate's layers, which fits the criteria of a hematoma.

The majority of MST are idiopathic.[1-4] However, we can consider secondary events if associated with thrombophilia, drug-related causes (anticoagulants), or a partial hydatidiform mole. The case presented had no identifiable secondary cause.

Most descriptions of the ultrasound appearances of MST have been in case reports with no strict diagnostic criteria.[1,2,9,10] Various descriptions of the subchorionic thrombohematoma include a heterogeneous, homogenous, or hypoechogenic mass in the chorion with a different echotexture to that of the normal placenta. On some occasions, it may simply appear as placentomegaly.[5] One suggested criteria for the diagnosis of MST include involvement of much of the placental surface area with a blood clot measuring at least 1 cm in thickness.[4] This lack of a distinct diagnostic criteria may account for the limited number of cases documented. Table 1 summarises the critical ultrasound features used to diagnose MST in published case reports over the past 20 years. The most common finding was an inhomogeneous mass with echo-lucent cystic lesions.

In our single case report, we believe that we saw the various ultrasound features of MST as it progressed over time. Therefore, we postulate that MST ultrasound features are in 4 phases:

Heterogenous stage- this acute phase would represent the formation of a thrombus. Such thrombus usually appears distinct from the normal placenta as we would expect more back-scattering within a thrombus of platelet aggregates and red blood cells.[11]

The gelatinous stage- is a transition from a solid-state to a viscous liquid, giving it a gelatinous appearance on ultrasound. It is widely agreed that the altered haemostatic status in pregnancy increases the risk of thrombosis, especially within the uteroplacental circulation. In addition, there is evidence suggesting that human placental extracts can suppress platelet aggregation, which may account for thrombi instability and the appearance of dense heterogeneous tissue with jelly-like movements.[12]

The fluid-fluid level stage represents the chronic stage of the haematoma, where liquefaction occurs as the proportion of red blood cells (RBCs) in the thrombus decreases. This is because of thrombi retraction, which squeezes RBCs and other contents out of thrombi and creates a fluid-fluid level in a confined space.

Resolution stage—where the size of the thrombus/mass reduces significantly over time. This may rarely occur as a result of clot resorption. The more likely explanation, especially in cases where the patient is still experiencing spotting or bleeding, is that the growth of the fetus and amniotic sac displaces liquefying blood through the cervix.[2]

Homogeneous placentomegaly-we postulate that the hematoma spreads diffusely throughout the entire placenta in this scenario. This gives the appearance of an enlarged placenta with no apparent distinction between the hematoma and normal placental tissue. From the literature, cases with documented diffuse placentomegaly were associated with spontaneous abortion, intrauterine or neonatal death soon after diagnosis.[1]

MST tends to occur randomly and has no particular risk factors. It is not thought to recur, and family history is not a risk factor. Therefore, management guidelines for massive subchorionic thrombohematomas are limited. Some reported cases, like ours, have had favourable outcomes, including normal fetal growth.[2] Close fetal surveillance should be instituted once an extensive heterogeneous nonvascular collection on the fetal surface of the placenta is detected. Factors associated with poor outcomes include high maternal serum alpha feto-protein (MSAFP), oligohydramnios, early fetal growth restriction, and abnormal umbilical artery Doppler velocimetry.

Possible outcomes of MST include spontaneous abortion, intrauterine growth restriction, stillbirth, and preterm delivery.[1] These outcomes are secondary to fetal blood flow disturbances, which depends on the location of the MST in relation to the cord insertion.[13] MST located close to the umbilical cord insertion compresses the umbilical vessels and provides a poorer prognosis.[5] In eleven cases reported by Nishijima et al 55% resulted in stillbirth or neonatal death, and all the survivors were delivered at an average gestational age of 32 weeks.[14] In ten cases reported by Fung et al only 60% resulted in a live birth, out of which 66% were preterm.[1] One rare outcome of MST is the resolution of the thrombohematoma, but even in those cases prognosis for the fetus is still poor.

There was no fetal compromise or umbilical artery Doppler changes in our case. We believe that because of the lateral origin of the MST, it allowed for further

expansion with little or no compromise to the intervillous spaces and no compression of the umbilical vessels.

CONCLUSION

To the best of our knowledge, the exact incidence of MST has not been documented, and this underreported entity has diagnostic implications. However, our observation may suggest that the various ultrasound features of MST may represent the temporal sequence of events in thrombus formation and resolution. Thus, the appearance of an MST on ultrasound depends on the phase during which it was imaged. Also, the significance of an MST does not depend upon their size but rather on their site.

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REFERENCES

1. Fung TY, To KF, Sahota DS, Chan LW, Leung TY, Lau TK. Massive subchorionic thrombohematoma: A series of 10 cases. Acta Obstet Gynecol Scand. 2010;89(10):1357-61.
2. Windrim C, Athaide G, Gerster T, Kingdom JCP. Sonographic Findings and Clinical Outcomes in Women With Massive Subchorionic Hematoma Detected in the Second Trimester. J Obstet Gynaecol Canada. 2011;33(5):475-9.
3. Chhabra A, Butcher CD, Batra K, Mohsen NA, Hallowell MJ, Kuhlman KA, et al. Subchorionic Hemorrhage Imaging: Practice Essentials, Computed Tomography, Magnetic Resonance Imaging Medscape. 2017. Available at: https://emedicine.medscape.com/article/404971-overview#a4. Accessed on 20 June 2021.
4. Fox H SN. Pathology ofthe placenta. Philadelphia: Wiley-Blackwell. 2007;116-30.
5. Yanagisawa F, Aoki S, Odagami M, Miyagi E. Massive subchorionic hematoma (Breus' mole) presents a variety of ultrasonic appearances: A case report and literature review. Clin Case Reports. 2019;7(4):744-8.
6. Wang L, Zhou Q, Li L, Zeng S. Unique fluid-fluid level ultrasonic appearance in subacute placenta abruption with massive subchorionic hematoma. Int J Gynecol Obstet. 2018;141(3):391-2.
7. Linthwaite RF. Subchorial Hematoma Mole (Breus ' Mole). J Am Med Assoc. 1963;186(9):107-9.
8. Shanklin DR, Scott JS. Massive subchorial thrombohaematoma (Breus' mole). Obstet Gynecol Surv. 1976;31(1):12-6.
9. Szlachetka K, Faske E, Laniewski S, Glantz JC. A Rare Case of Two Consecutive Breus' Molar Pregnancies. J Ultrasound Med. 2017;36(6):1279-82.
10. Usta IM, Abdallah M, El-Hajj M, Nassar AH. Massive subchorionic hematomas following thrombolytic therapy in pregnancy. Obstet Gynecol. 2004;103(5 Pt 2):1079-82.
11. Fang J, Wan YL, Chen CK, Tsui PH. Discrimination between newly formed and aged thrombi using empirical mode decomposition of ultrasound b-scan image. Biomed Res Int. 2015;2015.
12. Sur TK, Biswas TK, Ali L, Mukherjee B. Anti-inflammatory and anti-platelet aggregation activity of human placental extract. Acta Pharmacol Sin. 2003;24(2):187-92.
13. Reiners N, Sai V, Ragavendra N, Sridhar A, Chen A. Obstetrics and Gynaecology Cases-Reviews Breus Mole: A Placental Anomaly in a Patient Undergoing a Dilation and Evacuation. 2016. Available at: https://clinmedjournals.org/articles/ogcr/obstetrics-and-gynaecology-cases-reviews-ogcr-3-093.pdf. Accessed on 20 June 2021.
14. Nishijima K, Shukunami KI, Tsuyoshi H, Orisaka M, Tajima K, Kurokawa T, et al. Massive subchorionic hematoma: Peculiar prenatal images and review of the literature. Fetal Diagn Ther. 2005;20(1):23-6.
15. Alanjari A, Wright E, Keating S, Ryan G, Kingdom J. Prenatal diagnosis, clinical outcomes, and associated pathology in pregnancies complicated by massive subchorionic thrombohematoma (Breus' mole). Prenat Diagn. 2013;33(10):973-8.

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