

Trans-Abdominal Ultrasonographic Evaluation of Molar Pregnancy

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Abstract

Original Research Article

Background: Molar pregnancy is the most common benign form of gestational trophoblastic neoplasm. Molar pregnancy has distinctive histologic characteristics: a cystic or grape-like degeneration of chorionic villi, absent or inadequate vascularization of chorionic villi, and abnormal proliferation of placental trophoblast. **Objective:** To assess the role of ultrasonography (UCG) in the evaluation of molar pregnancy. **Method:** This cross-sectional study was carried out on consecutively selected 40 patients out of 45 patients who were suspected to be suffering from molar pregnancy. This study was conducted at Mymensingh Medical College Hospital from those who were attended at the department for ultrasonography for suspicious features of gestational trophoblastic diseases. **Result:** Among the 40 patients in this study, 9 were 15-20 years of age, total 24 were between 20-35 years of age, and 7 patients were 35-45 years of age. The range of age was 15 to 45 years. **Conclusion:** In conclusion, ultrasonography can be accepted as an initial imaging modality in the evaluation of gestational trophoblastic diseases.

Keywords: Ultrasonography, Pregnancy, Gestational Trophoblastic Diseases, CT scan, X-ray.

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INTRODUCTION

Molar pregnancy, also known as hydatidiform mole, is the most prevalent form of gestational trophoblastic disease (GTD) originating from placental tissue. It differs from other neoplasms in that it is derived from fetal tissue rather than maternal tissue. Based on genetic and histological characteristics, molar pregnancies can be classified as complete or partial moles. They are usually considered the noninvasive form of GTD, but they have the potential to become malignant and invasive [1]. Molar pregnancy is common in Asia and highly curable, so early diagnosis and prompt treatment are crucial. Enhanced sonographic techniques and precise measurement of human chorionic gonadotropin hormone aid in earlier diagnosis. Ultrasound is a rapid, simple, and highly accurate modality that is the preferred choice for initial diagnosis. In Bangladesh, sonography is widely available even in remote areas, and can be used as the primary diagnostic tool for molar pregnancy since biochemical tests are not easily accessible.

In some circumstances, transvaginal sonography, but it requires skilled operators and transvaginal probes which are scarce in Bangladesh.

Transvaginal sonography, though provides additional diagnostic information, is limited in Bangladesh due to a lack of skilled operators and probes. It is best utilized as an adjunct to transabdominal sonography. Doppler sonography is also limited in Bangladesh, so transabdominal sonography can be considered one of the best methods for evaluating gestational trophoblastic disease. For metastatic disease evaluation, chest X-rays, CT scans, and MRIs are used.

Early diagnosis and prevention of potential complications are important for the timely and successful management of molar pregnancy with preservation of fertility. Histopathological examination of the evacuated material or product of conception is essential to confirm the diagnosis.

The study is designed to evaluate the role of ultrasonography in the initial diagnosis of molar pregnancy and to determine the accuracy of ultrasonographic suspected hydatidiform mole confirmed by histopathological examination.

Objective

To assess the role of ultrasonography (UCG) in the evaluation of molar pregnancy.

METHODS

This study conducted a cross-sectional evaluation of patients clinically suspected of having molar pregnancy from 2009 to 2010. This study was take place at radiology and imaging department, Mymensing Medical College Hospital. The selection was based on ultrasonography findings. Patients not admitted to the hospital or without histopathological reports were excluded. Each patient underwent transvaginal and transabdominal ultrasound, with results compared to histopathological reports and serum beta HCG levels. Diagnostic findings included a large echogenic heterogeneous mass in the uterine cavity with cystic spaces scattered throughout, often giving the classic snowstorm appearance and bilateral thick lutein cysts in some cases. (Late 1st trimester and 2nd trimester of

pregnancy). This study was approved by the Ethical Committee of this institution.

RESULT

This study was based on data collection from patients with pregnancy profile who attended the department of Radiology and Imaging in Mymensingh Medical College Hospital. A total of 40 cases were evaluated for our study. The disease is more prevalent in the first pregnancy (37.50%) and in those above 3rd gravidae (25.20%). The least numbers are in the 2nd (17.50%) and 3rd pregnancies (20%). The most common age group of molar pregnancy was 20 to 35 years of age (24cases, 60%) and the least common age group was more than 35 years i.e. 17.50%.

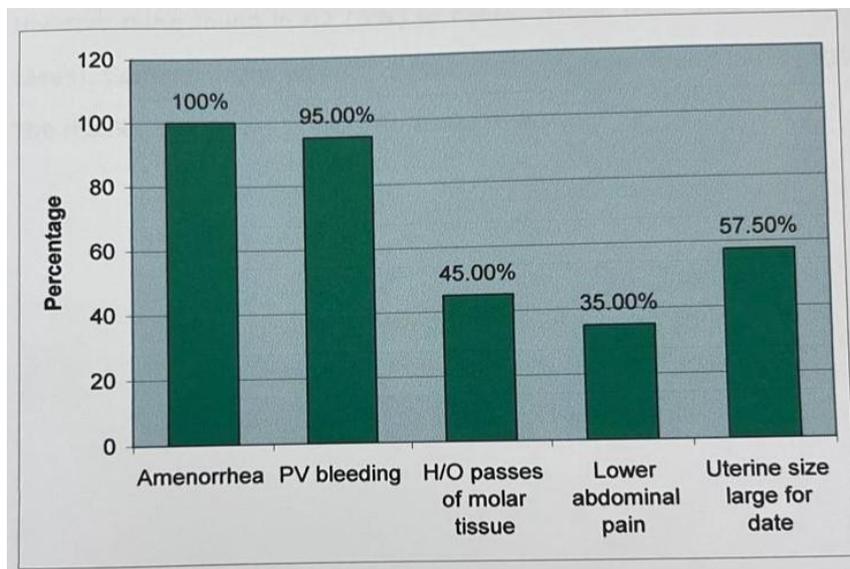


Fig 1: Distribution of patient according to clinical feature

Fig I: Shows out of 40 patients 38 (95%) of them complaints vaginal bleeding. History of passage of mole found in 18 (45%) patients.

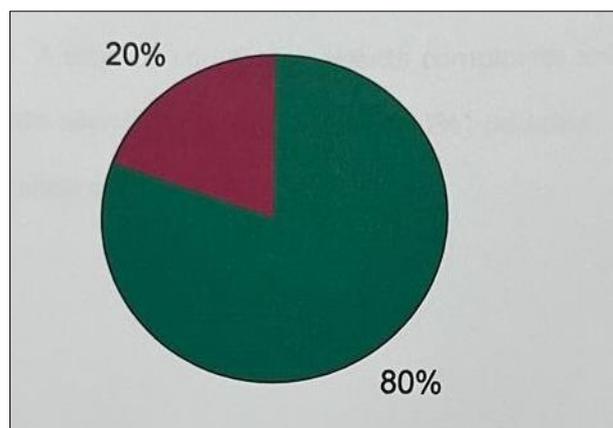


Fig- 2: Distribution of patient according to gestational age

Among 40 patients 32 (80%) were diagnosed as having MP with snowstorm and 8 (20%) were diagnosed as having MP without snowstorm appearance.

Table 1: Relationship of molar pregnancy by gestational age

Gestational age	U ultrasonographic findings of molar pregnancy		Total
	Snowstorm appearance (Classic mole)	Without snowstorm appearance (Possible mole)	
<12 weeks	26 (65%)	02 (5%)	28 (70%)
>12 weeks	06 (15%)	06(15%)	1.2 (30%)
Total	32 (80%)	08 (20%)	40 (100%)

Table: I shows snowstorm appearance in ultrasound images based on gestational age. Up to 12 weeks of gestation, 65% of cases had a classic mole

(snowstorm), while 5% had a possible mole (without snowstorm). In the > 12 weeks group, 15% had a classic mole, and 15% had a possible mole.

Table 2: Distribution of patient according to ultrasonographic findings of molar pregnancy

Characteristics snowstorm		Number of patients	Percentage (%)
Complete mole		27	67.50%
Invasive mole		02	5.00%
Panial mole		03	7.50%
Complex mass without characteristics snowstorm	Retained product of conception	06	20.00%
	Septate collection	02	
Total		40	100%

Table 2 describes the characteristics of patients with different types of moles. Of 40 patients, 27 had complete moles, 2 invasive, 3 partial mole. The

remaining 8 had complex masses, 6 due to RPOC and 2 due to septate collection.

Table 3: Distribution of patient according to βhCG level in relation to ultrasonographic diagnosis (n=40)

Ultrasonographic findings	βhCG(IU/L)						Total
	50000-100000	100000-150000	150000-200000	200000-250000	250000-300000	300000-350000	
Molar pregnancy with snowstorm	0	4	4	4	15	5	32
MP without snowstorm	4	2	0	2	0	0	8
total	4	6	4	6	15	5	40
%	10%	15%	10%	15%	37.50%	12.50%	100%

Table 3 outlines βhCG levels in patients, with a majority being high. Of 40 molar pregnancy cases, 32 had varied βhCG levels. 8 of these had no snowstorm appearance. Mean βhCG was 256579 (range 50000-

350000u/L) up to 12 weeks, and 172619 (range 50000-300000u/L) after 12 weeks. The difference between the two groups was statistically significant (p<0.0 I).

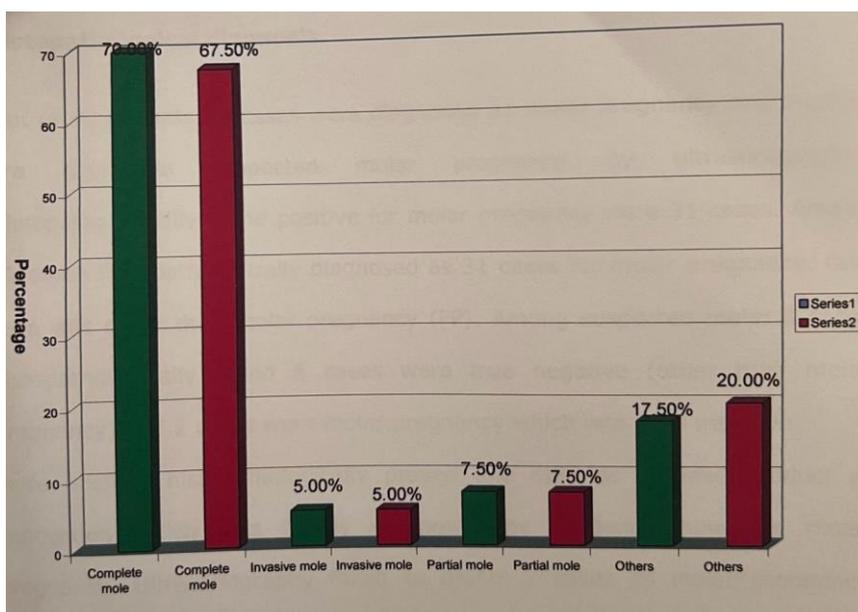


Figure 3: Comparison between ultrasonographic and histological findings of molar pregnancy

In a study of 40 cases, histopathology confirmed 33 molar pregnancies, with 70% complete moles. Ultrasonography diagnosed 31 as molar pregnancies, missing 2 out of 8 suspected cases,

indicating false negatives. The effectiveness of ultrasonography was evaluated using various statistical measures.

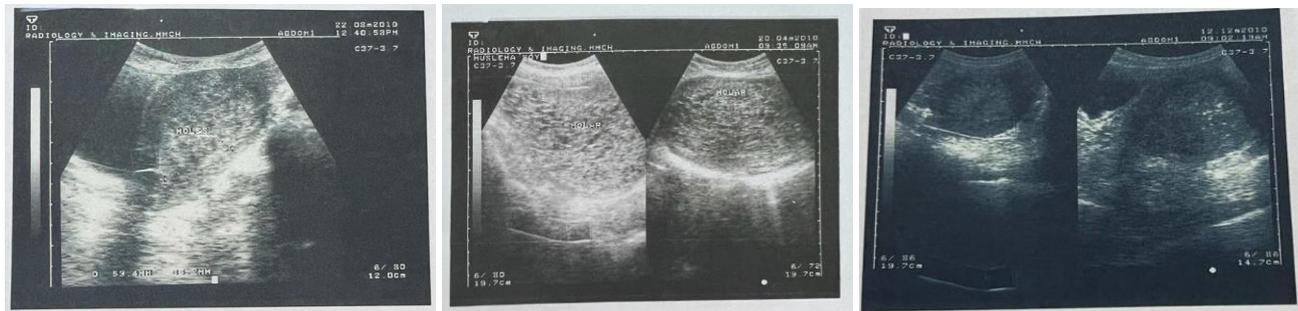


Figure: 4 Ultrasonogram shows a) characteristic snowstorm appearance of molar pregnancy b) cystic space with echogenic component c) retained product of conception.

DISCUSSION

This study aimed to evaluate the accuracy and usefulness of ultrasonography in diagnosing gestational trophoblastic disease at Mymensingh Medical College Hospital.

In Bangladesh, 28% of women have their first pregnancy at or before the age of 19, while 5% at the age of 35 or older, and the rest, 67% between the ages of 25 and 34 years². Our study included 40 patients aged 15 to 45 years, with a significant majority (60%) in the 20 to 35 years age group. According to the study conducted by Tham (2003) the average age of women diagnosed with gestational trophoblastic disease was 26.3 years (SD=6.7 years) among Asian women and slightly higher at 26.9 years (SD=7.5 years) among non-Asian women [3].

In a study by Sangeeta *et al.*, (2021), involving 43 participants, most patients were primigravida (46.51%), followed by second gravida (18.6%), third gravida (18.6%), and more than third gravida (11.62%) [4]. Our study revealed that the disease was more prevalent in first pregnancies (37.50%) and in those with more than third pregnancies (25%).

In gestational trophoblastic disease, vaginal bleeding is a common symptom, affecting 89.30% to 91.60% of cases [5]. However, our study revealed that amenorrhea with vaginal bleeding was the most prevalent symptom, observed in 95% of patients. Additionally, 48% of patients reported a history of mole passage, while 35% experienced lower abdominal pain. Furthermore, 80% of patients exhibited a larger-than-expected uterine size for their gestational age. According to Ekanem (2005) reported that abnormal vaginal bleeding was observed in 79.70% of cases, while 67.60% of cases exhibited the passage of vascular mole.⁶ Traditionally, molar pregnancies are present in the second trimester with vaginal bleeding and clinical signs

of a large-for-dates uterus and vesicle passage per vagina [7].

Ultrasonography is extremely sensitive for the evaluation of molar gestations during the second trimester [8]. In our study of 40 patients, 35% were diagnosed before 12 weeks of gestation, while 65% were diagnosed after 12 weeks.

Hydropic villi within the endometrial cavity create a classic sonographic image of snowstorms. However, this may not be visible in early pregnancy due to the small and numerous vesicles. As the pregnancy progresses, the villi enlarge resulting in a classic appearance. Lazarus reported that an ultrasound scan at 11-14 weeks can accurately identify molar pregnancies [9].

This study diagnosed 32 out of 40 patients with molar pregnancy by ultrasound. Their serum beta hCG levels ranged from 50,000 to 350,000 IU/L. The remaining 8 patients had a suspected pregnancy without a snowstorm image and beta hCG levels of: 4 patients between 50000- 100000IU/L (6-8 weeks and 25-40 weeks), 2 patients between 100000-150000IU/L (17-25 weeks), and 2 patients between 200000-250000IU/L (13-16 weeks). Interestingly, patients diagnosed before 12 weeks had a higher mean beta hCG level (256,579 IU/L) than those diagnosed after 12 weeks (172,619 IU/L). This difference was statistically significant ($p < 0.01$). Hossain's [10] study showed that ultrasound detected typical features of hydatidiform mole in 52 out of 58 cases, and these cases had elevated beta hCG levels according to gestational age. The concentration of normal beta hCG level in non-pregnant individuals was determined to be $< 5 \text{ mlU/ml}$. During a normal pregnancy, beta hCG levels vary based on gestational age. HCG was only measured to support the diagnosis and get a pre-evacuation value when ultrasound suggested a mole.

CONCLUSION

Ultrasonography is an important diagnostic tool for identifying potential abnormalities and distinguishing between normal pregnancies and hydatidiform moles. It plays a crucial role in the early diagnosis of molar pregnancy. The accuracy of ultrasonographic suspected hydatidiform mole can be confirmed through histopathological examination. Combining ultrasonography with histopathological examination ensures a more precise diagnosis and helps guide appropriate treatment decisions.

REFERENCES

- Ghassemzadeh, S. & Kang, M. (2020). Hydatidiform Mole [Internet]. PubMed. Treasure Island (FL): StatPearls Publishing. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK459155>.
- Alam Md, R., Khan Md, N., Cherri, Z., Tapan Kumar, R., & Rahman Md, M. (2018). Child bearing age and pregnancy outcomes in Bangladesh: a multilevel analysis of a nationwide population-based survey. *Prim Health Care*, 8(294), 2167-1079.
- Tham, B. W. L., Everard, J. E., Tidy, J. A., Drew, D., & Hancock, B. W. (2003). Gestational trophoblastic disease in the Asian population of Northern England and North Wales. *BJOG: An International Journal of Obstetrics & Gynaecology*, 110(6), 555-559.
- Shah, S., Devi, S. L., Reddy, S. R., Mitra, M., & Sravanthi, K. A Prospective Study of Molar Pregnancies in Tertiary Care Hospital.
- Barroilhet, L. M., Goldstein, D. P., & Berkowitz, R. S. (2011). Vaginal Bleeding and Gestational Trophoblastic Disease. In *Bleeding During Pregnancy: A Comprehensive Guide* (pp. 65-76). New York, NY: Springer New York.
- Ekanem, E. I., Etuk, S. J., Itam, I. H., Ekanem, A. D., & Ekabua, J. E. (2005). Hydatidiform mole in Calabar, Nigeria: a ten-year review. *Mary Slessor Journal of Medicine*, 5(1), 72-76.
- Ngan, H. Y., Seckl, M. J., Berkowitz, R. S., Xiang, Y., Golfier, F., Sekharan, P. K., ... & Massuger, L. (2018). Update on the diagnosis and management of gestational trophoblastic disease. *International Journal of Gynecology & Obstetrics*, 143, 79-85.
- WOODWARD, R. M., FILLY, R. A., & CALLEN, P. W. (1980). First trimester molar pregnancy: nonspecific ultrasonographic appearance. *Obstetrics & Gynecology*, 55(3), 31S-33S.
- Lazarus, E., Hulka, C., Siewert, B., & Levine, D. (1999). Sonographic appearance of early complete molar pregnancies. *Journal of ultrasound in medicine*, 18(9), 589-594.
- Hossain, G.A., Islam, S.M.M., Mahmood, S., Khan, M.N., Akhter, N. & Chkrabarty, R.K. (2002). Incidence of hydatidiform mole in Bangladesh. *Bangladesh ultrasonography*. 9(1): 12-18.