

# Prediction of complications by serial beta HCG levels in patients with molar pregnancy

Ayesha Sultana, Linganand L. Pujar, Ashalata Mallapur

Department of OBG, S. Nijalingappa Medical College and HSK Hospital, Bagalkot, Karnataka, India

## Abstract

**Background:** Molar pregnancies are classified into complete or partial hydatidiform mole based on histopathological and cytogenetic features. Some of these may present with complications in the course of treatment. This study was taken up to understand the importance of serial human chorionic gonadotropin (HCG) levels in the management and prevention of complications.

**Methods:** This was a retrospective case series study. Cases of singleton gestation in a tertiary care centre, with diagnosis of hydatidiform mole were included in the study and cases of invasive mole and choriocarcinoma were excluded. Suction and evacuation (S&E) was done in all cases. Pregnancy was terminated in cases with severe maternal or fetal complications. Following delivery, the diagnosis was confirmed on histopathological examination and serum beta HCG levels were assessed for four weeks.

**Results:** There was one case of complete hydatidiform mole and four cases of partial hydatidiform mole. One case of partial mole needed second cycle of methotrexate with folinic acid as beta HCG levels did not reduce significantly even after one week of S&E. The mean serum beta HCG levels, although decreased by the end of one week after S&E, the values showed a drastic reduction by the end of 2 weeks, and almost normalized by the end of 4 weeks after S&E.

**Conclusion:** It can be concluded that serial beta HCG levels is mandatory for proper management and prevention of further complications in patients with both partial and complete hydatidiform mole.

**Key words:** Serial beta HCG, hydatidiform mole, chemotherapy

## Introduction

Molar pregnancies are classified into complete or partial hydatidiform mole based on histopathological and cytogenetic features<sup>[1]</sup>.

Complete hydatidiform mole (CHM) is characterized by rapidly progressing hydatidiform change affecting the whole placenta with widespread and gross trophoblastic hyperplasia in the absence of an embryo and its covering amnion<sup>[2]</sup>. It arises as a result of abnormal fertilization of an empty ovum, with a genome that is almost entirely of paternal origin<sup>[3]</sup>, resulting in a diploid karyotype, most often 46, XX.

Partial mole demonstrates a slow hydatidiform change that affects only some of the villi in the placenta<sup>[2]</sup>.

The most common genotype is Dispermic triploid<sup>[4]</sup>. The incidence of molar pregnancy varies across countries. The incidence of molar pregnancy in

Japan (2:1000 pregnancies) is reported to be about threefold higher than the incidence in Europe or North America (about 0.6 to 1.1 per 1,000)<sup>[5]</sup>. In Taiwan, 1 in 125 pregnancies are molar, while in the United States, the incidence is 1 in 1,500 live births. The incidence of complete and partial hydatidiform moles in Ireland were investigated by reviewing all products of conception from first and second trimester abortions<sup>[6]</sup>.

Several potential etiologic risk factors have been evaluated for the development of hydatidiform mole. These include, among others, the extremes of maternal age, prior history of hydatidiform mole, history of spontaneous abortion, deficiency of beta carotene, animal fat intake and smoking.

Although it is reported that the subsequent pregnancies are not at risk factors for complications such as preterm labour, anomalies or still birth<sup>[7]</sup>,

## Corresponding Author:

**Dr. Ayesha Sultana**

Department of OBG, S. Nijalingappa Medical College, Bagalkot, Karnataka, India

E-mail: dr.ayesha.sk@gmail.com

there is evidence that the outcome of the subsequent pregnancies may be adversely affected in women with history of hydatidiform mole<sup>[8,9]</sup>.

This study was taken up to understand the importance of serial human chorionic gonadotropin (HCG) levels in the management and prevention of complications.

### Materials and methods

This was a retrospective case series study undertaken at HSK hospital Bagalkot, which is a tertiary referral centre. The information on the age, parity, gestational age was extracted from the case files. The other information noted were the risk factors, clinical presentations, laboratory results, treatment, follow up and the complications of molar pregnancy. The diagnosis was based on ultrasonography.

Cases of singleton gestation in a tertiary care centre, with diagnosis of hydatidiform mole were included in the study and cases of invasive mole and choriocarcinoma were excluded.

Baseline investigations that were done were Haemoglobin estimation, urine analysis, blood group and typing, Liver function test, Renal function test, bleeding time, clotting time, ECG, Special investigations, Serum beta HCG, Chest X-ray (P A view), thyroid function test.

In all women, transabdominal and transvaginal ultrasonography was done for confirmation of diagnosis. On ultrasonography, typical "snow storm appearance", suggestive of complete molar pregnancy was seen in all the cases. Blood transfusion was given in cases of severe anaemia. Suction and evacuation (S&E) which is the procedure of choice, was done in all cases. Pregnancy was terminated in cases with severe maternal or fetal complications. Following delivery, the diagnosis was confirmed on histopathological examination. Serum beta HCG levels were followed up. Data was expressed in percentages and proportions.

### Results

There were total five cases of molar pregnancies that were diagnosed, confirmed histologically, treated and followed up regularly in the hospital. All the cases were multigravida.

Table 1 shows the age - wise distribution of cases. Cases were equally distributed in each of the age groups.

**Table 1. Age - wise distribution of cases**

| Age in years | Number | Percentage |
|--------------|--------|------------|
| 15-19        | 1      | 20%        |
| 20-24        | 1      | 20%        |
| 25-29        | 2      | 40%        |
| ≥30          | 1      | 20%        |

There was one case of complete hydatidiform mole and four cases of partial hydatidiform mole (Table 2)

**Table 2. Distribution of cases according to the type of hydatidiform mole**

| Type                       | Number | Percentage |
|----------------------------|--------|------------|
| Complete hydatidiform mole | 1      | 25%        |
| Partial hydatidiform mole  | 4      | 75%        |

The case of complete mole presented with amenorrhoea, bleeding PV and pain abdomen, whereas the cases of partial mole presented with only amenorrhoea (Table 3).

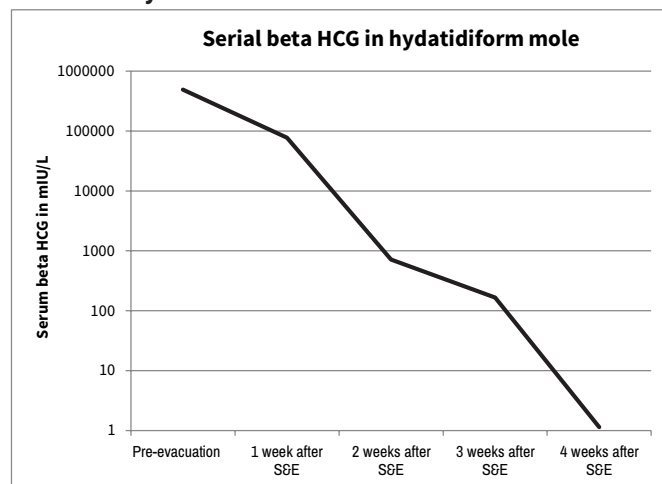
**Table 3. Distribution of cases according to the symptoms on presentation**

| Symptoms        | Complete hydatidiform mole<br>Number (%) | Partial hydatidiform mole<br>Number (%) |
|-----------------|--|---|
| Amenorrhoea     | 1 (100%)                                 | 4 (100%)                                |
| Bleeding PV     | 1 (100%)                                 | 0 (0%)                                  |
| Pain in abdomen | 1 (100%)                                 | 0 (0%)                                  |

No complications were noted during and after suction and evacuation in any of the cases. Injection methotrexate 50 mg/Kg body wt. and folic acid 1mg/Kg body wt. were administered to all the cases and beta HCG levels were followed up (Table 4).

**Table 4. Serum Beta HCG levels in the cases**

| Cases                  | On presentation and before S&E | After 1 week of S&E | After 2 weeks of S&E | After 3 weeks of S&E | After 4 weeks of S&E |
|------------------------|--------------------------------|---------------------|----------------------|----------------------|----------------------|
| Case 1 (Complete mole) | 4,25,632 mIU/L                 | 5176 mIU/L          | 200 mIU/L            | 100 mIU/L            | 1mIU/L               |
| Case 2 (Partial mole)  | 3,93,600 mIU/L                 | 17003 mIU/L         | 501 mIU/L            | 80mIU/L              | 2.5mIU/L             |
| Case 3 (Partial mole)  | 9,34,912 mIU/L                 | 11674 mIU/L         | 1839 mIU/L           | 150 mIU/L            | 2mIU/L               |
| Case 4 (Partial mole)  | 5,32,736 mIU/L                 | 3,35,360 mIU/L      | 1000 mIU/L           | 500 mIU/L            | 0.1 mIU/L            |
| Case 5 (Partial mole)  | 1,59,056 mIU/L                 | 17418 mIU/L         | 30 mIU/L             | 2.25mIU/L            | 0.1mIU/L             |
| Mean values            | 4,89,187.2mIU/L                | 77,326.2mIU/L       | 714mIU/L             | 166.45mIU/L          | 1.14mIU/L            |

**Figure 1. Serum mean beta HCG levels at different weeks in hydatidiform mole**

Case 4 of partial mole needed second cycle of methotrexate with folinic acid as her beta HCG levels did not reduce significantly after one week of S&E.

The mean serum beta HCG levels, although decreased by the end of one week after S&E, the values showed a drastic reduction by the end of 2 weeks, and almost normalized by the end of 4 weeks after S&E (Table 4, Figure 1).

### Discussion

We studied the serum HCG levels of five patients with molar pregnancy, the aim of this study was to assess HCG levels in patient with complete molar pregnancy to predict the occurrence of persistent GTN after surgical evacuation of molar pregnancies.

Pre evacuation HCG levels were higher and these lowered after chemotherapy. The results of the present study indicate that the most reliable predictor is the serial HCG level at one and two weeks after evacuation.

Kangetet al<sup>[10]</sup> showed that the cut off points for the HCG levels at one and two weeks after evacuation were 3,00,000 to 1500mIU/L. In the present study, the mean pre-evacuation HCG level was 4,89,187.2 mIU/L and the mean HCG level at one and two weeks after evacuation were 77,326.2 mIU/L to 714 mIU/L, respectively.

In a study by Wolfberg et al<sup>[11]</sup>, the risk of progression to persistent GTN in women whose HCG level decreased to undetectable level was 0.2%.

In the present study, women whose HCG level did not show significant decrease even after one week after evacuation showed progression to persistent GTD, which was managed appropriately.

**Conclusion:** It can be concluded that regular follow-up of patients with hydatidiform mole (both partial and complete) for serial beta HCG levels is mandatory for proper management and prevention of further complications.

### References

- Schmitt S, Doret M, Massardier J, Hajri T, Schott A-M, Raudrant. Risk of gestational trophoblastic neoplasia after HCG normalization according to hydatidiform mole type. *Gynecology Oncology* 2013;130:86-9.
- Kaneki E, Kobayashi H, Hirakawa T, Matsuda T, Kato H, Wake N. Incidence of postmolar gestational trophoblastic disease in androgenetic moles and the morphological features associated with low risk postmolar gestational trophoblastic disease. *Cancer Sci* 2010; 101(7):1717-21.
- Horn LC, Kowalzik J, Bilek K, Richter CE, Eienkel J. Prognostic value of trophoblastic proliferation in complete hydatidiform moles in predicting persistent disease. *Pathology Research Practice* 2006;202:151-6.
- Genest DR. Partial hydatidiform mole: clinicopathological features, differential diagnosis, ploidy and molecular studies, and gold standards for diagnosis. *Int Gynecol Pathol* 2001;20:315-22.
- Palmar Jr. Advances in epidemiology of gestational trophoblastic disease. *J Reprod Med* 1994;39: 155-162.
- Jeffers MD, O' Dwyer P, Curran B, et al. Partial hydatidiform mole: a common but underdiagnosed condition. *Int J Gynecol Pathol* 1993;12:315-323
- Aghajanian P. Gestational trophoblastic disease. In: *current diagnosis and treatment, Obstetrics and Gynecology*. 10th ed. USA: McGraw Hill; 2007.
- Garrett LA, Gamer EL, Feltmate CM, Goldstein DP, Berkowitz RS. Subsequent pregnancy outcomes in patients with molar pregnancy and persistent gestational neoplasia. *J Reprod Med* 2008;53:481-6.
- Sebire NJ, Foskett M, Fisher RA, Rees H, Seckl M, Newlands E. Risk of partial and complete hydatidiform molar pregnancy in relation to maternal age. *BJOG* 2002; 109:99-102.
- Kang WD, Choi HS, Kim SM. Prediction of persistent gestational trophoblastic neoplasia: the role of hCG level and ratio in 2 weeks after evacuation of complete mole. *Gynecologic Oncology* 2012;124(2):250-3.
- Wolfberg AJ, Feltmate C, Goldstein DP, Berkowitz RS, Lieberman E. Low risk of relapse after achieving undetectable hCG levels in women with complete molar pregnancy. *Obstetrics and Gynecology* 2004;104(3):551-4.

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