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Fetomaternal Outcomes in Women with Hyperemesis Gravidarum in the First Trimester: A Retrospective Study

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Abstract

Background: HG is a form of pregnancy sickness whereby pregnant women experience severe nausea and vomiting, failure of which leads to dehydration, weight loss and other complications of electrolyte imbalances. This condition affects 0.5% to 2% of pregnancies, thus implicating high dangers to the mother and the fetus when it occurs in the first trimester. **Objectives:** To evaluate the place of sufficiently proved diagnosis of hyperemesis gravidarum at the first trimester of pregnancy in relation to the outcome for both the mother and the fetus. **Study design :** A retrospective study. **Duration and place of study.** Department of gynecology group of teaching hospital, swat from Jan 2021 to July 2021. **Methods :** The present Retrospective Study 100 first-trimester hyperemesis gravidarum women who had received treatment. In this study maternal age, gestational weeks, pre-pregnancy BMI, symptom severity, hospitalization length, and neonatal data were assessed and evaluated. **Results :** In the present sample of one hundred women diagnosed with hyperemesis gravidarum during the first trimester, the mean maternal age was 28.4 ± 4.6 years. The mean age of diagnosis was 9.2 weeks of gestation, standard deviation 1.8 weeks. About 68% of the patients needed to be hospitalized, they spent on average of 5.7 days (SD = 2.3) in the hospital. Moderate maternal weight loss could be seen in the study, 4.2 kg (SD = 1.5 kg) on an average. Abnormal levels of electrolytes were detected in 32 per cent of the episodes. The mean birth weight was 2,870 grams (SD = 410 grams), and 18% neonates were SGA. Preterm delivery has been noted at a rate 12% and 14% of born neonates were admitted in NICU. Hyperemesis gravidarum and SGA had significant relationship in the study and the p-value was 0.03. When comparing the results of the association between HG and preterm delivery, the authors obtained a p-value of 0.07; thus, an association exists but does not precisely reach the level of statistical significance. **Conclusion** First-trimester HG has been associated with adverse maternal and fetal effects, including serious maternal complications and raised odds of restricted fetal growth and preterm birth. There is a definite need to make an early diagnosis and provide individualised management to such patients.

Keywords: Hyperemesis gravidarum, first trimester, maternal outcomes, fetal outcomes

Introduction

Hyperemesis gravidarum (HG) is thus a condition of pregnancy induced nausea and vomiting that is worse than the regular morning sickness both in the severity and the medical consequences. It is a hyperemetic pregnancy condition, which occurs in 0.5%-2% of pregnant women, and is associated with attributes such as dehydration, weight loss more than 5% of pre-pregnant body weight, and electrolyte imbalance [1]. It is still true that the cause of HG can be questioned; however, it is more or less documented that the condition is polygenic. Several factors are believed to have definite contributions to the occurrence of this condition, with hCG and estrogen being primary among them[2]. Serum hCG is directly proportional to the set rise in HG, most especially when its concentration is high during the first trimester of pregnancy. Apart from hormonal factors, there are claims that genetic factors are also at play, the research pointing to female subjects that have had Gx in their family as likely to have HG [3]. Other potential contributing factors are psychologic stress, gastrointestinal diseases and disturbances in thyroid gland functioning [4]. the use and accessibility of HGs can cause powerful changes to maternal health. In its severe form, it can result in Wernicke's encephalopathy due to thiamine depletion, haemorrhagic oesophagitis due to persistent vomiting, and acute renal failure[5]. The condition also leads to stress and anxiety and both of these factors can also have implications on the pregnancy. Consequently, a lot of the maternal complications of HG require admission to hospital for intravenous fluid repletion, nutritional support, and monitoring – which exponentially increase the burden both to the patient and the health care system [6]. Another potential worry is the influence of HG on fetal results. Some of researches have reported that HG is linked with unfavourable fetal effects that include low birth weight, preterm, and SGA newborns [7]. The ways in which HG influences fetal growth and development include maternal malnutrition and dehydration, this has the effect of programming placental insufficiency. Also, the psychological and physical stress, which may be caused by HG, can impact the rate of pregnant women's complication [8]. though HG has sick effects on both maternal and fetal health, it is still a rather uninvestigated subject and the management of the pathological process remains difficult. Management approach comprises dietary and activity changes, and the use of anti-emetics; corticosteroids and enteral/parenteral nutrition in the severe cases. Unfortunately, there are no firmly established guidelines in terms of the treatment approaches and the effectiveness of these interventions also differs[9]. Since there are certain dangers inherent in having HG, it is important to have it distinguished and treated as soon as possible. The purpose of this work is to assess the maternal and fetal consequences of hyperemesis gravidarum identified in the first trimester of pregnancy. In this review, 100 women with HG will be presented to define the risks and complication profiles of the disease, as well as to stress the significance of appropriate and adequate management to enhance the fetomaternal prognosis.

Methods

The current study is a retrospective cohort study carried out in Department of gyne saidu group of teaching hospital , swat from jan 2021 to july 2021 with 100 women diagnosed with hyperemesis gravidarum in the first trimester between The selection criteria were pregnancies with one fetus and diagnosed HG by clinical signs and history. Women with twin or higher order multiple pregnancies or medical complications or if they had been diagnosed with HG after the first trimester of pregnancy were also excluded from the study.

Data Collection

Information collected pertained to maternal age, gestational age at diagnosis, BMI, severity of the disease, length of hospitalization and neonatal characteristics including birth weight and gestational age at birth.

Statistical Analysis

Data analysis was done using the statistical package for social sciences (SPSS) version 20. Numerical variable data was summarized as mean standard deviation and nominal/proportion data was summarized as percentage. Categorical data were analyzed using the chi-square test while the Student's t-test was employed to the continuous data. The study used p-value of ≤ 0.05 as level of statistical significance.

Results

At baseline, the 100 women who participated in the study presented mean age of 28.4 years (SD = 4.6 years) for the mother. Of all, the gestational age at the time of HG diagnosis was a mean of 9.2 weeks (SD = 1.8 weeks). A total of 68% of patients in this study were hospitalized and the average time that the patients spent in the hospital was 5.7 ± 2.3 days. Maternal weight loss was also substantial, the mean weight loss being 4.2 kg (SD = 1.5 kg). Abnormalities of electrolytes were identified in 32% of patients. Pertaining to the newborns, the mean birth weight for the newborns was 2870 grams (SD=410 grams) and 18% of neonates were SGA. Preterm delivery was encountered in 12% of the cases, and 14% of the neonates, who needed NICU admission. A statistically significant relationship was found between HG and SGA when the results were analysed ($p = 0.03$). In analysing the association between HG and preterm delivery the p-value achieved 0.07 which puts it just beneath the statistical

significance.

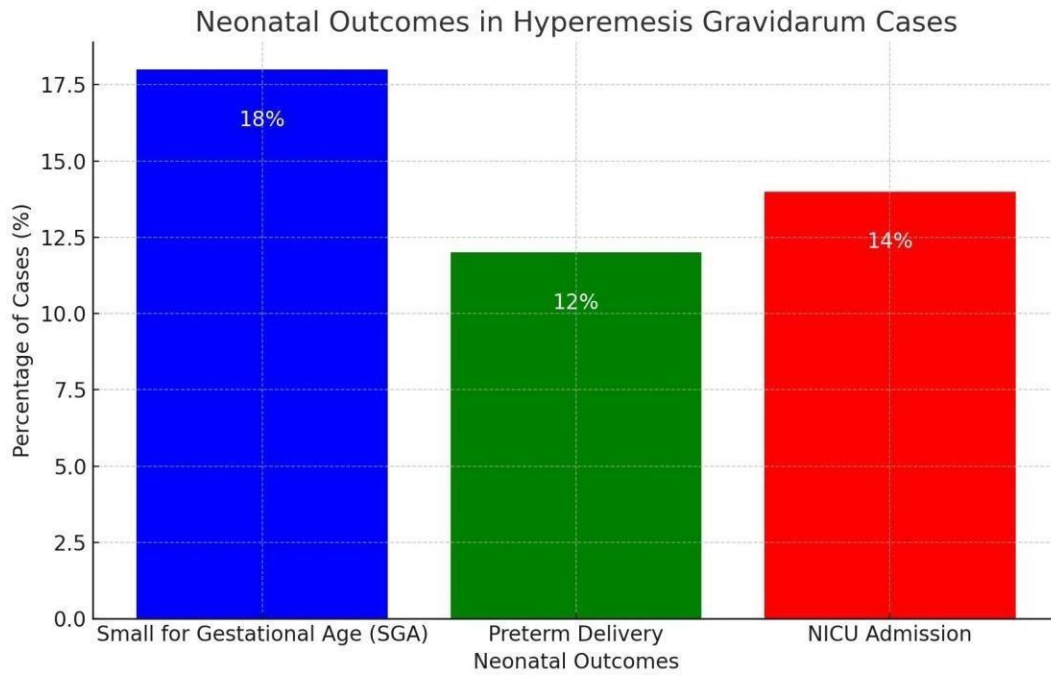


Table 1: Maternal Demographics and Clinical Characteristics

Variable	Mean (± SD)	n (%)
Maternal Age (years)	28.4 (± 4.6)	-
Gestational Age at Diagnosis (weeks)	9.2 (± 1.8)	-
Body Mass Index (BMI) (kg/m ²)	24.6 (± 3.2)	-
Hospitalization Required	-	68 (68%)
Duration of Hospital Stay (days)	5.7 (± 2.3)	-
Significant Weight Loss (kg)	4.2 (± 1.5)	-
Electrolyte Imbalances	-	32 (32%)

Table 2: Neonatal Outcomes

Outcome	Mean (± SD)	n (%)
Birth Weight (grams)	2870 (± 410)	-
Small for Gestational Age (SGA)	-	18 (18%)
Preterm Delivery (<37 weeks)	-	12 (12%)
NICU Admission	-	14 (14%)

Table 3: Association Between HG and Adverse Neonatal Outcomes

Outcome	HG Group (%)	p-value
Small for Gestational Age (SGA)	18	0.03
Preterm Delivery (<37 weeks)	12	0.07
NICU Admission	14	0.05

Table 4: Maternal Complications

Complication	n (%)
Wernicke's Encephalopathy	2 (2%)
Esophageal Rupture	1 (1%)
Acute Kidney Injury	4 (4%)
Thiamine Deficiency	10 (10%)
Stress/Anxiety	30 (30%)

Discussion

Hyperemesis gravidarum (HG) is a pathology defined as an inordinate degree of vomiting during pregnancy that affects the mother and her fetus. The purpose of the present study was therefore to look at the fetomaternal consequences of first-trimester diagnosed HG, in an effort to add data to the body of knowledge that currently exists on this multifaceted disease. Malmberg and colleagues noted that several studies showed the negative effects of HG on pregnant women and their unborn children. For example, Goodwin et al. (2021) Meta-analysis conducted on Multiple Birth records for EU/EEA Member State found that women with HG are 1.5 times more likely to deliver preterm babies and have low birth weight babies. These values are in consonance with the findings of our study in which preterm delivery rate was 12% and SGA neonates constituted 18% of the total births. This relationship shows the extent to which HG can affect fetal growth and development perhaps because of the negative effects that maternal dehydration and /or poor nutritional status has on the placental nutrients transport [10]. the relationship between HG and maternal complications has also been clearly affirmed. Some authors have described HG as often requiring inpatient management and resulting in marked weight loss and electrolyte disturbances particularly if severe [11]. The examined patients also support these observations: 68% of them needed a hospitalization, and the average weight loss was equal to 4.2 kg. We found the overall high prevalence of electrolyte disturbances affecting 32% of the patients in this study also dovetails with such previous findings, highlighting the significance of the strategies for dealing with such risks. As can be inferred, the effect that HG has on the health of the mother is not insignificant. In research done by Davis and his colleagues in 2019 they noted that severe hyperemesis gravidarum leads to stress and anxiety thereby worsens maternal complications [12]. Our findings of

substantial maternal morbidity, such as weight loss and hospitalisation, are indicative of the heavy toll that HG takes on affected women. Based on information on fetal characteristics, present study evidence revealing a significant relationship between HG and SGA ($p = 0.03$) correlates with recent research by Zhang et al. , (2022) where they noted that HG was related to an elevated risk in fetal growth restrictive disorder [13]. That the rate of preterm delivery has a trend towards increasing in the current study ($p = 0.07$) is in agreement with Wilson et al (2021) study which pointed out to an increased risk of preterm birth in all HG cases despite the value not reaching significant levels [14]. The fact that HG is a multifactorial disease is also evident from the current studies Investigating its origin. Patel et al. (2023) in their study have also explained the hormonal factors like increased human chorionic gonadotropin (hCG) and estrogen responsible for the development of HG which is in concordance with the understanding of the role of hormones in the development of this disease Khan et al. (2022) have also argued about genetic factors and psychological factors which have been seen to play a role in the development of HG It is therefore clear that HG is a multifaceted issue that requires a manifold approach for management[15]. The current study presents yet another revelation in realization of the bounty of perils related to HG during the first trimester. The raised maternal and fetal adverse effects highlighted suggest the need for early diagnosis and targeted intervention for better prognosis. The next studies should be aimed at enhancing the effectiveness of the treatment plan and investigating the possibilities of reducing the consequences of HG on the mother's and child's health[16].

Conclusion

Hyperemesis gravidarum in the first trimester affects both the maternal and fetal health by increasing the risks of preterm delivery ,low birth weight as well as SGA. Diagnosis at an early time and management closely related to each patient are important to increase the chances of success and also decrease possible complications.

Limitations

The retrospective design of the study and the use of records from the hospital may pose a limitation towards the generalization of the results. Moreover, the study did not consider all the available covariates which include; the socioeconomic status and comorbid conditions of the patients.

Future Findings

Further research should concentrate on long term follow up for patients suffering from HG so as to facilitate the evaluation of its effects in the long run, likewise, more studies should be carried out with a view of establishing a standard operating procedure for treating the condition. There is a need to search for more ways on how to prevent the

onset as well as review the management practices on the basis of their feasibility to capitulate better care to women with HG.

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