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RISK FACTORS AND COMPLICATION OF HYPEREMESIS GRAVIDARUM: HOSPITAL-BASED STUDY. ELOBIED CITY NORTH KORDOFAN- SUDAN

Haitham Abdalla Ali Ismail[1], Mohammed Ahmed Bealy[2,3]*, Ahmed Elnour Adam Zakaria[1], Nawal Ali Ahmed Mohamed[1], Abuelez Hassan Ibrahem Abdallah[4], Eldaw Breima Suliman[5], Nada Elfatih Agabna Agbeldour[6], Ghrashy etyieb Mohammed[2], Hatim Adam Nagi[7] and Emad Abboh[2]

[1]Department of Obstetrics and Gynecology, Faculty of Medicine University of Kordofan.
[2]Department of Pathology, College of Medici, University of Ha'il, Sudi Arabia.
[3]Department of Histopathology and Cytology, Faculty of medical Laboratory, University of Kordofan.
[4]Department of Community Medicine, Faculty of Medicine University of Kordofan.
[5]Department of Microbiology, Faculty of Medical Labaratory Sciences, University of Kordofan.
[6]Medical officer, Elobied Teaching hospital- North Kordofan State- Sudan.
[7]Department of Family & Community Medicine, College of Medici, University of Ha'il, Sudi Arabia.

***Corresponding Author: Mohammed Ahmed Bealy**
Department of Pathology, College of Medici, University of Ha'il, Sudi Arabia., Department of Histopathology and Cytology, Faculty of Medical Laboratory, University of Kordofan.

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ABSTRACT

Background: Hyperemesis gravidarum (HG) is the most frequent cause of hospitalization during the first trimester of pregnancy. their predictive abilities are unknown, despite their association with grave consequences. This study's objective is to assess and pinpoint specific risk factors and consequences associated with HG in the state of North Kordofan Sudan. **Methodology:** Between January and August of 2023, 77 patients who had been admitted with HG were included in the study as a complete coverage sample for this descriptive, questionnaire-based study that was carried out at Elobeid Teaching Hospital. **Results:** Of the 77 candidates, 54.4% belonged to the 12- to 25-year-old age group, 67,3 live in rural areas, 54.3 were primigravidae, and 70 had either no education or very little education; 75% had a single fetus, 68.8% had a female fetus, 5,2% had hyperthyroidism, and 11.7% had hypothyroidism. Fifty percent of candidates had a family history of H. pylori infection, and twenty-five percent had previously been infected with the bacteria. Preterm labor ceased in 66.7 for individuals with a history of HG. **Conclusion:** The majority of the candidates had multiple risk factors, including being under 25 years old, having a female fetus, residing in a rural area, having a first pregnancy, and having poor educational attainment. The primary problem in the majority of HG patients is premature labor. The previously stated result no longer differs from the facts on HG risk factors and outcomes that are now accessible.

KEYWORDS: Hyperemesis, Kordofan, Risk factors, Complications.

INTRODUCTION

Intractable vomiting during pregnancy that causes weight loss and volume depletion, ultimately leading to ketonuria and/or ketonemia is known as hyperemesis gravidarum (HG).[1] HG is a rather uncommon illness**,** occurring generally in 0.3% _3.6% of pregnancies, though it can be up to 10.8% in some areas., despite the fact that more than 70% of pregnant ladies suffer nausea and vomiting to some extent throughout the first trimester of their pregnancy. Ketonuria, weight loss of more than 5% of pre-pregnancy weight, and continuous vomiting are frequently used criteria for inpatient management of HG patients [2], although still no clear policies for hospitalization of HG patient in Sudan. The illness often manifests in the first trimester of pregnancy, between weeks 4 and 9, peaks between weeks 12 and 15, and resolves around week 20. Nonetheless, a significant proportion (9–20%) of women who come with HG report that their nausea and vomiting continue after 20 weeks of gestation and sometimes continue until the end of the pregnancy.[3] The etiology of HG appears to be influenced by a variety of factors. Genetic incompatibility, immunological issues, endocrine abnormalities, dietary inadequacies, and disorders of the gastrointestinal system all contribute to the pathologic mechanism that causes HG.[4] Although the evidence is inconclusive, some studies has suggested that Helicobacter pylori infection during pregnancy may be related to HG.[3] Recent research has connected the genes GDF15 and IGFBP7, which control appetite, cachexia, and placentation, to HG, but no single theory can, of course, explain HG.[5] The following complications are

categorized as pregnancy-related problems in HG: undernourishment, anemia, hyponatremia, Wernicke's encephalopathy (WE), kidney failure, central pontine myelinolysis (CPM), stroke, cerebral artery vasospasms, seizures, coagulopathy, hypoglycemia, rupture or perforation of the esophagus, pancreatitis, hepatic disease, jaundice, pulmonary embolism, pneumothorax, pneumomediastinum, rhabdomyolysis, vitamin K deficiency and coagulopathy, splenic avulsion, depression, and post-traumatic stress disorder, newborn problems (lower birth weight, small for gestational age, and birth before 37 weeks of gestation) and issues related to central nutrition (sepsis, fungemia, tamponade, local infection, venous thrombosis, fatty infiltration of the placenta, and transaminitis).[6]

There is a lack of information about HG in the Elobeid region, so this study aims to create a database that can help in a better understanding of HG, its risk factors, and its typical outcomes. Using such data can greatly enhance patient care as well as the outcome of this challenging condition.

METHODOLOGY

Between January and August of 2023, a questionnaire-based study with a descriptive design was carried out at Elobeid Teaching Hospital.The entire coverage sample for the study consisted of 77 patients who had been admitted at that time with HG. A standardized questionnaire containing questions regarding demographics such as age, education level, place of residence, sex of the fetus, chronic illnesses, family history of HG, and some particular problems was given to all pregnant women who were admitted with HG during the study period. Using SPSS, percentages and frequencies were computed in order to analyze the data. Every participant gave their informed consent.

RESULTS

Data about pregnant women are shown in the **Table 1** according to parity, age categories, and place of residence. For every category, it gives percentages and frequencies. Most of study subjects were in the age ranges of 12–25 years old and 36–45 years old, 42 (54.5%), and 31 (40.3%), in that order. The residence distribution illustrates the difference between rural and urban areas, with rural constituting a larger percentage of 67.5%. It also shows the parity of pregnant women, with descending frequencies and percentages of 41 (54.5%), 36 (45.5), and 0% for the Primigravida, Multipara, and Grand Multipara categories, respectively.

Table 1: Distribution Of Pregnant Ladies By Demographic Data Age And Residence.

Age groups	Frequent	Percent
12-25yrs	42	54.5%
36-45yrs	31	40.3%
36to45yrs	4	5.2%
Residence of the pregnant women		
Urban	25	32.5%
Rural	52	67.5%
The parity of pregnant women		
Primigravida	41	54.5%
Multipara	36	45.5%
Grand multipara	00	00%

Table 2 lists the gestational age of the pregnancy, the number of gravid fetuses in the pregnant woman's current pregnancy, and the education levels of the pregnant women. It provides information on the distribution of gestational age, fetal count, and educational background among the study population by including frequencies and percentages for each category.

Table 2: Distribution of Pregnant Ladies By Educational Level, Number Of Gravid Fetus And The Age Of Current Pregnancy.

	Frequent	Percentage
Education levels of pregnant women		
Primary school	15	19.5%
Secondary school	30	38.9%
University	15	19.5%
Postgraduate studies	7	9.1%
Not educated	10	13%
Number of gravid fetuses in current pregnancy		
Single	58	75.3%
Twin	19	24.7%
The gestational age of current pregnancy		
4 to 7 weeks	11	14.3%

8 to 10 weeks	15	19.5%
11 to 13 weeks	51	66.2%

Table 3: Distribution of Pregnant Ladies by Gender Of Fetus, Symptoms Of Hyperemesis Gravida And Fate Of Pregnancy In Women With Hyperemesis Gravidum.

	Frequent	Percent
The Gender of fetus in the current pregnancy		
Female	53	68.8%
Male	21	27.3%
Female and male	3	3.9%
The present symptoms of hyperemesis gravidarum		
Excessive nausea and vomiting	23	29.8%
Other symptoms	44	70.2%
The fate of pregnancy in women had previous history of hyperemesis gravidarum		
Preterm labor	22	66.7%
Term labor	4	12.1%
Posterm labor	0	00%
Miscarriage	7	21.2%

Regarding data on many elements of pregnant women and their pregnancies, such as the gender of the fetus in the current pregnancy, the majority of fetuses were female, followed by male, and a small percentage (68.8%, 27.3%, and 3.9%, respectively) were both male and female. The majority of women who experience hyperemesis gravidarum symptoms include nausea and vomiting, headache, and tachycardia 44(70.2%), whereas only 23 (29.8%) experience excessive nausea and vomiting alone. Preterm labor, miscarriage, term labor, and posterm labor accounted for the majority of pregnancy outcomes in women with a history of hyperemesis, with respective rates of 66.7%, 21.2%, 12.1%, and 0% as indicated in **Table 3**.

In terms of the women's past infertility history, the majority had none, accounting for 90.9% of the total, while a small percentage (9.1%) had. as depicted in **Figure 1**.

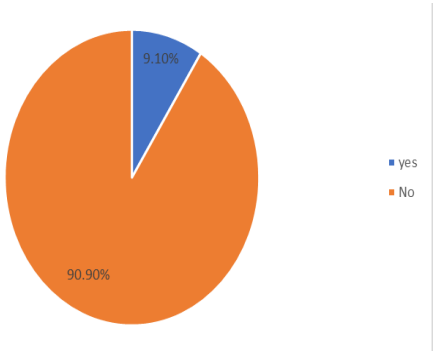

Figure 1: Discription of study population by History of previous infertility.

In conditions of gender, female fetuses make up the majority of delivered babies and obedient fetuses among women with a history of hyperemesis, while male fetuses represent the minimum, equivalent to 88% and 12% respectively. as depicted in **Figure 2**.

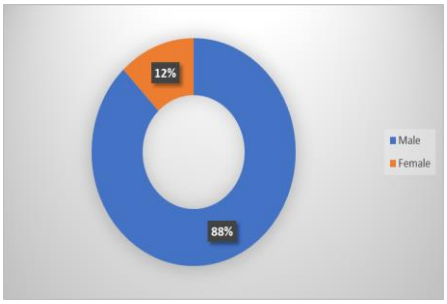

Figure 2: Description Of Study Population By The Gender Of Delivered Baby And Obedient Fetus Regarding Women Had Previous History Of Hyperemesis Gravidarum.

Given that a third of the women in this study had no family history of hyperemesis gravidarum 29.9%, almost more than half of the women had a history of the condition, either their mothers 49.3% or their sisters 18.2%. **Figure 3.**

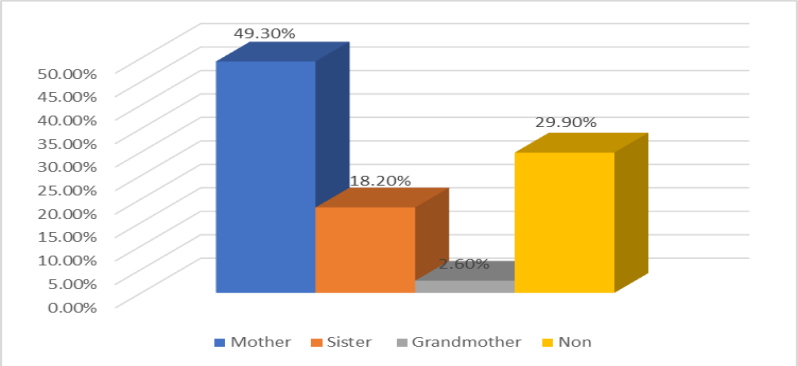

Figure 3: Description of participant by the family history of hyperemesis gravidarum.

When the H. pylori infection was examined for recurrence, only 26 percent of the women had a history of recurrent infection, whereas the other 74 percent had not. Similar to **Figure 4**.

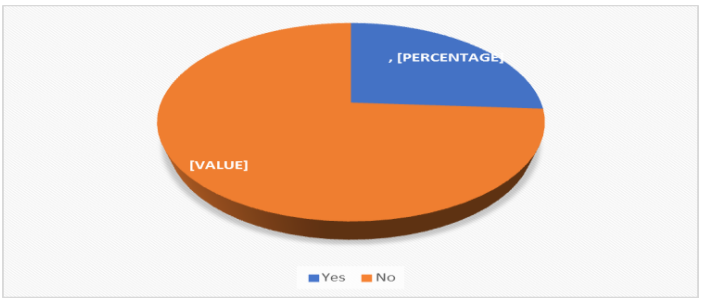

Figure 4: Description of pregnant women by history of recurrent infection or not eradicating H. Pylori infection.

Table 4: distribution of study participant by history of various chronic disease, social habits, and symptoms of Wernicke's encephalopathy.

	Frequent	Percent
History of thyroid gland diseases		
Hyperthyroidism	4	5.2%
Hypothyroidism	9	11.7%
Non	64	83.1%
History of chronic diseases		
Hypertension	2	2.6%
Diabetes mellitus	10	13%
Renal disease	3	3%
Asthma	10	13%
Non	52	67.5%
History of social habit		
Alcohol consumption	1	1.3%
Non	76	98.7%
Symptoms of Wernicke's encephalopathy		
Fever	3	3.9%
Ataxia	1	1.3%
Confusion	00	00%
Nystagmus	00	00%
Non	73	93.8%

Few participant women had a history of hyperthyroidism, and a smaller percentage had a history of hypothyroidism; nonetheless, none of them had hyperthyroidism. represented separately 4 (5.2%), 9 (11.7%), and 64 (83.1%). The study's participant women varied in terms of their history of the most common chronic diseases: hypertension, diabetic millet (DM), renal disease, and asthma. Asthma and DM showed a

higher percentage of 13%, while hypertension was 2.6% and renal disease was 3%. However, the majority of pregnant women in the study had no history of any of these chronic diseases, accounting for 67.5% of the total.

Out of the women who participated in the study, only one (1.3%) reported being intoxicated, while the remaining 98.7% said they never drank. The majority of participants do not exhibit confusion or nystagmus in relation to Wernicke's encephalopathy symptoms. However, a small percentage do exhibit fever (3.9%), and ataxia (1.3%). As can be observed in **Table 4.**

DISCUSSION

One of the most typical signs of pregnancy in the first trimester was HG. The majority of the female participants in the current study, or roughly 55%, were between the ages of 12 and 25, according to a study by Nithiyasri et al. 2020. they found that most of the studied women age were less than 20 years.[7] The survey's distribution of women revealed that, although a 2019 study conducted in Finland found otherwise, women from rural areas suffer more than their urban counterparts, accounting for 67% of the sample. This finding is consistent with the research conducted by Mekonnen et al. (2018).[8] The current study revealed that multigravida had a high prevalence of HG (55%), which is similar to previous research by Melanie et al. (2022) that found multigravida to be almost the same percentage.[9] According to our study, women with postgraduate degrees had a lower percentage of HG (15%) than women with no education or only a high school education. Additionally, research conducted in Ethiopia revealed that education improved pregnant women's knowledge of hyperemesis gravidarum and helped them adopt healthy behaviors related to it.[10]

About the relationship between HG and gestational age of pregnancy According to Paauw et al. (2005), infants born to women with HG are more likely to have shorter gestational ages and longer hospital stays[11]; however, the participants in this study had varying gestational ages, suggesting that HG and the higher were at week 11 – 13 indicate about 66% which is close to above series.

A retrospective study carried out in the United Kingdom reveals that women who appear with HG are more likely to be carrying a female fetus, and that these women also tend to have greater levels of ketonuria and more hospital admissions[12], as well as the current finding female fetus represent 68%. In this series primiparous women tend to have more experience HG represent 54.4%, agreed with study conducted in Finland that showed around this percentage.[13]

Our findings for the various symptoms of HG are no longer different from previously published data because excessive vomiting and nausea with other symptoms accounts for about 71% while nausea and vomiting alone comprise around 29%, These findings are consistent with studies that demonstrate HG is characterized by persistent first trimester vomiting that results in weight loss greater than 5% of pregnancy body weight and ketonuria unrelated to other causes.[14] H.Pylori infection tend to associated with about near 30% of participant in this study, which supported with study conducted in Saudi Arabia that approve H. Pylori infection in more than 80% of candidate.[15] Many chronic conditions, including hyperthyroidism, hypothyroidism, hypertension, diabetes mellitus, renal disease, and asthma, were found to be associated with HG in this study, albeit at varying percentages. As a result, the association may have occurred by accident, but we were unable to exclude these conditions from risk factors because, to the best of my knowledge, no studies have been done on these issues.

In relation to complications. The most frequent complications are preterm birth (66.2%) and miscarriage (22%), which is consistent with a 2013 Norwegian study.[16]

Weight loss, jaundice, and severe nausea and vomiting are complaints made by 70.2% of women; this indicates the severity of the consequences if treatment is not received. Wernicke's encephalopathy (WE) is an uncommon disorder; no one has been diagnosed with it; nevertheless, 3.9% of patients have complained of fever and 1.3% of patients have complained of ataxia, which may indicate the development of WE if HG is not treated. These results are consistent with those reported by Groleau et al. in 2019.[17]

In summary, women in the North Kordofan state's Elobeid city who have HG or are at risk for HG have one or more of the following risk factors: they are younger than 25 years old, from rural areas, primigravida, multiple gestation, having previously experienced infertility and HG, having a family history of HG. Additionally, preterm birth and pregnancy loss are consequences of HG. More study with a larger sample size and more variables is advised in order to enable the collection of additional statistical relationships through techniques like cross tabulation and chi square, validate the results, and guarantee more trustworthy conclusions.

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