

Emesis Gravidarum Prevalence in Pregnant Women in Rize Region

Rize Bölgesindeki Gebelerde Emesis Gravidarum Prevalansı

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Özet

Amaç: Gebelikte bulantı ve kusma (NVP) gebelikte sıklıkla karşılaşılan bir durumdur ve ihmal edilirse ciddi maternal ve fetal komplikasyonlara yol açabilir. Bu çalışmanın amacı Rize’de NVP sıklığını ve ilgili faktörleri belirlemektir.

Gereç ve Yöntemler: Bu prospektif çalışmada, NVP şiddeti ve sıklığı, 5-20 gebelik haftası arasındaki gebelerde, Pregnancy-Unique Quantification of Emesis and Nausea (PUQE) skorlama sistemi kullanılarak puanlanarak belirlendi. PUQE skoru 7’nin altında olan gebeler hafif NVP grubu, 7 ve üzeri olan gebeler ise orta ve şiddetli NVP grubu olarak tanımlandı. Demografik veriler ve kan elektrolit seviyeleri her iki grup arasında karşılaştırıldı.

Bulgular: Toplam 221 gebe kadın çalışmaya dahil edildi. Orta-şiddetli NVP sıklığı %10 (n=22) olarak bulundu. Hiperemesis gravidarum sıklığı %2 (n=4) olarak bulundu. Orta-şiddetli NVP semptomları olan gebelerin ortalama vücut kitle indeksi, hafif semptomları olan gebelerden daha yüksek bulundu ($p<0,001$). Orta-şiddetli NVP semptomları olan gebelerin ortalama kan sodyum ve potasyum düzeyleri daha düşük bulundu ($p=0,003$ ve $<0,001$).

Sonuç: Rize ilinde NVP sıklığı literatürle benzerdir. Vücut kitle indeksinin artması NVP sıklığı ile ilişkili olabilir. Bu gebelerde kanda elektrolit dengesizlikleri görülebilir. Bu nedenle tüm gebeler NVP açısından dikkatlice değerlendirilmeli ve gerekli hastalarda elektrolit dengesizliklerini ortadan kaldırmaya yönelik tedaviler planlanmalıdır.

Anahtar kelimeler: Bulantı, Kusma, Gebelik, Hiperemesis Gravidarum, Prevalans

Abstract

Objective: Nausea and vomiting of pregnancy (NVP) are frequently encountered in pregnancy and can lead to serious maternal and fetal complications if neglected. This study aims to determine the frequency of NVP and related factors in Rize.

Material and Methods: In this prospective study, the severity and frequency of NVP were determined by scoring pregnant women between 5-20 weeks of gestation, using the Pregnancy-Unique Quantification of Emesis and Nausea (PUQE) scoring system. Pregnant women with a PUQE score below 7 were defined as the mild NVP group, and a score of 7 and above was defined as the moderate and severe NVP group. Demographic data and blood electrolyte levels were compared between the two groups.

Results: A total of 221 pregnant women were included. The frequency of moderate-severe NVP was found to be 10% ($n = 22$). The frequency of hyperemesis gravidarum was 2% ($n=4$). The average body mass index of pregnant women with moderate-severe NVP symptoms was found to be higher than that of pregnant women with mild symptoms ($p<0.001$). The average blood sodium and potassium levels of pregnant women with moderate-severe NVP were found to be lower ($p=0.003$ and <0.001).

Conclusion: The frequency of NVP in Rize province is similar to the literature. Increased body mass index may be associated with the frequency of NVP. Electrolyte imbalances may occur in the blood of these pregnant women. For this reason, all pregnant women should be carefully evaluated in terms of NVP, and treatments should be planned to eliminate electrolyte imbalances in patients.

Keywords: Nausea, vomiting, pregnancy, hyperemesis gravidarum, prevalence

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INTRODUCTION

Emesis gravidarum or nausea and vomiting of pregnancy (NVP) is commonly seen among pregnant women (1). The symptoms occur 2-4 weeks after fertilization, reach their most severe form between weeks 9 and 16 of pregnancy, and usually decrease by week 20 of pregnancy. Symptoms may be observed in approximately 50% to 90% of all pregnant women (2). In one in 200 women, nausea and vomiting become more severe and may turn into hyperemesis gravidarum, accompanied by dehydration and weight loss (3).

Although NVP is considered normal during pregnancy and treated, for some women it is just an annoying symptom, while for others it can seriously affect the quality of life. In 10-35%, symptoms may increase depression and mood changes, which can negatively affect housework and social relationships (4). These pregnant women are also at risk for mood disorders and depression (5).

Having a history of NVP and hyperemesis gravidarum (HG) in previous pregnancies increases the risk of HG in the second pregnancy by 3 times. Additionally, NVP is more common in Asian countries compared to Western societies (6). Although the cause of NVP is unknown, it is thought that genetic, endocrine, and gastrointestinal factors may play a role.

This study aimed to determine the prevalence and risk factors of NVP and HG in pregnant women in Rize.

MATERIALS AND METHODS

This prospective study was conducted among patients who applied to the pregnancy outpatient clinic of Recep Tayyip Erdogan University Faculty of Medicine Training and Research Hospital from 01 January 2023 and 31 December 2023. The study included women between the ages of 17-45, 5-20 weeks of pregnancy. Age, body mass index (BMI), number of previous live births and stillbirths, and gestational age were recorded. The gestational age determination was based on the last menstrual period, obstetric examination, and ultrasonography findings.

A scoring system was developed in 2002, especially for use in research, to determine the severity of the disease in the clinic and to create certain standardization. According to the PUQE score index (Pregnancy-Unique Quantification of Emesis and Nausea, a pregnancy-specific measurement of nausea and vomiting), scores are assigned to the patient based on the number of hours with nausea and vomiting, as well as the frequency of involuntary retching. This was later modified in 2008 (7). In the current study, the Turkish

validated form was used (8). Modified PUQE scoring Questions and scores in the Modified PUQE scoring system are as follows:

On average, how much nausea and stomach discomfort do you feel in a day?

None $\leq$ (1 point), 1h (2 points), 2-3h (3 points), 4-6h (4 points), >6h (5 points)

On average, how many times do you gag and vomit in a day?

No vomiting (1 point), 1-2 times (2 points), 3-4 times (3 points), 5-6 times (4 points), $\leq$ 7 times (5 points)

On average, how many times a day do you experience retching or dry vomiting without expelling anything?

None (1 point), 1-2 times (2 points), 3-4 times (3 points), 5-6 times (4 points), $\leq$ 7 times (5 points)

Modified PUQE scoring. According to the Modified PUQE scoring system, if the patient's total score is $\leq$ 6, mild; between 7 and 12, medium; and $\geq$ 13 will be considered as severe NVP. Data were collected by face-to-face interviews with pregnant women.

Pregnant women with a PUQUE score below 7 were defined as group 1 (mild nausea and vomiting), and those with a PUQUE score of 7 and above were defined as group 2 (moderate-severe nausea and vomiting).

The inclusion criteria of the patients in the study were: 17-45 years of age, 5-20 weeks of pregnancy.

Exclusion criteria for patients in the study: No systemic diseases such as gastritis, pyelitis, and hyperthyroidism that may cause complaints of nausea and vomiting, ectopic pregnancy, hydatidiform mole, and multiple pregnancies.

Statistical method: Statistical Package for Social Sciences (SPSS version 20.0) program was used for statistical analysis. The distribution of demographic data of the patients included in the study, mean, standard deviation, minimum, and maximum values, was recorded. The Mann-Whitney U test was used in the statistical evaluation of the data obtained. The statistical significance level was set as 5%.

The study was reviewed according to the "Declaration of Helsinki" and "Good Clinical Practice Guideline" and was prepared "duly" according to the guideline. Informed consent was obtained from all participants in the study.

Ethics Approval: Approval for the study was received from the ethics committee of Recep Tayyip Erdogan University (decision no: 2022/233).

RESULTS

A total of 221 pregnant women were included in the study. The demographic data of the pregnant women included in the study are shown in **Table 1**.

According to the PUQE scores, mild nausea and vomiting were detected in 199 (90%), while moderate and severe nausea and vomiting were detected in 22 (10%). It was observed that 4 (2%) of the patients in the moderately severe group were hospitalized for treatment. Statistically significant differences were observed in BMI, mean sodium, and potassium levels of the patients with mild and moderate-severe NVP groups. Comparison of PUQE scores according to demographic data is shown in **Table 2**.

DISCUSSION

Nausea and vomiting of pregnancy, which worsens the pregnancy experience and may lead to the need to terminate the pregnancy in some cases, is a very common condition in clinical practice. The fact that it is common and is a normal symptom in the natural course of pregnancy may cause treatment delays. In our study, it was determined that the frequency of NVP was mostly mild, while it was severe in 10 percent of cases and required hospital follow-up and treatment in two percent.

There are many studies on the pathophysiology of NVP. The theory that the placenta affects pregnancy nausea and vomiting. As evidence for this theory, the gene that codes the placental proteins such as GDF15 and IGFBP7 is associated with NVP and HG. Additionally, HG may occur in mol hydaitiforme despite the absence of the fetus (9).

Human chorionic gonadotropin (hCG) regulates some factors and interleukins that may cause emesis. In a study, high maternal serum hCG levels are found at the time period of nausea and vomiting simultaneously (10). High hCG level is accepted as a risk factor for NVP (11). Additionally, NVP symptoms are often more severe in conditions associated with high hCG levels (12).

Sex hormones (such as estrogen and progesterone) may also play a role in the mechanism of NVP. These hormones can alter gastric rhythm, increase gastrointestinal transit time, and slow gastric emptying in non-pregnant women. So these changes may cause an increase in nausea and vomiting (13). There are opinions that *Helicobacter pylori* may also affect pregnancy nausea and vomiting. It has been found that *H. pylori* is found more frequently in the stomachs of women with HG (14).

When looking at the epidemiological factors that determine the frequency and severity of NVP, it is seen

Table 1. Demographic data of pregnant women included in the study

	Mean	Std. Deviation	Minimum	Maximum
Age (year)	28,64	5,577	17	51
BMI (kg/m ²)	26,61041	5,135528	17,6	50,5
Gravida	2,84	1,21	0	8
Gestational weeks	11,83	4,84	5	20

BMI: Body mass index

Table 2. Comparison of the relationship between demographic data and PUQE score in pregnant women.

	Grup1 Mean±SD	Grup2 Mean±SD	p*
Age (year)	28,33±5,308	31,50±7,123	0,59
Gravida	2,84±1,15	2,82±1,65	0,407
BMI (kg/m ²)	25,27±3,56	28,9±2,7	0,001
Gestational weeks	11,86±4,990	11,55±3,2	0,992
Sodium	137,45±1,75	135,4±3,31	0,003
Potassium	4,1±0,26	3,83±0,25	0,001

* Mann-Whitney U test was used to compare groups. BMI: Body mass index

that African American women experience NVP and HG more frequently than European women. Risk factors include those experiencing their first pregnancy, adolescents, those with a history of nausea and vomiting in their previous pregnancy, high body mass index and multiple pregnancies (15). According to the data obtained in our study, pregnant women who experience moderate and severe nausea and vomiting appear to have a higher body mass index.

Imbalances in blood electrolyte levels may occur in pregnant women who have problems with nutrition and fluid intake due to severe nausea and vomiting. Patients in this situation can be hospitalized, and clinical improvement can be achieved within a few days with hydration therapy containing appropriate electrolytes (16). The data in our study also shows that there are imbalances in the sodium and potassium levels of pregnant women with moderate and severe nausea and vomiting.

Since the pathogenesis of NVP and HG is still unknown, their treatment is difficult. Treatment focuses on improving the symptoms. Treatment modalities depend on the severity of symptoms and can be administered on a broad spectrum, ranging from dietary modifications, intravenous fluid rehydration (including electrolytes, vitamins, and thiamine), pharmacological therapy, and hospitalization.

The frequency of nausea and vomiting in pregnant women in Rize is similar to the literature average. Elevated BMI is a risk factor for NVP. Sodium and potassium levels may be affected by nausea and vomiting. Taking this issue into consideration during pregnancy follow-ups, questioning patients' symptoms, and providing advanced examinations and treatments in necessary cases will contribute to improving the pregnancy experience.

Conflict of Interest and Financial Status: Our study has not been financed by an institution and institution. In this study, there is no conflict of interest among the authors on any subject.

Ethical approval: This study was approved by the Recep Tayyip Erdogan University Scientific Research Ethics Committee (date:22/12/2022; Decision no: 2022/233). The Helsinki declaration was followed in the study.

Authors' contribution: They declare equal contribution to the study.

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