

Disability and psychiatric symptoms in hyperemesis gravidarum patients

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Abstract

Purpose Nausea and vomiting is an important health problem which adversely affects the daily routine and quality of life in pregnant women. The purpose of this study was to measure the level of change in the quality of life, depression and anxiety in hyperemesis gravidarum (HG) patients in relation to social–demographic data and disease variables.

Methods One hundred pregnant women hospitalized with the diagnosis of HG were included in the study. A total of 100 healthy pregnant women were also evaluated as the control group. All the patients in the study completed the socio-demographic data form, the Hospital Anxiety and Depression Scale (HADS-A and D) and Brief Disability Questionnaire (BDQ).

Results The mean HADS-D subscale score was 7.09 ± 3.91 in HG patients and 5.73 ± 3.32 in controls. The depression score in the HG patients were significantly higher than that of the control group ($p = 0.009$). The mean HADS-A subscale score was 7.73 ± 3.86 , which was significantly higher in HG patients compared to 6.70 ± 3.31 in controls ($p = 0.045$). The mean BDQ score was 11.2 ± 4.40 in HG patients and 8.5 ± 3.31 in the control

group of pregnant women, thus, significantly higher in the HG group as compared to controls ($p < 0.0001$). In the HADS-D, 52 patients in the HG group and 40 patients in the control group scored above the threshold value ($p = 0.089$). In the HADS-A, 28 patients in the HG group and 20 in the control group scored above the threshold value ($p = 0.185$).

Conclusions In patients with HG, a significant deterioration of physical and social health was encountered. HG disease is independent of any underlying psychiatric condition and adversely affects the quality of life of the sufferer.

Keywords Hyperemesis gravidarum · Maternal depression · Obstetrics · Pregnancy · Quality of life

Introduction

Nausea with or without vomiting is very common in early pregnancy, so mild symptoms are considered as part of the normal physiology of the first trimester. However, these symptoms can significantly impact the pregnant woman's quality of life, especially if they are persistent and/or severe [1]. Hyperemesis gravidarum (HG) is the term used to describe the severe form of nausea and vomiting in pregnancy. It is generally described as an unrelenting, excessive pregnancy-related nausea and/or vomiting that prevents the adequate intake of food and fluids. If severe and/or inadequately treated, it is typically associated with loss of greater than 5 % of pre-pregnancy body weight, dehydration and production of ketones as well as nutritional deficiencies, metabolic imbalances and difficulty carrying out daily activities [2].

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Hyperemesis gravidarum occurs in approximately 0.3–2 % of pregnancies [3]. The problem is generally time limited with onset at about the fifth week of pregnancy, peaking at 8–12 weeks, and resolves in the 16–18th weeks in most women, but approximately 5 % of women with hyperemesis have symptoms throughout the pregnancy [4].

The pathogenesis of HG is unknown; however, the predominant theories are; psychological factors, hormonal changes, abnormal gastrointestinal motility and *Helicobacter pylori*. Several other theories have also been suggested including specific nutrient deficiencies (e.g., zinc), alterations in lipid levels, changes in the autonomic nervous system, genetic factors and immunologic dysregulation [5].

Nausea and vomiting in pregnancy has been shown to adversely affect communication with family and spouse and may even cause depression. HG was found to be the most common reason for hospitalization during the first trimester of pregnancy [6]. The loss of a member of the workforce and also being admitted to hospital can impose an extra financial burden on the patient and the national economy. In addition, women with HG are in a weakened state and find it difficult to care for themselves and perform daily routines. Furthermore, they become oversensitive and lose self-respect. Being unable to manage and control the situation and not knowing when or if the nausea and vomiting will stop may result in feelings of disappointment, frustration, hopelessness, incapability and eventually anxiety. This may cause adjustment problems regarding pregnancy and motherhood [1].

To date, only a few studies have focused on the association between HG and anxiety, depression and quality of life, using validated instruments. Therefore, the objective of this study was to determine the depression and anxiety levels and changes in the quality of life in HG patients in accordance with demographic values and disease variables.

Materials and methods

One hundred consecutive patients with HG who were hospitalized in the Obstetric In-patient Clinic of the University Research and Training Hospital from the beginning of March 2011 to the end of September 2011 were included in this case–control study. The criteria for the patient to be hospitalized for HG were the presence of severe vomiting (more than three times per day without any other obvious cause), ketonuria in a urine test, inability to maintain oral nutrition, weight loss of more than 3 kg compared to pre-pregnancy weight and metabolic and electrolyte disturbances [hypokalemia (potassium <3.0 mEq/dl) or hyponatremia (sodium <134 mEq/dl)]. The control group comprised 100 healthy pregnant women who had not

suffered from HG and were matched for age, parity, body mass index (BMI) and gestational weeks at admission.

All the patients had a singleton pregnancy. Pregnant women were excluded from the study if they had any severe medical illness such as endocrine abnormalities, gastrointestinal, cardiovascular and pulmonary system diseases, eating disorders, gestational problems (e.g., imminent abortion, trophoblastic disease and ectopic pregnancy), multiple fetuses, psychotic diseases (e.g., delirium, schizophrenia) and psychiatric diseases or had used any psychotropic medication during the last 6 months. Patients who were illiterate or had mental or social inability that prevented them from comprehending or responding to the data collection instruments were also excluded from the study.

A comprehensive medical history was obtained from all the pregnant women and laboratory evaluation was also completed. A fetal sonogram was obtained to confirm the inclusion criteria. Data were collected at the time of admission using a series of forms completed in face-to-face interviews by the same physician (IE). The patient information form was used to obtain clinical and demographic data related to individuals. The second form included the Turkish versions of the Hospital Anxiety and Depression Scale (HADS). Originally developed by Zigmond and Snaith [7], HADS is a self-assessment scale specially developed for use in hospital settings to determine the risk of anxiety and depression in a patient and to measure the level and the change of severity. A Turkish translation of the HADS was used [8], which satisfied the validity and reliability studies and was reported as a suitable tool for the population in question. The scale includes 14 items and has subscales of HADS-A (anxiety, seven questions) and HADS-D (depression, seven questions). Each item is rated with 4-Likert score, and the highest score from each subscale is 21. In each subscale, points between 0 and 7 are assessed as ‘normal’, between 8 and 10 as ‘borderline’ and those over 11 point out to a significant psychological morbidity. The national version of HADS uses 7 points as the threshold for depression and 10 for anxiety [8]. The reliability coefficients of the anxiety and depression subscales of the HADS for the Turkish patient group were determined to be 0.85 and 0.78, respectively [8]. The third form included the Turkish translation of the Brief Disability Questionnaire (BDQ). This short self-report questionnaire was developed by the World Health Organization to assess physical and social disability. Testing of the validity and reliability of the national version of the BDQ has been carried out by Kaplan et al. [9]. The BDQ assesses a period of the previous month. It contains 11 items with responses 0 for “never”, 1 for “occasionally or mild”, and 2 for “always or severe”. It was accepted that individuals having 5 points or above from the BDQ questionnaire were

considered to have physical and social disability, 0–4 points = no disability, 5–7 points = mild, 8–12 points = moderate and 13 points or above was considered to be severe disability.

This case–control study was approved by the Institutional Ethical Committee of the School of Medicine. Written consent for participation was obtained after the design and aim of the study had been explained to all participants.

Statistical analysis

Statistical analyses were performed using the SPSS program for Windows version 13.0. The continuous variables were reported as mean \pm standard deviation (SD). Categorical variables were reported as number and percent. Comparisons of HADS between or among subgroups defined by demographic attributes were made using independent samples *t* test. Pearson's Chi-square test and Yates continuity correction test was used to compare the continuous and categorical variables between the groups. A value of $p < 0.05$ was considered to be statistically significant.

Results

The study was completed by all the patients (100 HG patients) in the study group and the controls (100 normal pregnant women). The obstetric characteristics of the groups in terms of age, parity and gestational age at admission were similar as shown in Table 1 ($p > 0.05$). The educational level in HG patients were significantly higher than that of the control group ($p = 0.009$). The economic status in the study and control groups were similar as shown in Table 1 ($p = 0.290$).

In this study, 33 patients in the HG group and 39 in the control group admitted that they had experienced nausea and vomiting in their previous pregnancies and 22 in the HG group and 5 in the control group had been admitted to hospital for treatment during previous pregnancies ($p = 0.043$).

When groups were examined for the presence of psychiatric disease, 7 patients in the control group and 14 in the HG group revealed that they had a history of psychiatric conditions ($p = 0.116$). Also, 16 patients in the HG group and 11 women in the control group had family members who had or had previously had a psychiatric condition ($p = 0.301$).

The mean HADS and BDQ scores for the two groups are given in Table 2. The mean HADS-D subscale score was 7.09 ± 3.91 in HG patients and 5.73 ± 3.32 in the control group of pregnant women. The depression scores in HG

Table 1 Medical, reproductive and socio-demographic characteristics of the two groups

	HG (<i>n</i> = 100)	Control (<i>n</i> = 100)	<i>p</i>
Maternal age (years)	27.11 \pm 5.46	27.65 \pm 5.30	0.734 ¹
Parity			
Primigravida	49	47	0.777 ²
Multipara	51	53	
Education			
Primary–middle school	39	54	0.009 ²
High school	28	31	
College	33	15	
Economic status (monthly income)			
≤ 400 €	30	42	0.290 ²
400–1,720 €	49	50	
$\geq 1,720$ €	11	7	
Nausea and vomiting in previous pregnancy			
Yes	33	39	0.442 ³
No	18	14	
Premenstrual syndrome			
Yes	57	62	0.471 ²
No	43	38	
Scheduled pregnancy			
Yes	78	76	0.737 ²
No	22	24	

¹ Independent samples *t* test

² Pearson Chi-square test

³ Yates continuity correction

Table 2 Comparison of HADS (HADS-D, HADS-A) and BDQ scores of the HG and control groups

	HG (<i>n</i> = 100)	Control (<i>n</i> = 100)	<i>p</i>
HADS-D	7.09 \pm 3.91	5.73 \pm 3.32	0.009 ¹
HADS-A	7.73 \pm 3.86	6.70 \pm 3.31	0.045 ¹
BDQ	11.2 \pm 4.40	8.5 \pm 3.31	0.0001 ¹
No disability (0–4)	7	13	
Mild disability (5–7)	20	24	
Moderate disability (8–12)	31	53	
Severe disability (≥ 13)	42	10	

HADS Hospital Anxiety and Depression Scale, BDQ Brief Disability Questionnaire

¹ Student's *t* test

patients were significantly higher than those of the control group ($p = 0.009$).

The mean HADS-A subscale score was 7.73 ± 3.86 in HG patients and 6.70 ± 3.31 in the control group. The anxiety score in HG patients were significantly higher than that of the control group ($p = 0.045$).

The mean BDQ score was 11.2 ± 4.40 in HG patients and 8.5 ± 3.31 in the control group. The physical and social disability score in HG patients were significantly higher than that of the control group ($p < 0.0001$) (Table 2).

Overall, in HADS-D, 52 patients in the HG group and 40 in the control group scored above the threshold value. The difference was not statistically significant ($p = 0.089$). Furthermore, in HADS-A, 28 patients in the HG group and 20 in the control group scored above the threshold value ($p = 0.185$). Table 3 shows the distribution of study groups above and below the threshold scores regarding depression and anxiety.

No association was noted between age, parity, economic status and scheduled pregnancy regarding HADS and BDQ scores in HG patients. In addition, no correlation was detected between psychiatric disease history and HADS-D ($p = 0.144$), HADS-A ($p = 0.333$) and BDQ ($p = 0.347$) in HG patients. Family history of psychiatric disease and HADS-D, HADS-A and BDQ was not correlated in control patients as well ($p = 0.144$, $p = 0.361$, and $p = 0.624$ respectively).

Discussion

This study has shown that women with HG had considerably more anxiety and depression than a well-matched control group of healthy pregnant women. However, 52 % patients in HG group and 40 % in the control group scored above the threshold value of the depression scale (HADS-D) ($p > 0.05$), and 28 % patients in the HG group and 20 % in the control group scored above the threshold value of the anxiety scale (HADS-A) ($p > 0.05$). In addition, no association was noted between the social–demographic and disease variables data including age, parity, economic status, scheduled pregnancy, family history of psychiatric disease and psychiatric disease history with the depression and anxiety scores in HG patients.

Table 3 Distribution of the two groups above/below threshold score regarding depression and anxiety

	HG (<i>n</i> = 100)	Control (<i>n</i> = 100)	<i>p</i>
HADS-D			
Sub-threshold (≤ 7)	48	60	0.089 ²
Over threshold (≥ 8)	52	40	
HADS-A			
Sub-threshold (≤ 10)	72	80	0.185 ²
Over threshold (≥ 11)	28	20	

² Pearson Chi-square test

A few previous studies have examined the relationship between anxiety and/or depression and HG, and the results were inconclusive. A number of psychiatric risk factors have been proposed in relation to HG including psychosocial stress, depression, anxiety, personality disorders and psychological conflict [10–12]. A retrospective case control study found an increase in psychiatric diagnoses in women admitted for HG [13]. Mazzotta et al. [14], in a retrospective cohort study, showed that severe nausea was associated with self-reported depression (52.4 %), consideration of pregnancy termination (17.9 %) and an adverse effect on the relationship with their partner (51.7 %). Swallow et al. [15] showed that nausea and vomiting in early pregnancy was associated with psychiatric morbidity. They reported that the severity of nausea and vomiting correlated independently with the level of anxiety/insomnia and depression. Similarly, Poursharif et al. [16] showed that in a large cohort of women with HG, over 80 % reported a negative psychosocial impact, including anxiety and depression, some of which continued after the pregnancy. A report on nausea and vomiting in pregnancy has concluded that there is an association between anxiety and depression early in pregnancy with severity of nausea and vomiting [17]. However, Majerus et al. [18] did not find an increase in psychiatric illness in women with HG during or after pregnancy. An important point is that the majority of women with HG have no psychological diagnoses prior to their HG in pregnancy [19]. For example, Seng et al. found that less than 90 % of women had a psychiatric disorder preceding HG [20], and Simpson et al. [21] and D’Orazio et al. [22] found no evidence for a psychosomatic etiology and no evidence to support an association between HG and personality characteristics.

Little data exist pertaining to the link between HG and anxiety. One retrospective case control study found that women with a diagnosis of post-traumatic stress disorder were almost four times more likely to have been hospitalized for HG as a pregnancy complication [20]. In a retrospective case control study of women with obsessive compulsive disorder, retrospective reports of HG were significantly more common than in the control group [23].

Two general theories are that hyperemesis reflects a conversion or somatization disorder or a response to stress [24]. A feeling of ambivalence toward the pregnancy has also been proposed as an etiologic or contributing factor. Although no study has definitively demonstrated that the psychological profile of patients with HG differs from those without the disorder, a woman’s psychological response to persistent nausea and vomiting may exacerbate her symptoms as a result of conditioning [24, 25].

A recent study by Tan et al. [26] on anxiety and depression in HG using HADS with similar methodology to our study with cutoff set at 7/8 for depression and 10/11 for

anxiety shows prevalence rates for depression as 47.8 % and for anxiety as 20.6 % . The authors found anxiety and depression were common in women affected by HG. However, they found that there was no convincing association between anxiety and depression and more severe illness. Tan et al. noted that the psychological distress observed in women with HG was secondary to the physical illness rather than the driver in the pathogenesis of HG.

One of the most important findings in our study is that a significant loss in physical and social abilities was detected in HG patients. This suggests that in HG patients independent of the underlying psychiatric process, the quality of life is negatively altered by the disease itself. In their review, Kim et al. [27] suggested that the quality of life of women with HG is severely disrupted and normalizing the patient's sense of demoralization should always be considered a priority during the treatment of these cases.

Uguz et al. [28] showed that the prevalence of any mood disorder and any anxiety disorder in women with HG was 15.4 and 36.5 %, respectively . In their study, 36.5 % of women with HG had some type of personality disorder. Avoidant (17.5 %) and obsessive–compulsive (13.5 %) personality disorders were most prevalent in HG. Simpson et al. [21] reported that compared to women without HG, women with HG have significantly higher somatization, anxiety, psychoticism and obsessive compulsive symptom levels during pregnancy, but there were no significant differences between HG subjects and controls after pregnancy. They proposed that once the HG resolves, this pattern eventually disappears.

The main strengths of this study were the assessment of the psychiatric evaluation by quantitative tests and patterned interview methods and the relatively small sample size. The patients were not followed up for psychiatric symptoms after the resolution of HG, which may be regarded as a limitation of this study, but to overcome this a matched group of pregnant women without HG were used as control.

In conclusion, a consensus on the association of HG with psychiatric symptoms has not yet been reached. Whether treatment-resistant nausea and vomiting has a psychiatric basis is still controversial. In HG patients, either the presence of a form of psychiatric disease itself or the coexistence of two separate disease entities simultaneously in a comorbid way is possible. In the present study, the depression and anxiety scores in HG patients were significantly higher than in healthy pregnant women, and HG had a significant alterative effect on women's quality of life. These results of our study are significant in emphasizing the importance of a multidisciplinary approach to HG follow-up and treatment.

Conflict of interest The authors report no declarations of interest.

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