

Anxiety and depression in patients with gastroesophageal reflux disorderSeyed Alireza Haji Seyed Javadi¹, Ali Akbar Shafikhani²

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Type of article: Original**Abstract**

Background: Evidence shows an influence relationship between described symptoms of gastroesophageal reflux disorder (GERD) and emotional state.

Objective: To determine the relationship between anxiety and depression with GERD in patients referred to the endoscopy unit of Bouali-Sina Hospital in Qazvin.

Methods: This case-control study was conducted in the endoscopy unit of Bouali-Sina Hospital in Qazvin, Iran, from April 2014 through May 2015. Two hundred individuals (100 patients with GERD and 100 healthy individuals as a control group) were enrolled into the current study. All subjects completed the hospital anxiety and depression questionnaire. GERD was diagnosed based on the Los Angeles classification system. Demographic and socioeconomic characteristics in addition to clinical history of subjects were collected and analyzed using proper statistical methods (independent-samples t-test and AVOVA) and using SPSS version 22.

Results: Among the recruited patients, 50 subjects had erosive esophagitis (ERD) and 50 had non-erosive esophagitis (NERD). The anxiety score was significantly higher in the NERD group than the ERD and control groups ($p=0.017$; $p<0.001$). In addition, the anxiety score was significantly higher in the ERD group than the control group ($p=0.014$). The score of depression was higher in the NERD group than the ERD and the control groups. However, this difference was not statistically significant for the ERD group ($p=0.63$), but the difference was significant in comparison to the control group ($p<0.001$). There was no significant difference among the groups regarding age, gender or body mass index (BMI). The number of smokers was significantly higher in the ERD group than the NERD and control groups ($p<0.001$).

Conclusion: The current study showed that mental factors (anxiety and depression) play important roles in the development of GERD, especially NERD; therefore, it is recommended to consider these factors to select a suitable treatment plan.

Keywords: Depression; Anxiety; Gastro esophageal Reflux Disorder

1. Introduction

Gastroesophageal reflux disorder (GERD) is a condition in which the stomach contents come back up into the esophagus and cause the patient to have an unpleasant feeling or digestive complications (1-3). The most common symptom of GERD is heartburn, which affects 7% of the total population (3). The study assumptions and general idea is that mental factors may play a role as a potential factor for GERD; for example, in a survey, 60% of patients with GERD reported exacerbation of symptoms at the time of exposure to mental factors (4). It means that minor psychostimulants may be perceived as the main symptoms by the patient; hence, mental factors may be the physiological function of the esophagus and the stomach. However, the mechanism of changes associated with the perceived symptoms in patients with GERD is still unknown (5, 6). GERD can cause and exacerbate mental complications in patients; similarly, mental disorders can also affect treatment results negatively. Conducted studies

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showed that administration of low doses of anti-depressant and anti-anxiety drugs could be effective in such cases. Therefore, it is necessary to determine the relationship between these factors and the prevalence of each of them in patients with GERD (7, 8). Epidemiological studies in Iran reported a high prevalence of this disease (9, 10). For example, in a study conducted by Alipour et al., 30% of men and 23% of women had GERD symptoms at least once a week. This is consistent with previous studies in Iran (11). To our knowledge, in Iran, especially in the city of Qazvin, there is no study that has determined the relationship between mental disorders and GERD subgroups such as erosive esophagitis (ERD) and non-erosive esophagitis (NERD). To achieve this goal, the current study was carried out in Qazvin province. Because demographic and personal features may also play important roles in the determination of mental factors (12, 13), it is necessary to consider such factors in the determination of this relationship. Anxiety and depression are two common mental disorders associated with chronic diseases; therefore, the current study mostly focused on these two disorders (14). The current study aimed to determine the mentioned relationship, in addition to measuring the severity of mental disorders.

2. Material and Methods

This case-control study has been conducted in the endoscopy unit of Bouali-Sina Hospital in Qazvin, Iran, from April 2014 through May 2015. The study was conducted through convenience sampling. This method relies on data collection of the populations that were conveniently available to participate in the study, which, for this purpose, was data collection of all patients who referred to the endoscopy unit during the time of study. The study was approved by the ethical committee of Qazvin University of Medical Sciences. The inclusion criterion was signing the informed written consent and the exclusion criteria included having a history of mental illness, peptic ulcer, history of gastrointestinal surgery, comorbidity of organic diseases such as cancer and abnormalities in laboratory tests such as hemoglobin and fasting blood sugar (FBS). Patients with ulcer scar were also excluded from the study. After explaining the study goals to the participants, each of them were asked to complete the hospital anxiety and depression scale (HADS) and demographic data questionnaire, including age, gender, education level, marital status, smoking, height, and weight to measure their body mass index (BMI). To compare the mentioned disorders with the general population, the same survey was conducted on healthy people. In the control group, for better matching, the first degree family members of the subjects were recruited. In addition, age range and gender of the subjects in the control group were also matched with those of the intervention group. The HADS questionnaire is a 14-item scale to measure the level of anxiety and disorder (15). This questionnaire is widely used in primary and applicable care in hospitals. The HADS determines seven items regarding anxiety and seven items on depression; each item includes four options ranging from 0 to 3. In this questionnaire, each of the anxiety and depression subscales are measured separately. Patients with the anxiety score (HADS-A) > 8 were considered with anxiety disorder (sensitivity 0.89 and specificity 0.75); patients with depression score > 8 were identified with depression disorder (sensitivity 0.8 and specificity 0.88) (16). The validity and reliability of the Persian version HADS have been approved in a previous study (15, 17, 18). Endoscopy findings were also analyzed by three endoscopists and subjects were accordingly categorized into two subgroups of ERD and NERD based on the Los Angeles classification system. Erythematous or normal mucosa may be observed in NERD patients; while, in ERD conditions, redness, fragility, superficial linear ulcers and exudate may be observed in visible mucosal damages (19). Data were provided as frequency and percentage for categorical variables, and as mean and standard deviation for continuous variables. Independent-sample t-test and AVOVA were used to analyze continuous variables and if suitable, the post hoc tests were also used. To compare categorical variables, the Chi-square test was used ($p < 0.05$). SPSS ver. 22 software was used to analyze the data.

3. Results

Among the patients referred to the endoscopy unit, 50 subjects with ERD and 50 subjects with NERD were enrolled into the study. In total, 100 subjects completed the questionnaires. Similarly, 100 subjects with normal symptoms without ERD also completed the questionnaires. Demographic features in addition to anxiety and depression in the three groups of ERD, NERD and the control, are provided in Table 1. There was no significant difference among the groups regarding age, gender or body mass index (BMI). The number of smokers was significantly higher in the ERD group compared to the NERD and control groups ($X^2=39.59$, $DF=6$, $p < 0.001$). The prevalence of anxiety and depression among the groups was significantly different; $X^2=28.01$, $DF=2$, $p < 0.001$ for anxiety and $X^2=13.76$, $DF=2$; $p=0.001$ for depression (Table 1). Results of variance analysis are provided in Figure 1. According to this figure, the NERD group had higher anxiety score compared to ERD and the control groups ($p=0.017$; $p < 0.001$). In addition, the anxiety score was significantly higher in the NERD group than the ERD and control groups ($p=0.014$, Figure 1, part A). The depression score was higher in the NERD group than the ERD and control groups, Figure 1, part B; there was no significant difference between the NERD and ERD groups regarding the depression scores

($p=0.631$), but the difference between the NERD and the control groups was significant ($p<0.001$); this difference was also significant between the ERD and control groups ($p=0.013$; Figure A, part B). Table 2 shows socio-demographic characteristics of patients with anxiety and depression. Accordingly, no significant difference was observed between the socio demographic variables (marital status and level of education) with anxiety and depression.

Table1. Comparing demographic features, anxiety, and depression among the studied groups

Variable		ERD (n=50)		NERD (n=50)		Control (n=100)		p -value
		n	%	n	%	n	%	
Gender	Male	32	64	20	40	52	52	0.056
	Female	18	36	30	60	48	48	
Body mass index		32.36	6.92	35	10.55	33.39	9.08	0.339
Smoking	Never	11	22	20	40	51	51	<0.001
	Used to smoke	8	16	13	26	27	27	
	Now	18	36	14	28	22	22	
	Withdraw	13	26	3	6	0	0	
Anxiety	Yes	24	48	36	72	27	27	<0.001
	No	26	52	14	28	73	73	
Depression	Yes	16	32	20	40	14	14	0.001
	No	34	68	30	60	86	86	

ERD: erosive esophagitis; NERD: non-erosive esophagitis

Table 2. The relationship between anxiety / depression Symptoms and demographic features of subjects

Variable		Total Patients	Patients with Depression		Patients with Anxiety	
		n	n	p -value	n	p -value
Marital status	Single	35	16	0.217	26	0.101
	Married	63	20		33	
	Divorced/widowed	2	0		1	
Level of education	Under high school diploma	23	11	0.221	17	0.12
	High school diploma	41	11		20	
	Higher education	36	14		23	

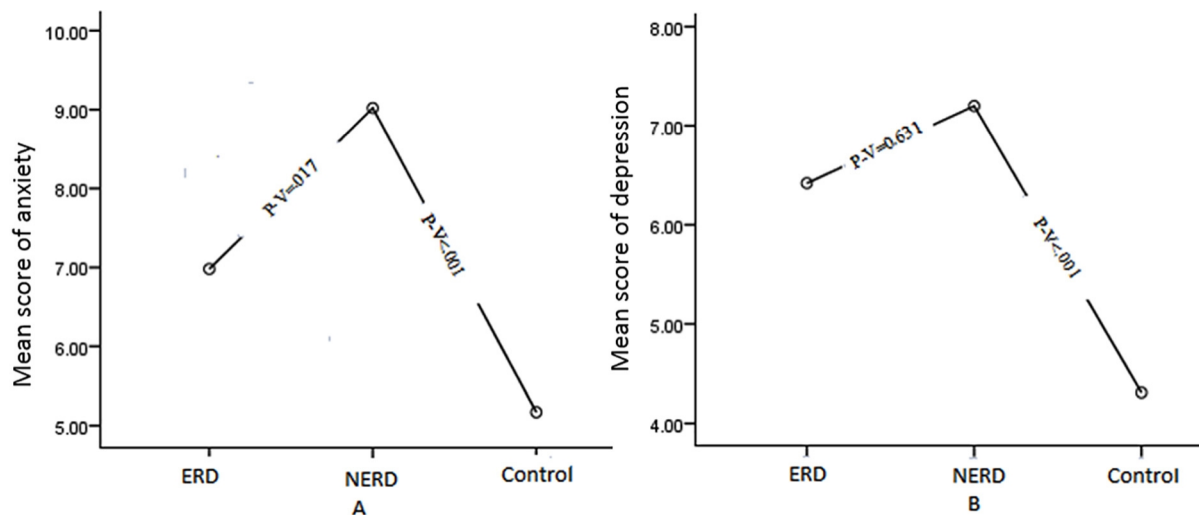


Figure1. The Relationship Between Mental Disorders and the Study Groups

4. Discussion

The current study aimed to find a proper therapeutic method, considering the effect of mental disorders, in patients with gastroesophageal reflux disorder (GERD). The results of the current study showed that the level of anxiety and depression was higher in patients with GERD compared to the control groups. In compliance with this study, Oh et

al. reported that the scores of depression and anxiety were higher in the patients with GERD than healthy subjects (20). Yang et al. also reported that the negative effects of mental disorders on the GERD symptoms were approved (21). A more detailed examination revealed, the anxiety score was significantly higher in the NERD group than the ERD and control groups. In addition, the anxiety score was significantly higher in the ERD group than the control group. The same situation was repeated for depression, with the difference that the increase in NERD versus ERD was not significant. Such findings reveal various pathogenesis of the disease. In other studies, the differences in psychological disturbances between erosive GERD and NERD patients have been reported (22, 23). For example, Yang et al. reported that anxiety and depression may play an important role in the occurrence of GERD and especially that of NERD (21). In justifying these findings, we can refer to the results of other studies, for example, according to a randomized controlled clinical trial; higher level of anxiety in patients with NERD was a predictor for a weak response in patients treated with proton pump inhibitor (23). Studies showed that the response to proton pump is different in patients with ERD and NERD. This is because of different pathology in ERD and NERD (24, 25). There was no significant difference among the groups regarding age or gender. Perhaps one of the reasons for this was the matching of groups. Hence, in the present study the subjects assigned to the control group were matched with the intervention groups regarding the mean age and gender. Blanchard et al. reported that all of these features may significantly affect the difference between depression and anxiety among the groups (26). In the current study, no significant difference was observed between the groups regarding BMI. Therefore, the comparison process was done realistically more because each of the potential confounding factors can affect the results. Some studies indicated that high BMI can affect the risk of depression (21, 27). The hypothesis in this field is based on the fact that this is done through biological mechanisms such as inflammation and deregulation of the stress hormone system, which may have secondary effects on the mental system (28). BMI can make such changes through negative effects of self-awareness (self- concept), especially in young females (29). There were also some limitations with the current study; for example, the current study was conducted based on the results of an institute or a particular organization and cannot be generalized to the total population. Since low responses to the proton inhibitor may be under the influence of socio-economic situations over mental disorder of patients, to get more reliable results, it is better to synchronize this factor among the groups. From the viewpoint of medicine, different treatments can be followed when the etiology of the disease is defined clearly (4, 30). Therefore, further studies should be conducted to reveal more details in this regard.

5. Conclusions

The results of the current study showed that mental factors such as depression and anxiety play important roles in the development of GERD, especially in patients with NERD. According to identifying indications of the disease in the study population, in cases of lack of anti-acid effectiveness, a different and more proper approach is needed. In such a situation, the use of drug therapy can significantly improve the symptoms of GERD patients. In addition, along with drug therapy, in order to achieve further improvement, patients are required to implement certain behavioral changes (smoking withdrawal and weight loss) in the disease profile.

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Conflict of Interest:

There is no conflict of interest to be declared.

Authors' contributions:

Both authors contributed to this project and article equally. Both authors read and approved the final manuscript.

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