J. Tokyo Med. Univ., **73**(2) : 114-120, 2015

Gastroesophageal reflux symptoms in patients with mental disorders

Taketo YAMATE[1)], Toshimasa MARUTA[1)], Chihiro MATSUMOTO[1)2)]

[1)]Department of Psychiatry, Tokyo Medical University, Japan
[2)]Department of Psychology, Graduate School of Human Sciences, Sophia University

Abstract

Aim The center for epidemiologic studies-depression scale (CES-D) and the frequency scale for symptoms of gastroesophageal reflux disease (the F-Scale) have been used as instruments to screen individuals with depression or gastroesophageal reflux disease (GERD). The aim of the present retrospective study was to investigate the relationship between psychiatric disorders, depressive symptoms, and reflux symptoms among outpatients.
Methods Data were collected from outpatients at our hospital. Of these outpatients, 861 completed both the F-Scale and the CES-D. The distribution of diagnoses was examined, a factor analysis of the F-Scale performed, and potential correlations between the CES-D and F-Scale, including the mean F-Scale subscales, investigated.
Results The analysis of the F-Scale yielded 2 factors : a general factor of gastric symptoms and heartburn, and a factor of reflux syndrome, which includes swallowing disorders and laryngeal symptoms. A high correlation between the CES-D and the F-Scale scores was found among patients with mild depressive episodes, moderate depressive episodes, adjustment disorder, panic disorder, schizophrenia, somatoform disorder, or other. In contrast, the correlation among patients with severe depressive episodes was lower than expected. Patients with eating disorders were found to have a high score on both subscales of the F-Scale.
Conclusion In this study, reflux symptoms were shown to be common among patients with psychiatric disorders. The results of this study emphasize the need to pay close attention to the digestive symptoms of patients with psychiatric disorders to promote the early identification and treatment of gastrointestinal disorders such as GERD.

Introduction

Symptoms of gastroesophageal reflux disease (GERD) are common, affecting 10%-30% of the population in Western countries[1-3)]. The prevalence of GERD is also increasing in Japan[4)], and is perhaps related to the recent increase in obesity. In Western countries, anxiety and depression are the most common psychiatric disorders among the adult population[5-7)]. These disorders are often found to coexist with chronic medical conditions such as cardiovascular disease, obesity, and diabetes mellitus, and there is an increasing awareness of the interaction between anxiety, depression, and medical illness[8)]. These psychiatric disorders may negatively influence somatic illness, and conversely, many physical diseases increase risk of depression and anxiety. Psychological factors and psychiatric disorders may influence gastrointestinal disorders such as GERD, although the relationship between these factors and reflux diseases has been largely uninvestigated[9)10)].

The primary aim of the present retrospective study was to clarify the relationship between depressive symptoms and reflux symptoms among psychiatric outpatients.

Received August 20, 2014, Accepted December 12, 2014
Key words : Reflux symptoms ; Depression ; CES-D ; F-Scale, Mental disorders
Corresponding author : Taketo YAMATE, Department of Psychiatry, Tokyo Medical University, 6-7-1 Nishishinjuku, Shinjuku-Ku, Tokyo 160-0023, Japan
Tel : +81 (0)3-3342-6111 (ext.5754) Fax : +81 (0)3-3340-4499 病態生理学ハイライト

Materials and methods

Measures

Two diagnostic systems, the International Classification of Diseases, 10th Revision and the Diagnostic and Statistical Manual of Mental Disorders, 4th Edition are used for diagnosis at the Department of Psychiatry at Tokyo Medical University Hospital. The center for epidemiological studies-depression scale (CES-D) developed by Radloff[11] was originally intended to detect depressive symptoms in a community population, but recently it has also been clinically used by non-psychiatric physicians in other specialized areas. At present, the CES-D is widely used throughout the world for screening depressed individuals. The CES-D is a self-rated 20-item instrument in which the respondent indicates the frequency of depressive symptoms using a 4-point scale, ranging from 0 (less than 1 episode/day) to 3 (more than 5 episodes/day), and includes items that address depression, well-being, somatic symptoms, and interpersonal difficulties[12].

The CES-D has several advantages, most notably its ease of administration[12]. The CES-D has been translated into Japanese[13] and validated. It has been used as an instrument to screen Japanese workers for depression[14] ; however, data from psychiatric patients in Japan are limited[15]. Providing standardized instruments for screening outpatients with depression is very helpful for physicians in distinguishing depression from other psychiatric disorders.

Recently, the use of simple questionnaires such as the F-Scale to assess GERD symptoms has become widespread in Japan[16]. The F-Scale is a self-reporting instrument written in simple and easy-to-understand language. It contains the following 12 questions : (1) Do you get heartburn? (2) Does your stomach feel bloated? (3) Does your stomach ever feel heavy after meals? (4) Do you sometimes subconsciously rub your chest with your hand? (5) Do you ever feel sick after meals? (6) Do you get heartburn after meals? (7) Do you have an unusual sensation in your throat? (8) Do you feel full while eating meals? (9) Do some things get stuck when you swallow? (10) Do you get bitter liquid coming up into your throat? (11) Do you burp a lot? (12) Do you get heartburn if you bend over? The frequency of symptoms is measured on the following scale : never = 0 ; occasionally = 1 ; sometimes = 2 ; often = 3 ; and always = 4. If the patient scores 8 points or more, GERD is generally considered to be present. The F-Scale contains 2 subscales : one for Acid Reflux-related Symptoms, which includes questions (1), (4), (6), (7), (9), (10), and (12) from the above ; and one for Motor Dysfunction Symptoms, which includes questions (2), (3), (5), (8), and (11).

Patients

We administered the F-scale to all outpatients presenting for the first time at the Department of Psychiatry at Tokyo Medical University Hospital between January 2005 and November 2006 (406 men, 455 women ; mean age, 37.9 years ; SD, 16.9). The CES-D was also routinely administered to all patients on initial presentation in order to evaluate depressive symptoms.

Statistical analysis

Data from the questionnaires and a chart review for each outpatient were entered and analyzed using a statistical software package (SPSS v.19.0, IBM SPSS, USA[17]). A P value of less than 0.05 was considered to indicate a statistically significant difference.

Results

Diagnostic distribution

The diagnostic distribution of the 861 patients who completed both scale questionnaires is shown in Figure 1. The most common diagnosis was mild depressive episodes, followed by adjustment disorder, panic disorder, and other. The other groups consisted of various diagnostic categories with less than 10 patients in each.

Reliability analysis of F-scale

In order to determine the applicability of the F-Scale among the patients targeted in the present study, internal consistency was first calculated. The internal consistency (coefficient alpha) of the F-Scale was 0.87.

Correlation between CES-D and F-Scale according to diagnostic category

The scores on the CES-D and F-Scale according to diagnostic category and the correlation coefficient between the CES-D and F-Scale are shown in Figures 1 and 2, respectively. Mild depressive episodes, moderate depressive episodes, adjustment disorder, panic disorder, schizophrenia, somatoform disorder, and other showed a high correlation between the 2 scales. However, the same correlation among patients with severe depressive episodes was not as high as in the conditions described above (Figure 3).

Mean scores on F-scale subscales according to diagnostic category

Table 1 and Figure 4 show the mean scores on the F-scale subscales. In Table 1, we calculated the percentage of patients whom we should suspect to suffer from GERD with a cut-off point at 8, which is commonly used, and also at 10, which is a more conservative measure. Even when the cut-off point was set at 10, GERD was found to be present in more than half of the patients.

Discussion

The purpose of this study was to investigate the relationship between depressive symptoms and reflux symptoms among psychiatric outpatients. The present

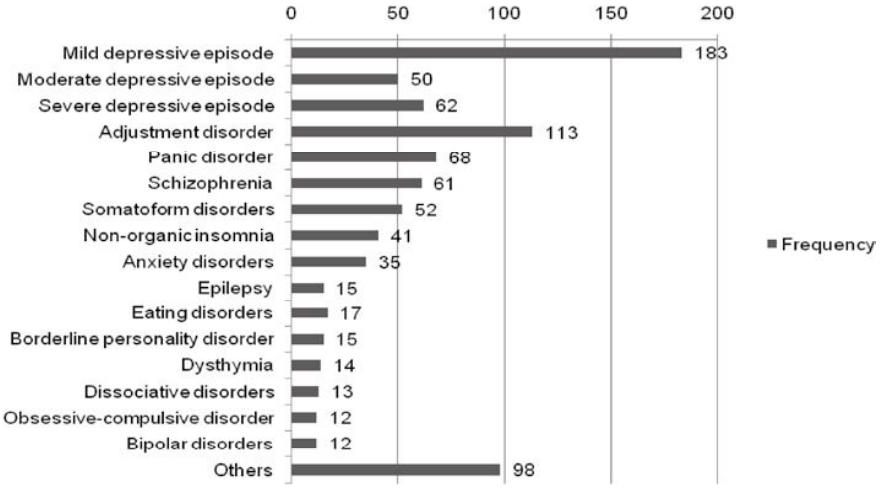

Fig. 1. Number of patients according to diagnostic category.

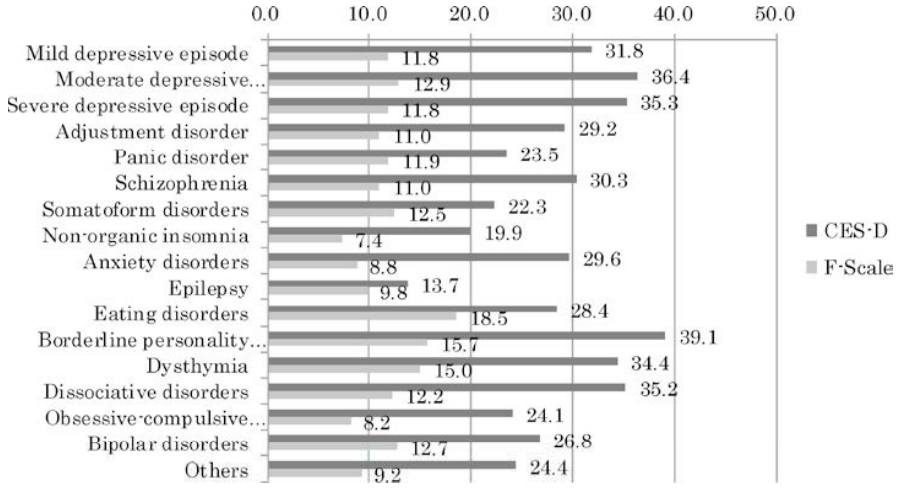

Fig. 2. Scores on CES-D and F-Scale according to diagnostic category.

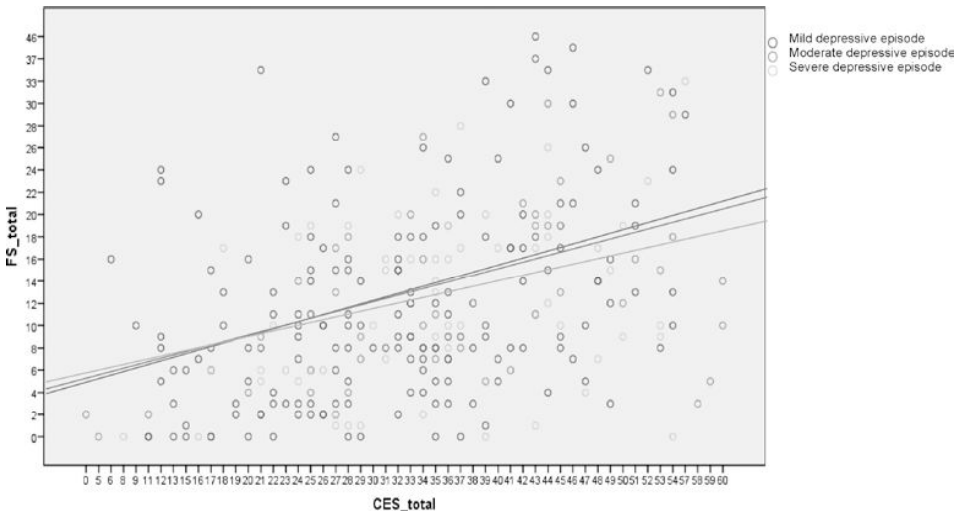

Fig. 3. Pearson correlation coefficient between CES-D and F-Scale according to diagnostic category

Table 1 Frequency and percentage of GERD with cut-off scores of 8 and 10

Disorder	Total (*n*)	Mean	SD	Cut off ≥ 8		Cut off ≥10	
				n	%	*n*	%
Mild depressive episode	183	11.75	8.853	122	67%	93	51%
Moderate depressive episode	50	12.90	7.859	37	74%	30	60%
Severe depressive episode	62	11.81	7.794	41	66%	36	58%
Adjustment disorder	113	10.98	8.772	69	61%	60	53%
Panic disorder	68	11.87	7.970	42	62%	34	50%
Schizophrenia	61	10.98	9.777	34	56%	28	46%
Somatoform disorders	52	12.46	9.865	31	60%	30	58%
Non-organic insomnia	41	7.37	7.035	17	41%	14	34%
Anxiety disorders	35	8.97	6.680	17	49%	15	43%
Epilepsy	15	9.80	8.809	8	53%	8	53%
Eating disorders	17	18.53	10.875	13	76%	13	76%
Borderline personality disorder	15	14.27	6.519	13	87%	11	73%
Dysthymia	14	15.00	10.385	13	93%	10	71%
Dissociative disorders	13	12.23	8.880	9	69%	6	46%
Obsessive-compulsive disorder	12	8.17	6.478	6	50%	5	42%
Bipolar disorders	12	12.67	12.018	7	58%	7	58%
Others	98	9.40	9.521	50	51%	42	43%
Total	861	11.30	8.872	529	61%	442	51%

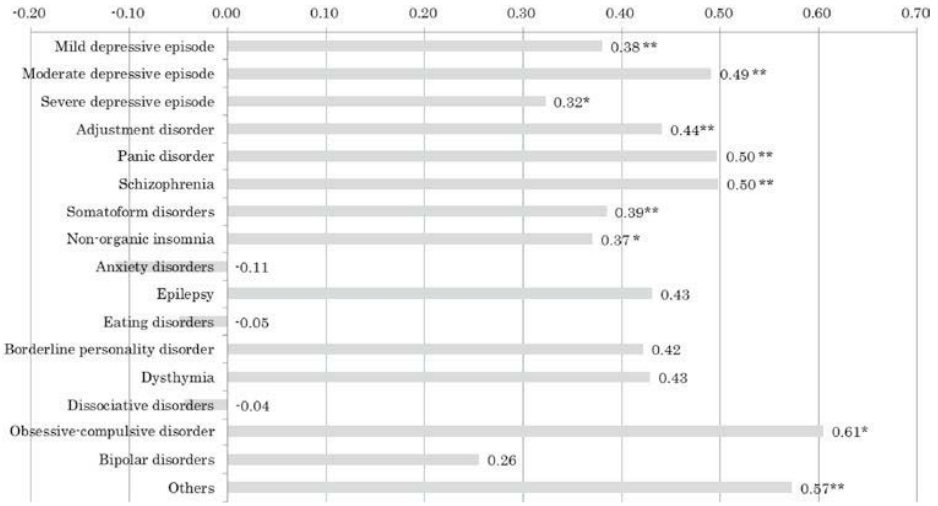

Fig. 4. CES-D scores on depressive episodes

results indicate a strong association between depressive and upper digestive symptoms, especially among patients with mild depressive episodes, moderate depressive episodes, adjustment disorder, panic disorder, schizophrenia, or somatoform disorders.

The current finding of a strong association between the CES-D and F-Scale is consistent with the findings of some previous cross-sectional, population-, and hospital-based studies[18)19)]. Jansson et al.[20)] pointed out 4 possible reasons for a high correlation between psychiatric disorders and reflux syndromes. Firstly, reflux symptoms may result in anxiety and depression as a consequence of worry over and being bothered by reflux symptoms over a long period. Secondly, psychological and psychiatric factors may influence an individual's perception of reflux symptoms and result in an altered threshold for somatic symptoms, as well as a change in the way esophageal stimuli are perceived and reported. Thirdly, psychological and psychiatric factors may actually increase the frequency of reflux symptoms. The same study also speculated that psychologically adverse factors may aggravate reflux symptoms by decreasing the pressure of the lower esophageal sphincter, altering esophageal motility, increasing the secretion of gastric

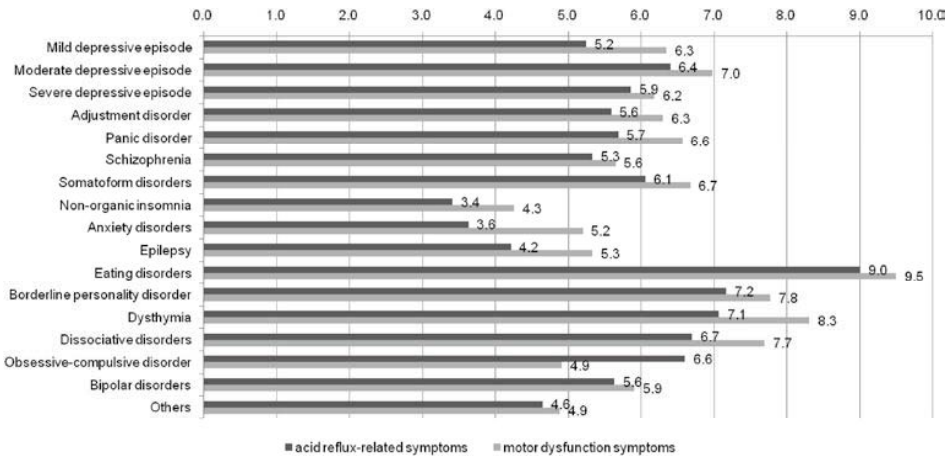

Fig. 5. Scores of subscales of F-Scale by diagnostic category

acid, or delaying the clearance of acid from the esophagus. Finally, another potential explanation for anxiety and depression increasing the risk of reflux symptoms is a self-abusive lifestyle, as psychiatric disorders may be associated with adverse lifestyle factors such as smoking and obesity.

One of the interesting findings of the current study is that, whereas the correlation between depressive and digestive symptoms was high among patients with mild and moderate depressive episodes, it was not as high among patients with severe depressive episodes. One possible explanation is that the strong autonomic nervous system (ANS) inhibition associated with severe depression decreases the activity of the ANS. Another possibility is that a severe depressive mood decreases the perception of somatic symptoms. Both mechanisms may play an important role.

Some studies have used the F-Scale to investigate the relationship between reflux symptoms and obstructive pulmonary disease or osteoporosis[21)22)]. However, to the best of our knowledge, no studies to date have investigated the relationship between reflux symptoms and mental disorders. The results of the present study, however, indicate that reflux symptoms are common in psychiatric disorders. As patients with psychiatric disorders are already at a higher risk of experiencing a variety of physical discomforts, including dry mouth, constipation, sedation and nausea from tricyclic medication, and diarrhea and abdominal pain as adverse effects of selective serotonin re-uptake inhibitors, it appears crucial to take every possible measure to address non-psychiatric symptoms that are detectable and treatable as part of holistic diagnostic and treatment procedures.

The current study is not without limitations. Among these, the most notable is the lack of more detailed information regarding each patient, including that on history of illnesses and associated treatments and interventions, and current medication, all of which could affect digestive symptoms. Another possible limitation of this study is that the assessment of reflux syndromes was only self-reported, and no data regarding the patients' actual digestive function using endoscopy were available. However, as the questionnaire used to assess heartburn and acid regurgitation is considered to be well validated, the data presented here should represent a reliable measure of the true occurrence of reflux. Finally, due to the retrospective nature of the study, a comparison with non-psychiatric subjects was not possible. Further investigation is needed in this area, and the high percentage of patients who reported gastrointestinal symptoms in this study seems to warrant it.

Taken together, the results of this study emphasize the need to pay close attention to the digestive symptoms of patients with psychiatric disorders to promote the early identification and treatment of gastrointestinal disorders such as GERD.

Acknowledgements

The authors would like to thank Jeremy Williams, Professor and Chair of the Department of International Medical Communications at Tokyo Medical University, for his review of the English manuscript.

References

1) Locke GR 3rd, Talley NJ, Fett SL, Zinsmeister AR, Melton LJ 3rd. Prevalence and clinical spectrum of gastroesophageal reflux : a population-based study in Olmsted county, Minnesota. Gastroenterol **112** : 1448-1456, 1997
2) Dent J, El-Serag HB, Wallander MA, Johansson S. Epidemiology of gastro-oesophageal reflux disease : a systematic review. Gut **54** : 710-717, 2005
3) Jacobson BC, Somers SC, Fuchs CS, Kelly CP,

Camargo CA Jr. Body-mass index and symptoms of gastroesophageal reflux in women. N Engl J Med, **354** : 2340-2348, 2006
4) Watanabe T, Urita Y, Sugimoto M, Miki K. Gastroesophageal reflux disease symptoms are more common in general practice in Japan. World J Gastroenterol **13** : 4219-4223, 2007
5) Weissman MM, Boyd JH. The epidemiology of affective disorders : Rates and risk factors. In : Grinspoon L (ed.) Psychiatry Update : American Psychiatric Association Annual Review, Vol. 2. Washington, DC, American Psychiatric Association, 406-428, 1983
6) Blazer D, Swartz M, Woodbury M, Manton KG, Hughes D, George LK. Depressive symptoms and depressive diagnoses in a community population. Use of a new procedure for analysis of psychiatric classification. Arch Gen Psychiatry **45** : 1078-1084, 1988
7) Boyd JH, Weissman MM. Epidemiology of affective disorders. Arch Gen Psychiatry **38** : 1039-1046, 1981
8) Aina Y, Susman JL. Understanding comorbidity with depression and anxiety disorders. J Am Osteopath Assoc **106** : S9-14, 2006
9) Kamolz T, Velanovich V. Psychological and emotional aspects of gastroesophageal reflux disease. Dis Esophagus **15** : 199-203, 2002
10) Bhatia V, Tandon RK. Stress and the gastrointestinal tract. J Gastroenterol Hepatol **20** : 332-339, 2005
11) Radloff LS. The CES-D scale : A self-report depression scale for research in the general population. Applied Psychological Measurement **1** : 385-401, 1977
12) Radloff LS, Teri L. Use of the Center for Epidemiological Studies-Depression Scale with older adults. Clin Gerontol **5**, 1986
13) Shima S, Shikano T, Kitamura T, Asai M. Atarashii yokuutsuseijiko hyouka syakudo ni tuite [Newself-rating scale for depression]. Clin Psychiatry **27** : 717-723, 1985
14) Wada K, Tanaka K, Theriault G, Satoh T, Mimura M, Miyaoka H, Aizawa Y. Validity of the Center for Epidemiologic Studies Depression Scale as a screening instrument of major depressive disorder among Japanese workers. Am J Ind Med **50**(1) : 8-12, 2007
15) Furukawa T, Hirai T, Kitamura T, Takahashi K. lication of the Center for Epidemiologic Studies Depression Scale among first-visit psychiatric patients : a new approach to improve its performance. J Affect Disord **46** : 1-13, 1997
16) Watanabe T, Urita Y, Sugimoto M, Miki K. Gastroesophageal reflux disease symptoms are more common in general practice in Japan. World J Gastroenterol **13** : 4219-4223, 2007
17) SPSS Statistics version 19, IBM, 2010
18) Jansson C, Wallander MA, Johansson S, Johnsen R, Hveem K. Stressful psychosocial factors and symptoms of gastroesophageal reflux disease : a population-based study in Norway. Scand J Gastroenterol **45** : 21-29, 2010
19) Oh JH, Kim TS, Choi MG, Lee H, Jeon EJ, Choi SW, Lee C, Chung IS. Relationship between Psychological Factors and Quality of Life in Subtypes of Gastroesophageal Reflux Disease. Gut Liver **3** : 259-265, 2009
20) Jansson C, Nordenstedt H, Wallander MA, Johansson, S, Johnsen, R, Hveem, K, Lagergren, J. Severe gastro-oesophageal reflux symptoms in relation to anxiety, depression and coping in a population-based study. Aliment Pharmacol Ther **26** : 683-691, 2007
21) Terada K, Muro S, Sato S, Ohara, T, Haruna, H, Maruno, S, Kinose, D, Ogawa, E, Hoshino, Y, Niimi, A, Terada, T, Mishima, M. Impact of gastro-oesophageal reflux disease symptoms on COPD exacerbation. Thorax **63** : 951-955, 2008
22) Miyakoshi N, Kasukawa Y, Sasaki H, Kamo K, Shimada Y. Impact of spinal kyphosis on gastroesophageal reflux disease symptoms in patients with osteoporosis. Osteoporos Int **20** : 1193-1198, 2009

精神障害患者における胃食道逆流症

山　手　威　人[1)]　　丸　田　敏　雅[1)]　　松　本　ちひろ[1)2)]

[1)]東京医科大学精神医学講座
[2)]上智大学大学院総合人間科学研究科心理学専攻

【要旨】【背景と目的】本研究ではうつ病スクリーニングに用いられる質問紙である CES-D (The center for epidemiologic studies-depression scale) と胃食道逆流症のスクリーニングに用いられる質問紙である F-scale (The frequency scale for symptoms of gastroesophageal reflux disease) を用いて精神科外来通院患者におけるうつ病などの精神障害と胃食道逆流症の相関関係を検討した。
【対象および方法】対象は、東京医科大学病院の外来受診者 861 例に対して CES-D および F-Scale を施行し、精神科診断の分布、および CES-D と F-Scale の相関関係の解析を行った。
【結果】CES-D と F-Scale において軽症うつ病エピソード、中等症うつ病エピソード、適応障害、パニック障害、統合失調症、身体表現性障害などにおいて高い相関がみられた。一方で重症うつ病エピソードでは期待された程の相関は認められなかった。
【結論・考察】本研究では精神障害患者において逆流症状は非常に日常的に認められることが示唆された。精神科診療において胃食道逆流症の様な消化器症状は疾患の早期発見と治療のため充分な注意をすることが必要であると考えられた。

〈キーワード〉　逆流症状、うつ病、CES-D、F-Scale、精神障害