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RESEARCH ARTICLE

Denial and Depression in Patients with Digestive System Cancer

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Abstract

Objectives: This study aimed to investigate the association among denial, depression, and other defense mechanisms in patients with digestive system cancer.

Methods: This research was conducted as a case control study. Denial and depression were assessed in 105 patients with digestive system cancer (n = 36; 34.3% were diagnosed with depression). Denial was assessed using the denial of cancer interview, and depression was investigated using SCID-1 and Hospital Anxiety and Depression Scale. Defense mechanisms were assessed using the Defense Mechanism Rating Scale.

Results: Patients with depression were less likely to experience denial. Neurotic and immature defense mechanisms were more frequently observed in patients with digestive system cancer who had depression than in those who did not have depression. In addition, a family history of psychiatric disorders, pain, and rectal cancer were related to depression. Mature defense mechanisms, humor, denial, and dissociation have independently protective functions against depression in patients with digestive system cancer.

Conclusions: Denial in patients with digestive system cancer can have a protective effect against depression and thus should be considered by clinicians when providing information regarding the illness and its prognosis.

Keywords

Denial, Defense mechanisms, Depression, Digestive system cancers, Colorectal cancer

Introduction

The most frequently observed psychopathology among patients with cancer is mood disorder. Mood disorder is an important psychiatric disorder that should be considered in patients with cancer because it affects the quality of life, self-care, patients' adherence to therapy, and severity, course, and response to cancer therapy [1].

A significant association is observed between types of cancer and depression. The prevalence of depression was lower among patients with colorectal and gynecological cancers and lymphoma than among those with pharynx, pancreas, lung, and breast cancers [2]. A study that assessed the association between depression and types of cancer observed that patients with pancreatic cancer were more depressed than those with other cancer types [3].

Some studies proposed that a new diagnosis of "maladaptive denial of physical disease" should be added to DSM [4,5]. Denial, described as defense functions in DSM-IV, can be defined as the exclusion of unwanted sensors out of awareness. Individuals attempt to protect themselves from damaging effects (hopelessness, sadness, fear, stress) of cancer diagnosis by denying emotional conflict or intrinsic or extrinsic stressors [6]. The denial of cancer interview, developed by Vos, et al. enables self-evaluation of denial level by a patient and evaluation of denial grading by a clinician. Denial is a common psychological phenomenon observed in patients with cancer [4]. This study aimed to investigate the association among depression, denial, and other defense mechanisms in patients with digestive system cancers.

Method

This research was conducted as a case-control study. The study was approved by the Ethical Com-

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mittee for Non-invasive Investigations of Dokuz Eylül University with protocol number of 1777-GOA and decision number of 2014/37-30.

Procedures

To determine the sample size, the prevalence of depression was accepted to be 13% in the case group with denial and 43% in the case group without denial. Thus, type 1 error was calculated to be 0.05; when the power is 80%, the number of patients in the case group could be 40 and that in the control group could be 80 [7]. Patients with digestive system cancer who were being followed up at the Oncology Outpatient Clinics of Dokuz Eylül University Medical Faculty were included in this study. Of these patients, those diagnosed as having major depressive disorder according to DSM-IV were categorized as the case group (n = 36), whereas those who did not meet the criteria of having major depressive disorder were categorized in the control group (n = 69).

Measures

Two months after cancer diagnosis, patients with digestive system cancer were evaluated for depression. Patient data were obtained using sociodemographic data, and disease data were obtained using the Structured Clinical Interview for DSM IV (SCID-I), Hospital Anxiety and Depression Scale (HADS), Denial of Cancer Interview, and Defense Mechanism Rating Scale (DMRS).

Statistical analysis

When comparing categorical data between the groups, chi-square and Fisher's exact tests were used, and when comparing continuous variables, t test was used in independent groups for normally distributed data. For data that were not normally distributed, Mann-Whitney U test was used. For calculating correlations of scale scores, Spearman's rank correlation was used, and correlation coefficient was given as Rho. In the multivariate analysis of depression-related factors, age, sex, disease duration, family history of psychiatric disease, and pain were used. In the univariate analysis, significant defense mechanisms were used in models. In addition, in multiple linear regression analysis, total HADS scores were considered to be dependent variables. The associations between variables and depression scores were evaluated using multiple linear regression analysis, and B coefficients were also calculated. The results are expressed using a 95% confidence interval (CI). In each multivariate analysis, the variables were analyzed via backward elimination method. Subtitles of the DMRS were also grouped as mature, neurotic, and primitive coping styles and were added to the model for analysis. Moreover, Cronbach's alpha coefficient was calculated to evaluate internal consistency for reliability of all scales.

Results

Participants characteristics

The mean age of the patients was 58.2 ± 10.2 years. The duration after digestive system cancer diagnosis was 17.2 ± 20.8 months. Of all the patients, 66.7% (n = 70) were males, 85.7% (n = 90) were married, 93.3% (n = 98) had children, 37.1% (n = 39) graduated from primary school, and 89.5% (n = 94) had no personal or family history of a psychiatric disease.

When evaluating the distribution of digestive system cancers in the case group, the most frequent diagnosis was colon cancer (47.6%; n = 50). Among the patients, 21% (n = 22) had colostomy, 22.9% (n = 24) had pain, 54.3% (n = 57) had distant metastasis, 31.4% (n = 33) underwent radiotherapy, and 67.6% (n = 71) underwent surgery.

The distributions of age, sex, childbearing, marital status, educational status, social insurance, job, alcohol usage, cigarette smoking, and history of psychiatric disease were similar between the case and control groups. The prevalence of depression was 63.6% (n = 7) among patients having a family history of a psychiatric disease, compared with 30.9% (n = 29) among other patients; these differences were statistically significant (p_{Fisher} = 0.044) (Table 1).

Depression was more prevalent in patients with rectal cancer (56.5%; n = 13); statistically significant differences were observed among patients with rectal cancer, colon cancer, and other cancers (stomach, esophagus, liver/gallbladder, and pancreas cancer) regarding the prevalence of depression (X^2 = 6.7; p = 0.035). The prevalence of depression was 58.3% (n = 14) if pain was present and 27.5% (n = 22) if pain was absent. Statistically significant differences were observed between the two groups with regard to depression (X^2 = 7.8; p = 0.005). In addition, no associations were observed between the presence of depression and the presence of colostomy, radiotherapy, surgery, or distant metastasis (p > 0.05; Table 2).

The mean of the total denial score was 10.7 ± 2.9 (median, 11.0; interquartile range, 3.0) in patients without depression and 8.8 ± 3.6 (median, 9.0; interquartile range, 3.8) in those with depression; denial scores were significantly higher in patients without depression than in those with depression (Mann-Whitney U test = 833.0; p = 0.005). Furthermore, the HADS score significantly decreased by 0.4 unit with each 1-unit increase in the total denial score (p = 0.001; 95% CI, -0.7 to -0.2).

When the use of humor as a defense mechanism increased, the HADS score decreased. A statistically significant weak negative correlation was observed between the total humor score and HADS score (-22.0%; p = 0.024). Moreover, a statistically significant weak negative correlation was observed between the total

Table 1: The distribution of gastrointestinal cancer cases according to sociodemographic and socioeconomic variables and depression.

		Depression absent		Depression present		
		n (69)	%	N (36)	%	
Gender	Female	24	68.6	11	31.4	$X^2 = 0.2$, p = 0.663
	Male	45	64.3	25	35.7	
Marital status	Married	60	66.7	30	33.3	$p_{Fisher} = 1.0$
	Single	1	50.0	1	50.0	
	Widow	3	60.0	2	40.0	
	Divorced	5	62.5	3	37.5	
Children	Absent	6	85.7	1	14.3	$p_{Fisher} = 0.418$
	Present	63	64.3	35	35.7	
Education	Primary school	25	64.1	14	35.9	$X^2 = 4.6$, p = 0.204
	Secondary school	11	64.7	6	35.3	
	High school	14	53.8	12	46.2	
	University	19	82.6	4	17.4	
Job	Retired	41	71.9	16	28.1	$p_{Fisher} = 0.586$
	Craft	1	50.0	1	50.0	
	Worker	14	60.9	9	39.1	
	Officer	3	60.0	2	40.0	
	Housewife	10	55.6	8	44.4	
History of psychiatric disease	No	63	67.0	31	33.0	$p_{Fisher} = 0.505$
	Yes	6	54.5	5	45.5	
Family history of psychiatric disease	No	65	69,1	29	30.9	$p_{Fisher} = 0.044$
	Yes	4	36.4	7	63.6	

Table 2: The distribution of cases according to the type of digestive system cancer, and presence of pain, colostomy, distant metastasis and depression.

		Depression absent		Depression present		
		n (69)	%	n (36)	%	
The type of digestive system cancer	Rectal cancer	10	43.5	13	56.5	$X^2 = 6.7$, p = 0.035
	Colon cancer	37	74.0	13	26.0	
	Other*	22	68.8	10	31.3	
Colostomy	Yes	55	66.3	28	33.7%	$X^2 = 0.05$, p = 0.817
	No	14	63.6	8	36.4%	
Pain	Yes	59	72.8	22	27.2	$X^2 = 8.0$, p = 0.005
	No	10	41.7	14	58.3	
Distant metastasis	Yes	35	72.9	13	27.1	$X^2 = 2.0$, p = 0.154
	No	34	59.6	23	40.4	
Radiotherapy	Yes	50	69.4	22	30.6	$X^2 = 1.4$, p = 0.234
	No	19	57.6	14	42.4	
Surgery	Yes	19	55.9	15	44.1	$X^2 = 2.2$, p = 0.142
	No	50	70.4	21	29.6	

Other*; Cancers of stomach, esophagus, liver/gallbladder, pancreas.

score of mature defense mechanisms and the HADS score (-20.9%; p = 0.032). No significant correlations were determined between neurotic defense mechanisms and the HADS score (p > 0.05).

When the total score of projection as a defense mechanism increased, the HADS score increased. A statistically significant positive weak correlation was observed between the total score of projection mechanisms and HADS score (26.8%; p = 0.006). The HADS score decreased with an increasing total score of dissociation as a defense mechanism, and a statistically significant weak negative correlation was observed between the total score of dissociation mechanisms and

HADS score (-23.5%; p = 0.016). When the total score of somatization increased, the HADS score increased; a statistically significant moderate degree positive correlation was observed between the total score of somatization and HADS score (32.5%; p = 0.001).

Internal consistency of the denial of cancer interview scale, HADS, and DMRS was determined as Cronbach's alpha coefficients of 0.60, 0.81 and 0.84, respectively.

Multivariate analysis results

When pain was present, total HADS score statistically significantly increased by 2.7 units (p = 0.005; 95% CI, 0.8-4.5). When the total denial score increased by 1 unit, the total HADS score statistically significantly decreased by -0.3 unit (p = 0.008; 95% CI, -0.5 to -0.1). When the humor mechanism score increased by 1 unit, the HADS score statistically significantly decreased by -0.2 units (p = 0.024; 95% CI, -0.3 to -0.03). As the projection score increased by 1 unit, the HADS score statistically significantly increased by 0.3 units (p = 0.005; 95% CI, 0.1-0.5). For each 1-unit increase in the somatization mechanism score, the HADS score statistically significantly increased by 0.3 units (p = 0.002; 95% CI, 0.1-0.4; Table 3).

When the model was adjusted with regard to duration after diagnosis, the HADS score statistically significantly increased by 0.04 for each additional month that passed (p = 0.023; 95% CI, 0.006-0.080). If pain was present, the HADS score statistically significantly increased by 2.7 units (p = 0.006; 95% CI, 0.8-4.6). With each 1-unit increase in the total denial score, the total HADS score statistically significantly decreased by -0.4 unit (p = 0.005; 95% CI, -0.6 to -0.1). HADS score increased by 1.2 units when the diagnostic group change from colon cancer to rectal cancer (p = 0.010; 95% CI, 0.3-2.1). With each 1-unit increase in the mature defense mechanism score, the total HADS score statistically significantly decreased by -0.2 unit (p = 0.004; 95% CI, -0.3 to -0.07). When the neurotic defense mechanism score increased by 1 unit, the total HADS score statistically significant increased by 0.1 unit (p = 0.007; 95% CI, 0.03-0.2; Table 4).

Discussion

To summarize our study results, in patients with digestive cancer, depression was more prevalent in patients with rectal cancer, a positive family history of psychiatric disorder, existence of pain, presence of somatization, and projection as parts of primitive defense mechanisms, and use of neurotic defense mechanisms. As denial scores increased, the prevalence of depression decreased. Denial had a protective effect on the occurrence of depressive symptoms and depression. Furthermore, depression was less prevalent among patients using mature defense mechanisms.

Although many previous cross-sectional studies reported that the disease duration was not associated

Table 3: Coefficients, p values and confidence intervals of pain, total score of denial and defense mechanisms subtitles (humor, projection, somatization) associated with total score of HAD depression scale.

Model*	Coefficient		p	95% Confidence interval for B coefficient	
	B	Std. Error		Minimum	Maximum
Pain	2.7	0.9	0.005	0.8	4.5
Total score of denial	-0.3	0.1	0.008	-0.5	-0.1
Humor	-0.2	0.1	0.024	-0.3	-0.03
Projection	0.3	0.1	0.005	0.1	0.5
Somatization	0.3	0.1	0.002	0.1	0.4

*Gender, family history, duration after diagnosis, diagnosis, pain, total score of denial, defense mechanisms like projection, somatization, dissociation, humor were tested in the model.

Table 4: Coefficients, p values and confidence intervals of pain, total score of denial, and grouped subtitles of defense mechanisms (mature, neurotic, primitive) associated with HADS depression score.

Model*	Coefficient		P	95% Confidence interval for B coefficient	
	B	Std. error		Minimum	Maximum
Duration after first symptom (as months)	0.04	0.02	0.023	0.006	0.080
Pain	2.7	1.0	0.006	0.8	4.6
Total score of denial	-0.4	0.1	0.005	-0.6	-0.1
Diagnosis	1.2	0.5	0.010	0.3	2.1
Mature defense mechanisms	-0.2	0.05	0.001	-0.3	-0.07
Neurotic defense mechanisms	0.1	0.04	0.007	0.03	0.2

*Gender, family history, duration after diagnosis, diagnosis, pain, total score of denial, mature, neurotic and primitive defense mechanisms were tested in model.

with coping styles, one longitudinal study reported that coping styles could be changed over time [8]. In the current study, no association was observed among disease duration, depression, and coping styles, although disease duration was considered when establishing the model.

Analysis of the association between defense mechanisms and depression revealed that a negative association existed between depressive symptom level and mature defense mechanisms and a positive association existed between depressive symptom level and immature defense mechanisms. As the severity of depressive symptoms increased, mature defense mechanisms directed toward adaptive behaviors decreased, and the use of immature defense mechanisms directed toward disruptive behaviors increased.

Our results appear to be compatible with those reported in the literature [9]. reported a negative association between depression severity and the use of mature defense mechanisms when investigating the defense mechanisms of subjects diagnosed with depression, both with and without a suicide attempt. Patients with depressive disorders used immature defense mechanisms more often and used mature defense mechanisms less frequently. The use of mature defense mechanisms increases and immature defense mechanisms decreases in parallel with improvements in depressive symptoms [10-13].

The depressive group more frequently used immature defense mechanisms than mature defense mechanisms [12,14]. Investigated the importance of defense mechanisms for consultation-liaison psychiatry in a cross-sectional study, they found significant associations among stress, anxiety, depressive signs, and immature defense mechanisms.

Jacobs, et al. found that lower ego defense levels and higher neurotic defense levels were associated with higher depression scores at the 13-month follow-up after a stressful event in 67 patients who had relatives who died or had severe diseases [15]. The disorders associated with defense styles are dysthymia, anxiety disorder, borderline personality disorder, and eating disorders. In the treatment process of depressive patients, mature defense mechanisms were more frequently used, and the use of primitive defense mechanisms decreased, whereas no changes were observed in the use of neurotic defense mechanisms. Therapeutic interventions had an effect on the use of defense mechanisms [10]. In our current study, primitive defense mechanisms such as somatization and projection were associated with depression. Total scores of neurotic defense mechanisms were also associated with increased depression scores. Humor, a mature defense mechanism, was protective against depression.

Somatic complaints are more frequently observed in patients with cancer, and patients may have somatization disorder even in the presence of somatic complaints of digestive system cancers. In our study, somatization mechanisms were also significantly associated with increased depression scores. Similar results have also been reported in the literature. In patients with breast cancer, somatic complaints were associated with depression. In patients with depression, somatic complaints were independent of physical disease, diagnosis, and treatment effect [16].

Somatization complaints, together with depression and anxiety, have been more frequently observed in patients with cancer of unknown primary source compared with those with metastatic cancer. It is necessary to carefully observe these patients for managing psychiatric disorders and somatic complaints [17].

In our study, the risk for depression was high in patients with rectal cancer. Anatomical localization in rectal cancer is closely associated with long-term functionality and quality of life. Creating anastomosis improves the quality of life for patients with rectal cancer much more than permanent ostomy, independent of whether the procedure is low anterior resection or abdominoperineal resection. Moreover, among these patients, irregular alterations in bowel movements and diarrhea may prevent social activities outside the home, possibly providing a basis for depression [18].

In this study, pain was a factor associated with depression in all multivariate analysis models. Pain is the most common symptom of cancer, and its etiology and management have been clearly understood. Psychological factors play a significant role in cancer-associated pain experience. More than one-third of patients treated for cancer and 60%-90% of those with advanced stage malignancy complain of significant pain. Many patients with cancer have more than one type of pain. Pain may result from the cancer itself, immobility, and different treatment methods, as well as comorbidities. Pain may also be defined as a somatopsychic experience. Pain intensity is based on tissue damage and the psychological status of a patient. Pain in patients with cancer is associated with many psychological precursors; other than progressive disease or therapy, psychogenic pain may also be experienced by patients with cancer. It is rarely the case that cancer pain results purely from psychological factors. Somatoform pain disorder or atypical somatoform disorder may arise because of cancer pain, or abnormal disease behavior may also aggravate pain. Psychological factors have an important role in chronic pain associated with cancer and somatization. Despair and fear of death may also increase pain. Chronicity in cancer pain is associated with a series of psychological signs such as sleep disorders, anorexia, decreased concentration, irritability, and signs of depressive disorder. Similarly, in our study, pain came into

prominence as a strong factor associated with depression in patients with digestive cancer. In patients with cancer, higher intensity pain was associated with MDs such as depression, frustration, anger, maladaptive coping style, belief that cancer progressed, higher life stress, and sensations of exhaustion, disappointment, despair, and hopelessness. A strong correlation was observed between somatic symptoms reported by patients and negative mood. For most patients, the results were evaluated as a pathology associated with mood, combined with the disease, rather than as a pure somatoform disorder [19].

Explaining somatic complaints and negative mood of patients and failure to explain the reason for the occurrence of somatic symptoms by the doctor may be helpful for the diagnosis. Evaluation of chronic pain in patients with cancer may be included in routine screening for psychological disorders [20].

Psychiatric disorders in patients with cancer may be affected by cultural differences. The fact that somatization was more frequently observed in the depression group made us consider the role of cultural and socioeconomic factors in our study. Feelings of guilt and suicidal thoughts are less prevalent in non-European cultures, although somatic complaints are more prevalent [21]. There is a difference between African Americans and white Americans in terms of reported somatization frequency. This study also found that patients reported less depression when they did not trust the health system [22].

Humor, as a mature defense mechanism, was revealed to be an important protective factor against depression in our study. The use of humor as a coping style in patients with sarcoma during the period of diagnosis was determined to be protective against depression. In an observational study conducted in Portugal regarding coping styles in patients with cancers, the use of humor as a coping style was protective against depression. In the same study, the denial subscale of a short coping scale was associated with an increased depression during the diagnosis and treatment periods [23]. Denial of cancer diagnosis appears to provide a method of coping with the disease and also helps to prevent depression in patients with cancer.

As denial increased, depression was less frequently observed. Similarly, in a study by Vos, et al. (2011) [24], emotional outputs in patients with lung cancer were strongly affected by the degree of denial they displayed; patients with lung cancer using a moderate degree of denial reported higher emotional functionality, less anxiety, and less depression.

These results bring to mind a few questions. First, should clinicians completely divulge the truth to their patients if denial can have protective effects? There is currently no evidence supporting the notion that withholding of information from patients may have a protective effect. The presence of cancer and its effects should be known by the patient in order for denial to arise. Doctors are imperative in their role to inform patients about the diagnosis and prognosis of the disease in most countries, and many patients claim to be realistically and fairly informed [25,26]. The other question is whether the doctors suggest the patients when the patients may show certain level of denial. In the light of data, patients should be respected if they show denial; patients should not be forced to face stressful situations if they are not yet ready. Doctors may be zealous and confront a patient to resolve the dilemma faced by the patient when decision-making skills of a patient are interrupted because of denial [27]. The management of denial in patients by clinicians may be dependent on several clinical situations. For example, denial before surgery may be beneficial for compliance. However, when confronting daily life challenges during rehabilitation, denial may interrupt compliance. Strong denial before the terminal period of a disease may complicate symptom management. Several guidelines exist for the management of severe denial [28-30]. The recognition and management of denial by clinicians are aided by understanding the context, effect, and function of denial. Thus, clinicians provide a tool for supplying information. However, in this era in which information about cancer may overwhelm patients because of information overload, patients should form confident areas and should keep intense and personal sensations to themselves. Denial may serve as a purpose in protecting patients in this regard and thus should be respected.

Fatigue and sleep disorders should be carefully considered when evaluating depression during the active treatment period. The approach of abstracting somatic symptoms should not be used for diagnosing depression in patients with cancer. In light of these data, the use of the DSM-IV criteria for diagnosing depression in patients with cancer is a suitable approach. However, HADS is a symptom screening scale that is not affected by somatic symptoms [31].

Conclusion

In patients with digestive system cancer, mature defense mechanisms as a group, and humor as a part of mature defense mechanisms is protective against depression. Moreover, denial of cancer is protective against depression. Patients with digestive system cancer who have depression use neurotic and immature defense mechanisms more often than mature defense mechanisms. Denial of cancer diagnosis may provide patients with a method of coping with the disease and also prevent them from succumbing to depression. Other than the intensity of somatic complaints in patients with digestive system cancer, it is important to note that that somatization may also cause somatic com-

plaints. Complaints should be carefully considered, and an effort should be made to differentiate somatization disorders in consultation-liaison clinical practice.

Because of the tumor location, colostomy, pain, and leaks, we may more frequently observe depression in patients with rectal cancer than in those with other digestive cancers. Pain is the most common symptom in cancer, and it is associated with an increased risk for depression in patients with digestive cancer. Pain management in cancer may be an important intervention factor to help prevent the development of depression. In patients with cancer, the evaluation of chronic pain should be included in routine screenings for psychological disorders. Properly informing patients is one of the most important factors in supplementary treatment of cancer because it can help in facilitating informed decision making and in developing a sense of control in patients.

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