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ORIGINAL ARTICLE

Prevalence of depressive symptoms in elderly cancer patients receiving chemotherapy and influencing factors

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Abstract

Background: Depression is one of the most prevalent causes of distress in the geriatric population. The purpose of this study was to examine the prevalence of depressive symptoms in elderly cancer patients and to determine the possible associated factors.

Methods: Cancer patients 65 years or older and on active chemotherapy completed the Yesavage Geriatric Depression Scale. We examined the relationship of depressive symptoms with age, gender, marital status, educational background, type of cancer, stage of disease, comorbidities, types of treatment for cancer, the duration after diagnosis of cancer, social support, and pain status.

Results: The study included 170 patients with a mean age of 71 years, and 47.1% were women. The prevalence of a high depressive symptom score was 19.4%. Of the patients who had a high depressive symptom score based on the Yesavage Geriatric Depression Scale, 18.2% had already been diagnosed with depression and used antidepressants. The mean pain score was significantly higher in patients who had a high depressive symptom score compared to others (P = 0.012).

Conclusion: The prevalence of depressive symptoms in elderly cancer patients receiving chemotherapy was similar to that in the geriatric population without cancer. It was also consistent with previous studies on elderly cancer population. Pain was found to be a factor related to depressive symptoms. The prevalence of depression may be reduced by pain control. The treatment of depression may both improve the patient's quality of life and enhance their compliance with treatment.

Key words: *cancer, depression, elderly patients.*

INTRODUCTION

Advances in preventive and therapeutic medicine and improving life conditions have increased the number of elderly people in the general population. It is estimated that the geriatric population will comprise 20% of the US population by 2030.[1,2] Currently, geriatric patients comprise more than 50% of all cancer patients, and 65–70% of cancer-caused deaths occur in geriatric patients. Therefore, the management of geriatric patients is a significant part of oncology practice.[3]

Depression is one of the most prevalent causes of distress in the geriatric population. The prevalence of severe depressive symptoms is reported to be 8–16%.[4,5] Moreover, different types of depression may be observed in up to 23% of the geriatric population with no comorbidities and in up to 25% of elderly people with medical conditions.[6,7] In geriatric patients with cancer, the loss of a spouse, friend, or relative concomitant with disease development and progression makes these individuals more vulnerable and susceptible to depression. The prevalence of depression is reported to be 17–26% in geriatric

patients with cancer.[8,9] In patients with cancer, depression has been associated with reduced quality of life, severely impaired physical activity, poor social interaction, sleep disorders, rapidly progressing cancer symptoms, and increased pain.[10] Depressive symptoms are also associated with frequent referral to health-care institutions, increased health-care expenses, non-compliance with oncologic treatment, poor treatment outcomes, reduced decision-making capacity, longer periods of hospitalization, and suicide.[11–16] A study of patients with advanced-stage cancer showed that depression was an independent predictor of survival.[17]

All these data emphasize the importance of recognizing and treating depression in geriatric oncology practice. In the present study, we aimed to draw attention to the prevalence of depressive symptoms in elderly cancer patients, raise awareness of geriatric depression, and determine the possible associated factors.

METHODS

After ethical approval, a prospective study was conducted at the Infusion Center of Dokuz Eylul University Medical Faculty (Izmir, Turkey) between June and September 2016. Patients with cancer over 65 years of age who were undergoing chemotherapy at an outpatient clinic were included.

Inclusion criteria

Patients were included in the study if they met the following criteria:

- were at least 65 years old
- were currently undergoing chemotherapy
- agreed to participate in the study and sign a written informed consent.

Exclusion criteria

Patients were excluding from this study for the following reasons:

- insufficient cognitive functionality to answer questions
- known brain metastasis
- receiving only oral therapy
- receiving only palliative care.

Individual and disease-related characteristics

Individual and disease-related characteristics of patients were obtained from questionnaires and the hospital's registration system. Data including age, gender, marital status, educational background, type of cancer, and stage of disease were recorded. The stage of cancer was assessed for each type of cancer and categorized as advanced (stage 4) or local (stage 1–3) disease. We also recorded comorbidities, previous diagnosis of depression, use of antidepressants, history of radiotherapy and surgery, and time since cancer diagnosis (more or less than 6 months). To evaluate the level of social support, patients were asked about their living situation. Living at home with family members was considered strong social support, whereas living alone, with a caregiver, or at a nursing home was deemed poor social support. This classification was made with considerations of the cultural importance of family care in old age in Turkish society and the inadequacy of nursing home conditions. In Turkey, elderly people living with their family members usually receive a good care and social support. The Numeric Pain Rating Scale was employed to assess pain. Patients reported the severity of their pain from 0 (indicating no pain) to 10 (most severe pain experienced).

All patients were administered the Yesavage Geriatric Depression Scale (GDS), validated for the Turkish language.[18] The test was administered to patients during infusion. The GDS is a convenient, self-report scale for elderly individuals that consisting of 30 'yes' or 'no' questions. Each answer in support of depression counts 1 point, and the cut-off value is accepted as 13–14.[19] We used 13 as the cut-off value in the present study.

Continuous variables were expressed as means ± SD. The Kolmogorov–Smirnov test was used to analyze continuous variables in terms of suitability for normal distribution. Continuous variables with a normal distribution were analyzed by the independent sample *t*-test, whereas continuous variables without normal distribution were analyzed by the Mann–Whitney *U*-test. Differences in proportions were analyzed using the χ^2 test. Probabilities <0.05 were considered significant. All statistical analyses were performed using SPSS ver. 15.0 (SPSS Inc., Chicago, IL). A sample size of 168 participants was calculated to ensure a

minimum required size within a 95% confidence interval and 5% of the true proportion.

RESULTS

The mean age of the 170 patients included in the study was 71.19 ± 5.39 years (range: 65–93). There were 80 female patients (47.1%). Of the 170 patients, 77.1% were married, 90.0% had strong social support, and 80.0% were aware of their disease. The most common type of cancer was gastrointestinal cancer (41.1%), followed by lung, breast, genitourinary, and gynaecologic cancers. Cancer stage was advanced in 62.4% of patients. Demographic and disease-related characteristics are given in Table 1.

A high depressive symptom score was encountered in 19.4% of the patients in the present study.

Table 1 Demographic and disease-related characteristics (*N* = 170)

Variables	
Age (years), mean ± SD (range)	71.19 ± 5.39 (65–93)
Gender, *n* (%)	
Female	80 (47.1)
Male	90 (52.9)
Marital status, *n* (%)	
Married	131 (77.1)
Single/divorced/widow	39 (22.9)
Educational background, *n* (%)	
No education	17 (10.0)
Primary	90 (52.9)
Secondary or undergraduate	59 (34.7)
Graduate	4 (2.4)
Social support, *n* (%)	
Strong (lives with family at home)	153 (90.0)
Weak (lives alone/with caregiver/at nursing home)	17 (10.0)
Awareness of disease, *n* (%)	
Aware	136 (80.0)
Unaware/partially aware	34 (20.0)
Type of cancer, *n* (%)	
Lung	45 (26.5)
Gastrointestinal	70 (41.1)
Breast	23 (13.5)
Gynaecologic	11 (6.5)
Genitourinary	14 (8.2)
Other	7 (4.1)
Stage, *n* (%)	
Local/regional	64 (37.6)
Advanced stage	106 (62.4)
Diagnosed with depression, *n* (%)	19 (11.2)
Use of antidepressants, *n* (%)	19 (11.2)
Time since cancer diagnosis, *n* (%)	
Less than 6 months	70 (41.2)
More than 6 months	100 (58.8)

The individual and disease-related characteristics of the patients with (group 1) and without (group 2) a high depressive symptom score were compared. The only related factor among those with a high depressive symptom score was pain. The mean pain score was 3.15 ± 2.77 in group 1 and 1.81 ± 1.88 in group 2 ($P = 0.012$). Comparisons of other characteristics are provided in Table 2.

No statistically significant relationship was detected between comorbidities and depressive symptoms. However, patients with and without congestive heart failure had high depressive symptom prevalence rates of 30.3% and 16.8%, respectively, which was close to statistical significance ($P = 0.078$) (Table 3).

Of the patients who had a high depressive symptom score based on the GDS, 18.2% had already been diagnosed with depression and were using antidepressants. Of the patients who did not have a high depressive symptom score, 9.5% had been diagnosed with depression and were being treated.

DISCUSSION

A high depressive symptom score was encountered in 19.4% of the patients in the present study. Pain was identified as a factor associated with depressive symptoms. Of the patients who had a high depressive symptom score, 81.8% had not been previously evaluated for depression. Sociodemographic characteristics, stage of cancer, awareness of disease, type of treatment, and comorbidities were not found to be related to depressive symptoms.

The prevalence of high depressive symptoms was close to the lower end of the range reported in the literature. The relatively low prevalence in this study might be associated with the fact that it was conducted on patients who were actively receiving chemotherapy. Patients who either were receiving oral therapy or were hospitalized and receiving palliative care only were excluded from the study. In a study of a similar patient group, the prevalence of high depressive symptoms was even lower; Weiss Wiesel *et al*. found clinically significant depression in 12.6% of 500 cancer patients receiving chemotherapy on an outpatient basis.[8]

According to previous studies, the prevalence of pain in patients with cancer varies between 14% and 100%, and the elderly population comprises the

Table 2 Comparison of patients with and without high depressive symptom score

Variables	Group 1 (n = 33)	Group 2 (n = 137)	P-value
Age (years), mean ± SD	71.45 ± 5.03	71.13 ± 5.49	0.759
Female gender	60.6%	43.8%	0.082
Advanced-stage disease	63.6%	62.0%	0.865
Number of comorbidities, mean ± SD	1.84 ± 1.37	1.64 ± 1.28	0.431
Mean pain score mean ± SD[†]	3.15 ± 2.77	1.81 ± 1.88	**0.012**
Time since diagnosis of cancer			
Less than 6 months	45.5%	40.1%	0.578
More than 6 months	54.5%	59.9%	
Social support			
Strong (lives with family at home)	84.8%	91.2%	0.329
Weak (lives alone/ with caregiver/ at nursing home)	15.2%	8.8%	
Marital status			
Married	80.2%	76.4%	0.801
Single/divorced/ widow	19.2%	23.6%	
Awareness of disease			
Aware	84.6%	79.2%	0.606
Unaware/partially aware	15.4%	20.8%	
Operated due to cancer	66.7%	54.0%	0.188
Received radiotherapy	27.3%	36.5%	0.318

P values < 0.05 were considered significant and shown as bold. [†] Pain score range: 0 (best)–10 (worst). Group 1, patients with a high depressive symptom score; group 2, patients without a high depressive symptom score.

highest risk group for cancer-related pain.[20,21] It has also been reported that the prevalence of non-cancer-related pain reaches 80% in elderly cancer patients. Studies have demonstrated that elderly individuals are less likely than younger groups to report pain and receive treatment to manage, and this likewise occurs with the reporting and treatment of depression.[22,23] There is a two-way relationship between pain and depression—specifically, depression aggravates perceived pain, and pain causes depression.[20,24,25] As part of the present study, we found that the mean pain score was significantly

Table 3 Comparison of the frequency of comorbidities according to presence of depressive symptoms

	Group 1 (n = 33)	Group 2 (n = 137)	P-value
Diabetes mellitus	39.4%	25.5%	0.113
Hypertension	66.7%	57.7%	0.344
Congestive heart failure	30.3%	16.8%	0.078
Chronic renal failure	3.0%	5.1%	0.613
Thyroid disease	12.1%	13.1%	0.876
Cerebrovascular disease	3.0%	2.9%	0.963
Asthma/COPD	12.1%	13.9%	0.916
Musculoskeletal disease	18.2%	14.6%	0.608
Dementia	0.0%	2.2%	0.945

COPD, chronic obstructive pulmonary disease; group 1, patients with a high depressive symptom score; group 2, patients without a high depressive symptom score.

higher in the patients who had a high depressive symptom score. Pain was the only factor associated with depressive symptoms. However, if we consider this two-way relationship, the depressive group had a higher sensitivity to pain. Notwithstanding the causal relationship, pain has been demonstrated to be associated with depression, cognitive impairment, fatigue, and even suicide in geriatric patients with cancer.[26,27] A study examining suicide in geriatric patients reported that patients with prostate cancer and uncontrollable pain had a significantly higher suicide rate.[16]

In our study, although the patients who had a high depressive symptom score also had more comorbidities, weak social support, awareness of disease, and a short time since cancer diagnosis, the difference was not statistically significant. In a study including 860 patients, Stommel *et al.* determined that type and stage of cancer, comorbidities, symptom severity, and reduced physical functionality were predictors of depressive symptoms.[28] Weiss Wiesel *et al.* also reported that lack of social support, increased number of comorbidities, and advanced-stage cancer were associated with depression.[8] The reason that we could not detect similar results might be due to the smaller sample size and different assessment scales employed.

We preferred the GDS, which is a practical tool with high sensitivity and specificity.[29] It has also been validated in Turkish and is frequently used by geriatricians. There are no clear data available regarding which scale is the most appropriate to assess depression in geriatric patients with cancer.

Nelson *et al*. investigated the use of the eight most common self-report depression scales, including the GDS, in this patient group.[6] Although most of these scales had been validated for both geriatric and cancer patients, there were no validation data specific to geriatric oncology patients. Moreover, the symptom profile analysis revealed that those measurements failed to identify many symptoms of depression in geriatric patients with cancer, and the authors concluded that further validation and scales were needed for this patient group.[6] In another study, Saracino *et al*. evaluated three different depression scales—namely, the Geriatric Depression Scale-Short Form, the Hospital Anxiety and Depression Scale, and the Center for Epidemiologic Studies Depression Scale-Revised—and compared them to the Structured Clinical Interview of the *Diagnostic and Statistical Manual of Mental Disorders*, fourth edition, which is the gold standard for diagnosis. With GDS and other scales, the authors found that 33–83% of patients may remain undiagnosed, and the definitive cut-off point for those scales was lower than the standard cut-off point for geriatric patients with cancer.[11]

Another important point is that GDS does not have any questions about the presence of pain. Therefore, a high depressive symptom score was independent of pain in our study.

As the manifestation of depression is different in elderly individuals than in younger individuals, they are underdiagnosed and undertreated most of the time.[9,30] Moreover, diagnosing depression can be more difficult in geriatric oncology patients because the physician, patient, and their relatives are focused primarily on the cancer treatment. Depression symptoms may overlap with cancer symptoms and can go unnoticed due to the busy schedule of oncology clinics. In such patients, it is also difficult to distinguish normal grief from depression, and some geriatric patients with cancer present anxiety and cognitive impairment, which makes it even more difficult to detect depression.[31] We found that only 18.2% of patients with high scores had been diagnosed with depression and were being treated. Of the patients who did not have a high depressive symptom score, 9.5% had been diagnosed with depression and were being treated. We thought that the depressive symptoms of these latter patients might have been palliated by treatment, which could have accounted for their scores being lower than the GDS cut-off value.

Study limitations

The limitations of the present study included the exclusion of patients who had received only oral therapy, or were hospitalized for palliative care. There were other limitations as well. The awareness of disease/cancer was subjectively evaluated by the same physician who administered the GDS, and social support status was assessed only based on patients' living situation. The sample size was another limitation; it was insufficient for evaluating the effect of the type of cancer on depressive symptoms.

Clinical implication

Our data showed that the prevalence of depressive symptoms in elderly patients with cancer was 19.4%, which was similar to the geriatric population without cancer. It was also consistent with previous studies on elderly cancer population. Most of these patients (81.8%) had not been previously evaluated in terms of depression. Pain is the primary factor associated with depressive symptoms. The prevalence of depression may be reduced by pain control.

Depression is a disease that can be controlled, and symptoms can be attenuated by proper treatment in many cases. The treatment of depression may both improve patients' quality of life and enhance their compliance with treatment.

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