ORIGINAL ARTICLE

Eastern Journal of Medicine
East J Med 24(4): 412-421, 2019
DOI: 10.5505/ejm.2019.52724

Syrian Migrants With Brain Metastasis Patients: Quality of Life and Anxiety Before Radiotherapy, Depression Before and After Radiotherapy and the Effect On Familial Relatives

Feryal Karaca[1], Gokhan Cavus[2*], Cigdem Usul Afsar[3], Selahattin Mentes[1], Yasar Sertdemir[4], Yurdal Gezercan[2]

[1]Department of Radiation Oncology, Health Sciences University, Adana City Hospital, Adana, Turkey
[2]Department of Neurosurgery, Health Sciences University, Adana City Hospital, Adana, Turkey
[3]Clinic of Medical Oncology, Istanbul Education and Research Hospital, Istanbul, Turkey
[4]Department of Biostatistics, Çukurova University School of Medicine, Adana, Turkey

ABSTRACT

In this study, our aim is to evaluate the quality of life, depression and anxiety of the Syrian patients who have brain metastasis and their relatives before starting radiotherapy and to correlate their depression and anxiety after radiotherapy. Brain metastases are frequently considered the last stage in many cancers. The European Organization for Research and Treatment of Cancer Quality of Life Questionnaire-C30, Beck Depression Inventory, and State-Trait Anxiety Inventory I-II test questionnaires were administered upon the arrival of 51 Syrian immigrant patients with brain metastases and their relatives to a radiotherapy clinic. Beck Depression Inventory, and State-Trait Anxiety Inventory questionnaires II were administered after radiotherapy. Beck Depression Inventory performed before and after radiotherapy in patients and their relatives and Beck Depression Inventory analysis was significant ($p<0.001$). State-Trait Anxiety Inventory II analysis performed before and after RT in patients and their relatives was significant ($p<0.001$). According to the State-Trait Anxiety Inventory II, high-anxiety situations occurred before radiotherapy, which we considered a continuum anxiety state, and increased in patients and their relatives after radiotherapy. According to the Beck Depression Inventory, depression decreased in patients' relatives after radiotherapy and increased in patients. The State-Trait Anxiety Inventory II scores after radiotherapy were high in patients and their relatives. This study was the first to evaluate the quality of life, socioeconomic status, depression, anxiety state and continuity of Syrian patients with brain metastases and their relatives. Therefore, we conclude that Syrian immigrants with brain metastases experience continued anxiety.

Key Words: Brain metastasis, Radiotherapy, Anxiety, Depression

Introduction

Brain metastases are a cause of significant morbidity. An estimated 20-40% of cancer patients will develop brain metastases during their illness. The prognosis for patients with brain metastases is generally poor; the median survival is 1 month for patients not receiving treatment. (1). Brain metastasis is a cause of significant morbidity in patients with underlying malignancies. Surgery can be considered when feasible for metastatic brain tumors and has been associated with better outcomes and quality of life; the guiding principles include maximal tumor removal when appropriate. Patients with a single brain metastasis may show better survival with external radiotherapy (RT) after surgery.

Whole-brain RT is the standard treatment for brain metastases. Externally administered RT provides symptomatic relief and recovery is possible in the survival cases accompanied by steroids that are administered with adjusted doses. Patients who have a single brain metastasis, can control extracranial disease, can undergo surgery due to brain metastases and can have aggressive therapies, such as extrinsic RT and stereotactic RT, may have a better survival rate.

The World Health Organization (WHO) defined health as not only physical health and the absence of any illness in the body but also the state of

***Corresponding Author:** Gokhan Cavus, Department of Neurosurgery, Health Sciences University, Adana City Hospital, Serinevler Mah., Ege Bagatur Bulvari, Yuregir/Adana, Turkey 01060
E-mail: dr.gokhancavus@gmail.com, Phone: +90 (532) 707 40 70, Fax: +90 (322) 355 01 55
Received: 20.02.2018, **Accepted:** 17.07.2019

well-being of the whole body-that is, the state of physical, mental and social well-being (2). According to the definition of this subjective and multidimensional health, health is defined not only as a long life but also based on quality of life. Quality of life is a key component of survival. Many patients with cancer experience a poor quality of life, distress, anxiety, depression, and sleep disturbances. Because of the limited survival time in patients with brain metastases, considering their quality of life and mood is important.

The European Organization for Research and Treatment of Cancer Quality of Life Questionnaire-C30 (EORTC QLQ-C30) is an important quality of life scale that is used to determine the physical and functional statuses of patients (3). Tannock, who writes about the importance of quality of life, stated that it is time to focus on the patient, not the tumors, when it is impossible to cure the disease (4). Depending on the location of the brain metastases, patients may suffer from neurologic symptoms that include headaches, focal weakness, mental disturbances, behavioural changes, seizures, speech difficulty, and ataxia. Studies conducted previously have determined the level of neurological symptoms by physical examination of the course of the disease with radiological images to evaluate the patient's treatment response. However, little is known about the quality of life, depression, and near- and far-future anxiety scales of patients with brain metastases and their caregivers. The Beck Depression Inventory (BDI) and State-Trait Anxiety Inventory (STAI I-II) scoring systems are the most reliable methods of assessing depression (5,6).

In this study, our aim was to evaluate the EORTC QLQ-C30, BDI, STAI I-II before the onset of RT and to correlate the depression and anxiety scores of the relatives of the patients and their relatives by looking at the BDI, STAI II after RT. This study is important because it is the first to evaluate depression and anxiety before and after RT in Syrian patients with brain metastases and their relatives.

Materials and Method

Between April 2016 and August 2017, 51 Syrian patients with brain metastases who were admitted to Adana Numune Training and Research Hospital Brain Surgery, Adana Numune Training and Research Hospital Radiation Oncology and Health Sciences University Istanbul Training and Research Hospital Medical Oncology Clinic and their relatives were included in the study. Patients and their relatives who were present during that time were prospectively included in the study. Ethical Committee approval was obtained from the University of Cukurova and the patient's approval Arabic written consent form. The EORTC QLQ-C30 (7), STAI I and State-Trait Anxiety Inventory (STAI II) scoring systems (8) and BDI (9) forms were given to Syrian patients and their relatives before RT began. The BDI and STAI II forms were given once more to the patients and their relatives after the completion of RT.

Quality of life was assessed using the EORTC QLQ-C30 version 3.0, a 30-item questionnaire. The components of the EORTC QLQ-C30 are global health status, five functional scales (physical, role, cognitive, emotional, and social), and nine symptom scales/items (fatigue, nausea/vomiting, pain, dyspnea, insomnia, appetite loss, constipation, diarrhea, and financial difficulties). The patients' responses were scored according to the EORTC QLQ-C30 scoring manual. Scores for the symptom components were linearly transformed to a scale of 0 to 100. A high score for a functional scale represented a relatively high level of functioning, whereas a high score for a symptom scale represented greater severity of symptoms or financial impact.

Twenty-one questions were evaluated using the Beck depression scale: 1) depressed mood, 2) pessimism, 3) sense of failure, 4) loss of satisfaction, 5) sense of guilt, 6) sense of punishment, 7) self-rancor (hatred, disgust), 8) self-accusation, 9) suicidal ideation, 10) crying, 11) irritability, 12) social isolation, 13) indecision, 14) altered body image, 15) inhibition for work, 16) sleep abnormalities, 17) fatigue, 18) loss of appetite, 19) weight loss, 20) somatic concerns, and 21) loss of libido. The BDI was used to measure the severity of depression. The BDI score ranged from 0 to 63. The BDI score of depression was classified as follows: <10, none or minimal; 10-18, mild to moderate; 19-29, moderate to severe; and 30-63, severe.

The STAI FORM was analyzed with a total of 40 questions consisting of direct or indirect (reverse) expressions. The STAI FORM-I consists of 20 questions that demonstrate the state of anxiety on a scale, and the STAI FORM-II consists of 20 questions that demonstrate the continuity of anxiety on a scale. The STAI contains 40 items; 20 items are allocated to each of the STAI I and STAI II subscales. For these two scales, the 20-35 interval is considered low anxiety, the 36-41

interval is considered medium anxiety, and the 42-80 interval is considered high anxiety.

Patients were asked whether there were cancer patients among their relatives, whether the relatives of the cancer patients were alive, whether they had applied for emergency services in the last month and, if so, why they applied, who was caring for the patient and how many people lived in the place that they reside.

Patient Characteristics: Patient characteristics are shown in Table 1. The following parameters were evaluated: KPS (Karnofsky Performance Scale), the number of single metastatic lesions in the brain and multiple metastases, the location of the single brain metastasis, education level, the cranial radiotherapy dose, male and female patient number, marital status, job, primary tumor, primary tumor grade, the presence of other metastases at the same site, the number of patients receiving RT, age-weight average, the place from which the Syrian patients had migrated, and the places where they reside. The questionnaire that was given to patients who were ill evaluated how many people lived in the household, who lived with the patients, whether they had cancer cases in the family, and whether they were still alive (Table 1).

Radiotherapy: All patients received standard radiation treatment (whole-brain 3-Gy treatment in 10 daily sessions, with a total of 30 Gy).

Supportive Care: This category contains an extremely wide range of interventions, patients and their relatives who came to and from the clinic and received psychological and medical care, psychosocial interventions, nutrition, and end-of-life comfort measures.

Statistical Analysis: All analyses were performed using SPSS 20.0 statistical software package (IBM SPSS Statistics). Continuous variables were summarized as mean and standard deviation and as median and minimum-maximum. For comparison of two related(paired) continuous variables, paired samples t-test or Wilcoxon Signed Rank test was used depending on whether the statistical hypotheses were fulfilled or not. For univariate analysis event free survival was calculated by Kaplan-Meier method and the log rank test was performed. The statistical level of significance for all tests was considered to be 0.05.

Results

The BDI scores performed before and after RT in the patients' relatives were significant at $p<0.001$. The STAI II scores of patients and their relatives before and after RT were also significant at $p < 0.001$ (Table 3, figure 1).

Regarding the single metastatic brain lesions and multiple brain metastases, no variable had a p value less than 0.050 (Table 4).

BID correlation to patients and patients before and after RT was $p=<0.001$ and it was statistically significant. The STAI II analysis of patients before and after RT was $p=<0.001$ and it was statistically significant. Although no statistically significant difference was found between the BID scale, STAI I and STAI II scores of patients with and without operative multiple brain metastases, the BECK depression scale STAI I and STAI II values of the operated patients were smaller than those of patients with multiple brain metastasis. It was observed that the high anxious conditions before the onset of RT in the STAI II scale, which we evaluated as the state of continuity concern to the patient and the patients who were caring for the patient, increased after the end of RT. In all patients, there was a decrease in the scale of depression in the patients according to the BID scale before and after the RT, while there was an increase in the BID score in the patients who looked after the patient.

Discussion

In the treatment of patients with brain metastases, if surgery and RT are not possible, RT alone is required. The combination of steroids and anticonvulsants and different combinations of primary therapies, number and location of metastases and performance status of the patient may play roles in determining which treatment combination or option is preferred. In the treatment of multiple brain metastases, the first option is all-brain RT (10). Patients may live with their family, children, and spouse, as well as with relatives. It was also observed that children were less interested in the patients; generally, the patients' spouses showed interest in them. Patients who migrated from Syria lived in the same house with a mean number of people of 5.78 (max: 14; min: 1) Considering that the educational level of the patients was 37 (72.5%) with primary education, 10 (19.6%) with secondary education, and 4 (7.8%) with university education (Table 1). Our 38 patients with multiple metastases were given external RT. Patients with single metastatic lesions in the brain were treated with whole-brain external RT after total metastasectomy.

The mean STAI I score of the patients and patient relatives who visited the clinic were 42.31 and

Table 1. Syrian patients' sociodemographic and clinical characteristics

	N (%)
Center	
Syria	51 (50)
Gender	
Female	22 (43.1)
Male	29 (56.9)
Marital status	
Single	1 (1.9)
Married	34 (66.6)
Widowed	16 (31.4)
Employment status	
Employed	7 (13.8)
Unemployed	22 (43.1)
House wife	22 (43.1)
Education	
Primary	37 (72.5)
Secondary	10 (19.6)
University	4 (7.8)
Primary cancer diagnosis	
Lung	15 (29.4)
Breast	19 (37.2)
over cancer	3 (5.8)
Colorectal	12 (23.5)
Stomach	2 (3.9)
Grade of primary cancer	
Grade 1	10 (19.6)
Grade 2	18 (35.3)
Grade 3	14 (27.5)
Grade 4	9 (17.6)
Comorbidity	
Yes	22 (43.14)
No	29 (56.86)
Karnofsky Performance Scale	
40	4 (7.8%)
50	13 (25.4%)
60	11 (21.5%)
70	23 (45.3%)
Multiple Brain Mets	38 (74.5%)
Single Brain Mets	13 (25.5%)
Localization of single brain metastasis	cerebral hemispheres (100%)
Cranial Radiotherapy	30 Gy
Corticosteroids	16 mg
Metastasis of the Patient	
Bone metastasis	25
Liver	18
Lung	28
Number of patients' radiotherapy	
First Radiotherapy	42 (82.4%)

	N (%)
Second Radiotherapy	8 (15.7%)
Third Radiotherapy	1 (2%)
Age mean	56 (max: 75, min: 33)
Weight (MED)	73.9 (max: 104, min: 46)
Length (MED)	167.7 (max: 190, min: 150)
Residence	
Adana	25 (49.01%)
Osmaniye	14 (27.4%)
Istanbul	12 (23.54%)
Places of immigration	
Halep	15 (29.42%)
İdlip	6 (11.7%)
Cobane	8 (15.68%)
Latakia	16 (31.37%)
Rakka	6 (11.79%
Number of people in the household (mean)	5.78 (max: 14, min: 1)
Patient's relative	
Partner	33 (64.7%)
Children	18 (35.3%)
Who lives with the patient	
Partner	11 (21.56%)
Children	16 (31.37%)
Relatives	3 (5.88%)
Family	21 (41.17%)
Does a relative also have cancer?	
Yes	29 (56.86%)
No	22 (43.14%)
Living relative with cancer	19 (37.3%)
Deceased relative with cancer	10 (19.6%)
Visit to the emergency department in the last month	
Yes	22 (43.14%)
No	29 (56.86)
Reason for visit to the emergency department	
Shortness of breath	6 (11.8%)
Dizziness	8 (15.7%)
Bleeding	2 (3.9%)
Pain	5 (9.8%)
Nausea	1 (2%)

30.49, respectively (Table 2). STAI I, known as the state anxiety scale, is considered to show a high level of anxiety in patients but moderate anxiety in patient relatives. The state anxiety scale in the Syrian migrants who visited the clinic for RT clearly showed that the patients were worried because of their situation. Similarly, the relatives who cared for the patients were found to be worried according to the state anxiety scale. Marlon Garzo Saria et al. have reported that anxiety and depression symptoms are high in the care of the patient, not only in the patient, but also in the care of the patient (11).

According to the EORTC QLQ-C3017 quality of life scale, in patients, the physical function test score was 44.70 ± 13.93, the general function score was 46.73 ± 18.56, the emotional function score was 43.95 ± 17.87, the comprehensive function score was 17.64 ± 20.92, the social function score was 42.81 ± 21.66, the fatigue

Table 2. Analysis results of EORTC QLQ-C30 and STAI I when the patients and relatives visited the radiotherapy clinic

	Patients	Relative	p
	Mean ± sd Median (Min, Max)	Mean ± sd Median (Min, Max)	
Physical Function Test	44.7057 ± 13.93 46.67 (0.00, 60.00)	73.20 ± 12.18 73.33 (46.67, 93.33)	<0.001
General Function Score	46.73 ± 18.56 50.00 (0.00, 66.67)	69.93 ± 16.67 83.33 (33.33, 83.33)	<0.001
The Emotional Function Score	43.95 ± 17.87 41.67 (8.33, 83.33)	54.90 ± 11.69 58.33 (33.33, 75.00)	<0.001
Comprehension Function Score	17.64 ± 20.92 16.67 (0.00, 83.33)	19.93 ± 23.09 16.67 (0.00, 66.67)	<0.001
The Social Function Score	42.81 ± 21.66 50.00 (0.00, 66.67)	67,64 ± 13,50 66,67 (33,33, 100,00)	0.642
Fatigue	73.85 ± 14.71 77.78 (44.44, 88.89)	23.52 ± 18.94 22.22 (0.00, 66.67)	<0.001
Nausea and vomiting	56.86 ± 17.37 50.00 (33.33, 100.00)	5.88 ± 10.96 0.00 (0.00, 50.00)	<0.001
Pain	52.94 ± 19.91 50.00 (16.67, 100.00)	26.14 ± 18.63 16.67 (0.00, 83.33)	<0.001
Shortness of breath	53.59 ± 29.87 33.33(0.00, 100.00)	37.25 ± 24.62 33.33 (0.00, 100.00)	
Insomnia	58.82 ± 22.69 66.67 (33.33, 100.00)	47.05 ± 16.57 33.33 (33.33, 66.67)	0.003
Constipation	72.55 ± 17.26 66.67 (33.33, 100.00)	15.68 ± 22.46 0.00 (0.00, 66.67)	<0.001
Loss of appetite	68.62 ± 20.45 66.67 (33.33, 100)	16.33 ± 19.28 0.00 (0.00, 66.57)	<0.001
General Life Score	31.37 ± 11.61 33.33 (8.33, 50.00)	72.22 ± 10.8 66.67 (41.67, 100.00)	<0.001
STAI I	42.31 ± 11.55 42 (20, 70)	30.49 ± 6.65 31.00 (20.00, 45.00)	<0.001

score was 73.85 ± 14.71, the nausea and vomiting score was 56.86 ± 17.37, the pain score was 52.94 ± 19.91, the shortness of breath score was 53.59 ± 29.87, the insomnia score was 58.82 ± 22.69, the diarrhea score was 0.00 ± 0.00, the constipation score was 72.55 ± 17.26, the loss of appetite score was 68.62 ± 20.45, the general life score was 31.37 ± 11.61, and the financial difficulty score was 79.09 ± 16.28 (Table 2) Patients with brain metastases and patients' relatives were found statistically significant except STAI I and EORTC QLQ-C30 Social Function Score before starting radiotherapy p <0.05. Considering these findings, the quality of life of our Syrian patients with brain metastases was not very high. The KPS was associated with global health status and physical functioning on the EORTC QLQ-C30. McMillan et al. reported that the EORTC QLQ-C30 scores regarding global health status, social functioning, fatigue, and appetite loss were significantly poor in patients with gastrointestinal carcinoma (12).

Jan J. Heimans et al. Looked at EORTC QLQ-C30 quality of life in patients treated with brain tumors (13). In these patients, they concluded that quality of life was adversely affected

Table 3. Evaluation of the Beck and STAI II forms before and after radiotherapy of the patients and patient relatives

	Before RT	After RT	p
	Mean ± sd Median(Min, Max)	Mean ± sd Median (Min, Max)	
Patient Beck	45.25 ± 11.11 49.00 (24.00, 63.00)	36.78 ± 10.95 36.00 (15.00, 58.00)	<0.001
Patient STAI II	47.73 ± 10.20 46.00 (27.00, 70.00)	55,43 ± 9,94 55,00 (36,00, 77,00)	<0.001
Patients Relative Beck	24.69 ± 11.91 22.00 (5.00, 56.00)	30.10 ± 11.27 28.00 (10.00, 57.00)	<0.001
Patients Relative STAI II	42.53 ± 8.30 42.00 (32.00, 66.00)	51.25 ± 7.37 52.00 (35.00, 78.00)	<0.001

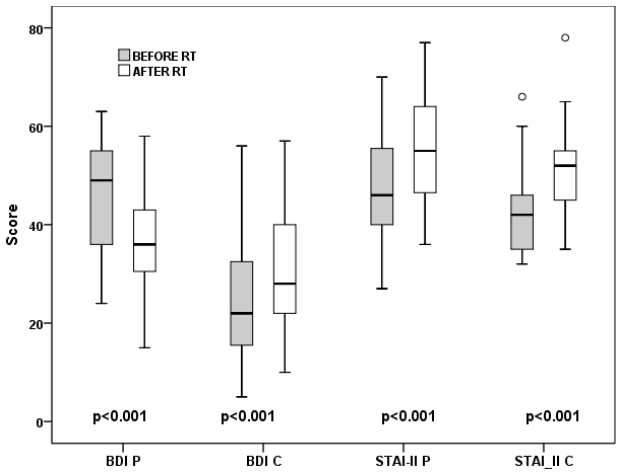

Fig. 1. BDI and STAI II evaluation of the patients and patient relatives before and after radiotherapy

The EORTC QLQ-C30 quality of life scale given to the patient relatives who visited the RT clinic revealed that the quality of life of the patients was not high. All of our subjects were stage 4 patients with poor EORTC QLQ-C30 scores. Additionally, the financial score of the patients and their relatives was very high. Gotay et al. investigated the quality of life of different ethnic groups and found that a higher order quality factor directly affected the functioning scales and symptom counts (14).

The evaluation of BDI and STAI II forms before and after RT revealed significance at p<0.001 shows the BDI and STAI II evaluations in patients and patient relatives. In our patients, the BDI score was 45.25±11.11 when patients received RT and 36.78±10.95 when RT ended. After RT, the level of depression relief was decreased in patients. The patient was found to have a BDI score increased after RT (Table 3). Figure 1. Mete HE et al. stated that cancer was not the only patient experience, but also affected the relatives of the patients negatively in those who loved them (15). Similar results to our research, Baral I et al. have achieved in his study. While the prevalence of moderate or severe depression was observed in 62% of patients in the first month of diagnosis, they showed that this rate reached 90% 6 months after the diagnosis was learned (16).

Patients with higher education levels may have greater awareness of the disease, leading to a stressful condition or worse illness perception. In contrast, patients with lower education levels can be more easily convinced by their physicians. These inconsistent results may be associated with the number of parameters acting on distress and ethnicity (17,18). However, the BDI score was 24.69±11.91 when the relatives visited the patients at our clinic, whereas it was 30.10±11.27 in patient relatives after the treatment concluded. According to this result, the depression score in relatives who are interested in the patient increases following treatment. The depression score was higher in migrants living in poor social conditions. One important parameter of the depression score is social environment. The social environment may provide a protective barrier against the harmful effects of depression (19,20).

While the STAI II score was 47.73±10.20 when the patient visited the RT clinic, after RT, the STAI II score was 55.43±9.94 (Table 3). Considering these findings, high-anxiety situations that were observed before the start of RT in the STAI II scale, which was regarded as a continuity anxiety situation, increased after RT ended. The STAI II score was 42.53±8.30 in patient relatives who came to the RT clinic and 51.25±7.37 following RT. Patients with high anxiety before RT showed an increase in the continuity anxiety

Table 4. Assessment of the Beck, STAI_I, and STAI_II systems in patients with operated and multiple brain metastases and their relatives

	Multiple Brain Metastasis N = 38	Patients who underwent surgery for single brain metastases N = 13	p
	Mean ± sd Median(Min, Max)	Mean ± sd Median (Min, Max)	
Number of Patients Before Beck Radiotherapy Began	45.69 ± 11.636 50.00 (25, 63)	45.11 ± 11.084 48.00 (24, 63)	.991
Number of Patients After Beck Radiotherapy Ended	36.82 ± 10.059 36.50 (15, 56)	36.69 ± 13.701 36.00 (15, 58)	.905
Number of Patient Relatives Before Beck Radiotherapy Began	26.15 ± 13.152) 32 (7, 45)	24.18 ± 11.594 22 (5, 56)	.603
Number of Patient Relatives After Beck Radiotherapy Ended	30.18 ± 11.394 27.50 (10, 57)	29.85 ± 11.364 35.00 (15, 47)	.787
Number of Patients Before STAI_I Radiotherapy Began	42.95 ± 11.428 42.00 (25, 70)	40.46 ± 12.204 41 (22, 56)	.729
Number of Patients Before STAI_II Radiotherapy Began	48.13 ± 10.124 45.00 (27, 70)	46.54 ± 10.729 47.00 (27, 62)	.770
Number of Patient Relatives Before STAI_I Radiotherapy Began	31.31±8.025 32.00 (20, 45)	30.21±6.209 31.00 (20, 45)	.649
Number of Patient Relatives Before STAI_II Radiotherapy Began	42.66 ± 8.857 42.00 (32, 66)	42.15 ± 6.706 42.00 (32, 55)	.914
Number of Patients After STAI_II Radiotherapy Ended	56.31 ± 8.864 57.00 (36, 67)	55.13 ± 10.375 55.00 (38, 77)	.273
Number of Patient Relatives After STAI_II Radiotherapy Ended	51.85 ± 5.014 52.00 (37, 56)	51.05 ± 8.064 52.00 (35, 78)	.494

score at the end of treatment. The expectations of future migrants and their anxiety may increase because of the higher scores of migrant patients seeking treatment at a hospital. As previously reported by Giovagnoli and colleagues, the anxiety status of patients before RT and chemotherapy appears to increase at the end of treatment (19). Anna R Giovagnoli 57 patients with brain tumor treatment and 24 patients with other neurological problems in the control group, using STAI -STAI II questionnaire, in patients with stable brain tumors depressive mood and affect the quality of life, negatively affect said (21).

Social risk factors affecting depression include social isolation, low socioeconomic status, and belonging to an ethnic minority (22,23). Severe depression situations were seen in our patients due to socioeconomic difficulties. Because of the limitations of treatments and aggravation brain metastases and palliative care in patients, there was no change in the progress of depression or anxiety at the end of RT. Similar results were observed following the completion of the survey conducted on the patients' relatives.

Evaluation of the EORTC 30, BDI, STAI I and STAI II scores conducted when patients and their relatives were referred to the RT clinic provided psychological assistance to patients and their caretakers with low quality of life, anxiety and depression scores.

Although there was no statistically significant difference between the BDI, STAI I and STAI II scores of patients with or without operated multiple brain metastases, the BDI, STAI I and STAI II scores of operated patients were lower than those in patients with multiple brain metastases (Table 4). Depression has a major impact on both morbidity and mortality through a number of different mechanisms, as it causes deterioration in quality of life, places a significant burden on close relatives, causes pain, adversely affects functional and physical performance, and affects social support (24,25).

A literature review revealed that depression is the most common psychiatric disorder in patients with cancer, with a prevalence between 22% and 29% depending on the location of the tumor and clinical stage (26). Giovagnoli et al. reported that the quality of life and depression scores of patients with chronic neurological disorders are adversely affected (6). Wittmann et al. found that physically inactive patients with breast cancer had higher levels of depression and anxiety (27). Patients with comorbidities may experience severe impairments that reduce autonomy, change the future goals of patients and their families, and require strategies to cope with the prospect of poor independence or short survival (28,29). Bottino et al. stated that it is difficult to report depression in cancer patients. It is very important to evaluate depression in patients who receive RT and in those who manage their illness (30).

The present study used the EORTC 30, BDI, STAI I and STAI II anxiety scales to assess quality of life, depression, and anxiety in Syrian patients suffering from single metastatic lesions and multiple metastases in the brain who migrated and their relatives. This study revealed that the depression and anxiety scores of patients with brain metastases with a low quality of life and those who were hospitalized were quite high. We conclude that the STAI II score after RT was higher in patients and their relatives and the continuity anxiety scale continued to increase in the Syrian migrants. The present study evaluated, for the first time, the quality of life, depression and anxiety states of Syrian patients with brain metastases and their relatives before and after RT. In patients who are caring for the patient, attention should be paid to the symptoms of depression and anxiety and they should be followed closely. Before and after RT, this study is new and current as it is the first study in which depression and anxiety are evaluated for patients with brain metastasis, patient and people caring for the patient.

References

1. Ellis TL, Neal MT, Chan MD. The role of surgery, radiosurgery and whole brain radiation therapy in the management of patients with metastatic brain tumors. Int J Surg Oncol 2012; 2012: 952345.
2. Who Preamble to the Constitution of the World Health Organization as adopted by the International Health Conference. Proceedings of the Official Records of the World Health Organization 1948 Apr 7; 1946 Jun 19-22; New York, NY, U.S.A.; 1946. Available from: http://www.who.int/about/definition/en/print.html, accessed on September 10, 2008
3. Heimans JJ, Taphoorn MJ. Impact of brain tumour treatment on quality of life. J Neurol 2002; 249: 955-960.
4. Tannock IF. Treating the patient, not just the cancer. N Engl J Med 1987; 317: 1534-1535.
5. Richter P, Werner J, Heerlein A, Kraus A, Sauer H. On the validity of the Beck Depression Inventory. A review. Psychopathology 1998; 31: 160-168.
6. Giovagnoli AR, da Silva AM, Federico A, Cornelio F. On the personal facets of quality of life in chronic neurological disorders. Behav Neurol 2009; 21: 155-163.
7. Validation of the Arabic version of the EORTC quality of life questionnaire among cancer patients in Lebanon. August 2013; 22: 1473-1481.
8. Ahmed M Abdel-Khalek. The development and validation of an Arabic form of the STAI: Egyptian results. Personality and Individual Differences 1989; 10: 277-285.
9. Ahmed m abdel-khalek. Internal cosistency of an arabic adaptation of the beck depression inventory in four arab countries. Psychological Reports 1998; 82: 246-266.
10. Khuntia D, Brown P, Li J, Mehta MP. Whole-brain radiotherapy in the management of brain metastasis. J Clin Oncol 2006; 24: 1295-1304.
11. Marlon Garzo Saria, Natasia S. Courchesne, Lorraine Evangelista, Joshua L. Carter, Daniel A. MacManus,Mary Kay Gorman, Adeline M. Nyamathi, Linda R. Phillips, David E. Piccioni,Santosh Kesari. Sally L. Malisk. Anxiety and Depression Associated With Burden in Caregivers of Patients With Brain Metastases 2017; 44: 306-315.
12. McKernan M, McMillan DC, Anderson JR, Angerson WJ, Stuart RC. The relationship between quality of life (EORTC QLQ-C30) and survival in patients with gastro-oesophageal cancer. Br J Cancer 2008; 98: 888-893.
13. Jan J.Heimans Martin J. B.Taphoorn. Impact of brain tumour treatment on quality of life.J Neurol 2002; 249: 955-960.
14. Gotay CC, Blaine D, Haynes SN, Holup J, Pagano IS. Assessment of quality of life in a multicultural cancer patient population. Psychol Assess 2002; 14: 439-450.
15. Mete HE, Önen Ö. Kanserli hastalarda depresyon. Duygudurum Dizisi 2001; 4: 184-191.
16. Baral I, Enderer M, Turgay M. Kanserli hastaların yakınlarında hastalığın çesitli evrelerinde saptanan psikiyatrik durum. NöroPsikiyatri Arsivi 1995; 32: 141-146.

17. Kim SH, Son BH, Hwang SY, et al. Fatigue and depression in disease-free breast cancer survivors: prevalence, correlates, and association with quality of life. J Pain Symptom Manage 2008; 35: 644-655.
18. Mehnert A, Koch U. Psychological comorbidity and health-related quality of life and its association with awareness, utilization, and need for psychosocial support in a cancer register-based sample of long-term breast cancer survivors. J Psychosom Res 2008; 64: 383-391.
19. Giovagnoli AR, Tamburini M, Boiardi A. Quality of life in brain tumor patients. J Neurooncol 1996; 30: 71-80.
20. Moyer A, Salovey P. Predictors of social support and psychological distress in women with breast cancer. J Health Psychol 1999; 4: 177-191.
21. Anna R Giovagnoli. Quality of life in patients with stable disease after surgery, radiotherapy, and chemotherapy for malignant brain tumour. J Neurol Neurosurg Psychiatry 1999; 67: 358-363.
22. Ell K, Sanchez K, Vourlekis B, et al. Depression, correlates of depression, and receipt of depression care among low-income women with breast or gynecologic cancer. J Clin Oncol 2005; 23: 3052-3060.
23. Dalton SO, Schuz J, Engholm G, et al. Social inequality in incidence of and survival from cancer in a population-based study in Denmark, 1994-2003: summary of findings. Eur J Cancer 2008; 44: 2074-2085.
24. Skarstein J, Aass N, Fossa SD, Skovlund E, Dahl AA. Anxiety and depression in cancer patients: relation between the hospital anxiety and depression scale and the European organization for research and treatment of cancer core quality of life questionnaire. J Psychosom Res 2000; 49: 27-34.
25. Spiegel D, Giese-Davis J. Depression and cancer: mechanisms and disease progression. Biol Psychiatry 2003; 54: 269-282.
26. Pitceathly C, Maguire P. The psychological impact of cancer on patients' partners and other key relatives: a review. Eur J Cancer 2003; 39: 1517-1524.
27. Wittmann V, Latos M, Horvath Z, et al. What contributes to long-term quality of life in breast cancer patients who are undergoing surgery? Results of a multidimensional study. Qual Life Res 2017; 26: 2189-2199.
28. Salander P, Bergenheim T, Henriksson R. The creation of protection and hope in patients with malignant brain tumours. Soc Sci Med 1996; 42: 985-996.
29. Giovagnoli A. Quality of life in patients with stable disease after surgery. J Neurol Neurosurg Psychiatry 1999; 67: 358-363.
30. Bottino SM, Fráguas R, Gattaz WF. Depressão e câncer. Rev Psiq Clin 2009; 36: 10915.