EMDR and CBT for Cancer Patients: Comparative Study of Effects on PTSD, Anxiety, and Depression

Liuva Capezzani
Psychiatry Department and Area di Supporto alla Persona, Regina Elena National Cancer Institute, Rome, Italy

Luca Ostacoli
Marco Cavallo
Sara Carletto
Department of Mental Health, "San Luigi Gonzaga" Hospital Medical School, University of Turin, ASL TO3, Orbassano, Italy

Isabel Fernandez
EMDR Italy Association, Bovisio Masciago (MI), Italy

Roger Solomon
Buffalo Center for Trauma and Loss, Buffalo, NY

Marco Pagani
Institute of Cognitive Sciences and Technologies, CNR, Rome, Italy

Tonino Cantelmi
Psychiatry Department, Regina Elena National Cancer Institue, Rome, Italy

This pilot study examined the efficacy of eye movement desensitization and reprocessing (EMDR) treatment compared with cognitive behavioral therapy (CBT) in treating posttraumatic stress disorder (PTSD) in oncology patients in the follow-up phase of the disease. The secondary aim of this study was to assess whether EMDR treatment has a different impact on PTSD in the active treatment or during the follow-up stages of disease. Twenty-one patients in follow-up care were randomly assigned to EMDR or CBT groups, and 10 patients in the active treatment phase were assigned to EMDR group. The Impact of Event Scale—Revised (IES-R) and Clinician-Administered PTSD Scale (CAPS) were used to assess PTSD at pretreatment and 1 month posttreatment. Anxiety, depression, and psychophysiological symptoms were also evaluated. For cancer patients in the follow-up stage, the absence of PTSD after the treatment was associated with a significantly higher likelihood of receiving EMDR rather than CBT. EMDR was significantly more effective than CBT in reducing scores on the IES-R and the CAPS intrusive symptom subscale, whereas anxiety and depression improved equally in both treatment groups. Furthermore, EMDR showed the same efficacy both in the active cancer treatment and during the follow-up of the disease.

Keywords: PTSD; cancer; CBT; EMDR; psychotherapy

Research exploring stress or trauma-related symptoms among cancer patients is not new (Andersen, Kiecolt-Glaser, & Glaser, 1994; Butler, Koopman, Classen, & Spiegel, 1999; Mehnert & Koch, 2007). However, the classification of the types of stress related to these patients has been the focus of research over these last years. Numerous studies in the literature have proposed that this population experiences stresses related to the diagnosis of the disease, and/or to the challenges of living with the illness that are much like how survivors of violent crime or natural disasters relate to their traumatic experiences (Cordova, Studts, Hann, Jacobsen, & Andrykowski, 2000; Jackson et al., 2007). Posttraumatic stress disorder (PTSD), which has been commonly associated with survivors of situations like those mentioned, is now being documented in cancer patients (Bruce, 2006; DuHamel et al., 2004).

 http://dx.doi.org/10.1891/1933-3196.7.3.134

PTSD is a disturbance defined by the development of certain symptoms following an emotionally stressful event that involved actual death or the threat of death, serious injury, or a threat to oneself or others (National Cancer Institute, 2012b). However, it is important to note that until 1987, the third revised edition of the *Diagnostic and Statistical Manual of Mental Disorders* (*DSM–III–R*; American Psychiatric Association, 1987) excluded patients with medical illnesses such as cancer from PTSD. Thanks to a text revision in the fourth edition of the *DSM* (*DSM-IV-TR*) that took place in the year 2000 (American Psychiatric Association, 2000), the diagnostic criteria for PTSD, specifically includes "being diagnosed with a life-threatening illness" as one example of a traumatic event, and people with histories of cancer can now be evaluated and considered at risk for PTSD (National Cancer Institute, 2012a).

There have been several studies of PTSD in this population with a variety of cancers—including melanoma, Hodgkin's lymphoma, breast cancer, and mixed cancers—but they were not homogeneous in their assessment of PTSD; some assessed patients for the full syndrome of PTSD (i.e., all *DSM-IV* criteria met) or only some of the PTSD-related symptoms (e.g., intrusive thoughts as measured by the Impact of Event Scale-Revised; IES-R; National Cancer Institute, 2012a). It is important to note that PTSD is difficult to diagnose in any population for several reasons: first, because it can be confused with many other psychological disorders, and secondly, because the onset of symptoms can occur over time, in some cases many years after the traumatic experience. In reference to cancer patients, in a specific phase of the oncological disease, symptoms can remain just below the surface, and even if treated, can result in only a partial remission. A recent study undertaken by Duke Cancer Institute is one of the few studies done to date that provides valuable data after a significant follow-up period; the study documents PTSD in non-Hodgkin's lymphoma patients over a median follow-up period of 12.9 years (Smith et al., 2011). In fact, this study demonstrated that PTSD actually intensified over the years. No single therapeutic strategy has been developed specifically for PTSD in this population. The literature on PTSD, however, is rich with examples of many successful psychological therapies, including cognitive behavioral therapy (CBT) as has been documented internationally (Foa, Keane, Friedman, & Cohen, 2008; Rothbaum, Astin, & Marsteller, 2005; Taylor et al., 2003) and eye movement desensitization and reprocessing (EMDR; Shapiro, 1995, 2001). EMDR has been recognized by the International Society for Traumatic Stress Studies (Chemtob, Tolin, van der Kolk, & Pitman, 2000) and, in 2001, was indicated as an effective intervention for PTSD (classification A/B) by the United Kingdom Department of Health (Bisson et al., 2007; Onofri, 2012). It has been used throughout the world since 1990 and has proven to be effective for patients with a wide range of stress and trauma-related diagnoses, including PTSD.

EMDR was effectively used with patients suffering from various diseases such as chronic pain (Grant & Threlfo, 2002; Schneider, Hofmann, Rost, & Shapiro, 2008), fibromyalgia (Friedberg, 2004), and myocardial infarction (Arabia, Manca, & Solomon, 2011).

In particular, a recent pilot study found preliminary evidence that EMDR was more effective than imaginal exposure therapy in the treatment of patients who had survived a life-threatening cardiac event (Arabia et al., 2011). This pilot study is the first structured research project in Italy, using CBT and EMDR in cancer patients, treated at the Regina Elena National Cancer Institute in Rome, Italy.

There are two prevalent assumptions in the psycho-oncology literature regarding the individual's response to his or her illness: the first views the person with cancer as being interconnected to a series of crises that occur over the course of the illness and that involve changes in the environmental ecosystem surrounding the patient (Morasso, 2002). The second focuses more on the individual and sees him or her as vulnerable or as having a psychopathological predisposition (Morasso, 2002). The focus on a "condition of crises" risks a superficial appreciation of psycho-oncological disease, missing both the traumatic impact of the experience as well as the psychological malaise attached to cancer, experienced as "traumatic" in such a way as to lead to a possible diagnosis of PTSD; a disturbance that is at the core of the individual's psychopathology.

Cancer has qualities that are objectively traumatic (Castrogiovanni & Traverso, 2006). The following *DSM-IV-TR* classifications demonstrate the scientific community's recognition of the disease's strong traumatizing impact on the individual.

- It produces a sense of threat to the individual's life, to the quality of life and the psychophysical integrity of the individual and others, including his or her family (Criterion A1 for PTSD, *DSM-IV-TR*; American Psychiatric Association, 2000).
- It creates an oppressive sense of vulnerability, loss of control, and sense of impotence (Criterion A2 for PTSD, *DSM-IV-TR*; American Psychiatric Association, 2000).

- Strong emotional reactions are exhibited with intrusive thoughts, avoidance of daily behaviors, elevated arousal, both in an acute form and chronic form that interfere with normal capacity to function (Criteria B, C, D, and F for PTSD, *DSM-IV-TR*; American Psychiatric Association, 2000).

As cited in the *DSM-IV-TR* (American Psychiatric Association, 2000), under criterion "E" of PTSD, symptoms must be present for at least 1 month, as might be the case following a cancer diagnosis.

Aims

The primary aim of this pilot study was to evaluate the relative efficacy of EMDR treatment compared with CBT in oncology patients with PTSD in the follow-up phase of the disease. We sought to evaluate the relative efficacy of EMDR and CBT on specific measures of PTSD as well as on PTSD-associated symptoms of anxiety, depression, and psychophysiological reactions. The secondary aim of this study was to assess whether EMDR treatment has a different impact on PTSD and PTSD symptoms in two different stages of disease (active treatment of cancer vs. follow-up) to address the question of whether EMDR treatment can produce benefits for cancer patients in the earlier phases of their medical treatment.

Methods

Participants

Thirty-one patients with different types of cancer (breast, colon, uterus, thyroid, melanoma, lung, and stomach cancer) were consecutively recruited from May 2010 to June 2012 from the Departments of Digestive Surgery, Thoracic Surgery, and Medical Oncology (Department B) of the Regina Elena National Cancer Institute in Rome, Italy. The patients were recruited by including all the referrals to the psychiatric clinic made by the Oncology Units who satisfied the clinical diagnosis of PTSD (31 out of 623 patients, 4.97%). All 31 patients agreed to participate in the study.

Inclusion criteria were as follows: (a) *DSM-IV* diagnostic criteria for PTSD and (b) absence of psychopharmacological therapy.

Exclusion criteria were as follows: (a) patients already in psychotherapy and (b) patients with psychopathological disturbances preexisting to the cancer diagnosis.

Patients were placed into one of two studies depending on the stage of the disease: 10 patients were in an active cancer treatment phase and 21 patients were in a follow-up phase. The 21 patients in the follow-up care of the disease were randomly assigned to one of two treatment groups: EMDR or CBT. The patients in the treatment phase ($n = 10$) were assigned to the EMDR treatment only study. As a result, we have three groups of patients: one group of patients in the treatment phase undergoing EMDR only ($n = 10$), one group of patients in the follow-up stage study undergoing EMDR ($n = 11$), and the other group of patients in the follow-up stage undergoing CBT ($n = 10$).

Measures

All of the questionnaires used for the assessment of participants in the study are self-administered except for the Clinical-Administered PTSD Scale (CAPS), which was administered by a blind independent interviewer.

The Clinician-Administered PTSD Scale (CAPS). The CAPS (Blake et al., 1995), in its Current and Lifetime Diagnostic Version (DX version) is a clinical semistructured interview based on the *DSM-IV-TR*, which is the gold standard to assess PTSD (Foa & Tolin, 2000; Weathers, Keane, & Davidson, 2001). The structure corresponds to the *DSM-IV* criteria, with B (intrusion), C (avoidance), and D (hyperarousal) symptoms rated for both frequency and intensity; these two scores are summed to provide severity ratings. Additional questions assess Criteria A, E, and F.

The Impact of Event Scale—Revised (IES-R). The IES-R (Weiss & Marmar, 1997) is a 22-item questionnaire consisting of three subscales (intrusion, avoidance, and hyperarousal) that assesses subjective distress caused by traumatic events. Respondents are asked to identify a specific stressful life event and then indicate how much they were distressed or bothered during the past seven days by each "difficulty" listed.

The Psychophysiological Questionnaire—Brief Version (QPF-R). The QPF-R (Pancheri, Chiari, & Michielin, 1985) was used to evaluate psychophysiological reactions. It includes 30 items on a 0–4 Likert scale that refers to somatic symptoms without demonstrable organic base.

The State-Trait Anxiety Inventory (STAI-Y). The STAI-Y (Spielberger, Gorsuch, & Lushene, 1970) is used to evaluate state anxiety (STAI-1) and trait anxiety (STAI-2). It encompasses 40 questions, 20 for state anxiety and 20 for trait anxiety. Each item is evaluated according to a 0–4 Likert scale.

The Beck Depression Inventory-II (BDI). The BDI (Beck & Steer, 1993) is a 21-item self-report instrument that assesses the presence and severity of symptoms consistent with the criteria of the *DSM-IV*.

Procedure

Assessment. Assessments were conducted at pretreatment and 1 month after the end of the treatment sessions.

Patients arrived at the center by referral from a physician within the hospital or from a general practitioner for the first interview. When the psychologist (LC) noticed clinical cues for a PTSD diagnosis, she invited patients to meet an independent and blind assessor who administered the CAPS in order to investigate the possible presence of PTSD. Assessments included the clinician interview of patient's medical history, which was carried out by the treating clinician during pretreatment and posttreatment. Then, patients with a confirmed diagnosis of PTSD were asked to complete the other psychological self-report questionnaires given to the patients by an independent assessor who was also available for answering questions about compiling the questionnaires. Then they were invited to participate in the research protocol. If they agreed, they discussed and signed the informed consent.

If they were in the follow-up phase of the disease, they were randomized to the EMDR treatment or to the CBT treatment. If they were in the active treatment phase of the disease, they were assigned only to the EMDR treatment.

Treatment. All the participants, regardless of the type of treatment received and of the stage of the disease, received 8 weekly treatment sessions. Following completion of treatment, all patients with symptoms still present after 1 month were advised to continue psychotherapy with the treatment provider despite the conclusion of the study.

EMDR. The EMDR standard protocol (Shapiro, 2001) of eight stages was administered, with the goal of achieving the following:

1. Stabilization by psychoeducation (on emotional adaptation to cancer, PTSD features, and EMDR treatment) and "resource installation" (Shapiro, 2001) including the "safe place" (Shapiro, 2001) technique in order to stabilize the clients and prepare them for treatment.
2. Identification and reprocessing of disturbing memories related to the oncological disease in all three prongs of the EMDR protocol: present and past events, identified through history taking and float back (e.g., diagnosis and relapse communications, treatment complications, and side effects) and in future templates for handling worries and fears (e.g., worsening of physical functioning, fear about the future). All eight phases of EMDR were followed (Shapiro, 2001) and the treatment focused only on the oncological disease and did not address any previous traumatic events.
3. Integration: reduction of distress and increased resources were integrated in the daily life in order to increase the patients' adjustment to being a cancer survivor.

All EMDR treatments were provided by a psychotherapist with 10 years of clinical experience in using EMDR.

CBT. The following techniques or therapeutic approaches were used according to the PTSD symptoms that were most frequently reported by each patient and according to the phase of psychotherapy. The goals to be achieved were as follows:

1. To stabilize the initial symptoms of the patient. For hyperarousal: psychoeducation, Rational Emotive Imagery (REI; Ellis, 1994), a technique of guided visualization, gradual and/or prolonged exposure to stressor in vivo or by visual imagination, and progressive relaxation techniques with instruction regarding diaphragmatic breathing for treatment of insomnia. For hypoarousal: psychoeducation, instructions to homework defining and recognizing and activating somatic resources (e.g., a structured physical activity program; Beck, Rush, Shaw, & Emery, 1979).
2. For flashback and intrusive thoughts: shifting of attention techniques.
3. For avoidance or escape behaviors: systematic desensitizing and gradual exposure by visual imagination or in vivo exposure (people or things).
4. For cognitive restructuring of negative cognitive thoughts related to the traumatic experience: forms A, B, C, D, E of Rational Emotive Behavior Therapy (REBT; Ellis, 1994) and socratic dialogue.
5. For the monitoring of psychophysiological fluctuation and the maintenance of new behavioral patterns: homework and diary entries.
6. For therapeutic compliance: monitoring techniques and redefinition of therapeutic alliances.

All the CBT treatments were provided by the same psychotherapist who provided the EMDR treatment and with 12 years of clinical experience in using CBT.

Statistical Analyses

Data were processed and analyzed using the Statistical Package for Social Sciences (SPSS) version 17.0 (Chicago, IL, USA).

Baseline group differences were assessed using one-way analysis of variance (ANOVA) to compare the three groups for continuous measures and Fisher's Exact Test for categorical measures.

Fisher's Exact Test was also used to evaluate the association between the treatment group (EMDR vs. CBT) and the PTSD diagnosis at time T1.

Generalized linear model (GLM) repeated measures multivariate ANOVA (RM-MANOVA) was used to analyze the main preintervention and postintervention effects and interactions both between and within EMDR and CBT groups in the follow-up phase of disease. Pairwise comparison between groups were made by simple contrast and are reported as means difference with the Sidak correction 95% confidence interval (95% CI) for multiple comparisons.

Simple logistic regression analyses were computed by taking the presence of PTSD after the treatment as a dichotomous dependent variable, and by considering singularly as independent variables age, gender, treatment type (EMDR vs. CBT), and the clinical variables scores at baseline (QPF-R, STAI-1, STAI-2, BDI-II, IES-R Total, CAPS Criterion B, C, and D) for patients who were in the cancer follow-up phase.

As a secondary outcome, RM-MANOVA was used to analyze the main preintervention and postintervention effects and interactions both between and within the different cancer treatment phase groups (active treatment vs. follow-up) in order to evaluate whether EMDR treatment has a different impact depending on the stage of disease in which it is carried out.

A $p < .05$ was considered statistically significant throughout all of the analyses.

Results

There were 31 patients enrolled in the study: 10 of them were in an active cancer treatment phase, all treated with EMDR and the other 21 patients were in a follow-up phase, of which 11 patients were randomized to the EMDR treatment and 10 patients were randomized to the CBT treatment. We did not have any patient dropouts from the treatment. Results showed that the different types of cancer (breast, colon, uterus, thyroid, melanoma, lung, and stomach cancer) were balanced in the three groups.

Comparison Between EMDR and CBT Treatments in the Follow-up Phase of the Cancer Disease

There were 21 patients in a follow-up phase, of which 11 were randomized to the EMDR treatment (all females) and 10 patients were randomized to the CBT treatment (8 females and 2 males). The mean age of the patients was similar in both groups (52.70, $SD = 8.68$ for CBT and 50.82, $SD = 7.64$ for EMDR). There were no differences in clinical variables between the two groups at baseline (see Table 1).

TABLE 1. Clinical Data of Participants in the Follow-up Phase of the Cancer Disease

	Pretreatment		Posttreatment		
	CBT ($N = 10$)	EMDR ($N = 11$)	CBT ($N = 10$)	EMDR ($N = 11$)	Sig.
QPF-R	61.60 (15.71)	57.45 (13.55)	54.50 (13.24)	48.45 (12.18)	*
STAI-1	45.40 (4.95)	44.73 (5.42)	43.90 (5.55)	40.00 (3.41)	*
STAI-2	46.50 (5.34)	45.82 (6.15)	43.80 (4.10)	43.55 (5.70)	
BDI-II	26.30 (8.73)	25.73 (10.89)	20.10 (9.24)	14.45 (9.30)	*
IES-R total	54.70 (10.62)	50.91 (9.45)	46.60 (14.13)	20.55 (17.85)	*, §
CAPS Criterion B	20.90 (7.71)	19.55 (8.15)	15.30 (5.87)	6.18 (6.95)	*, §
CAPS Criterion C	30.30 (8.13)	28.36 (12.19)	20.50 (7.59)	10.45 (7.54)	*
CAPS Criterion D	27.60 (6.22)	24.00 (8.15)	16.20 (9.16)	9.91 (5.61)	*

Note. Data are mean (*SD*). QPF-R = Psychophysiological Questionnaire—Brief Version; STAI-1 = State-Trait Anxiety Inventory—state anxiety; STAI-2 = State-Trait Anxiety Inventory—trait anxiety; BDI-II = Beck Depression Inventory-II; IES-R total = Impact of Event Scale—Revised total score; CAPS Criterion B = Clinician-Administered PTSD Scale—intrusion symptoms; CAPS Criterion C = Clinician-Administered PTSD Scale—avoidance symptoms; CAPS Criterion D = Clinician-Administered PTSD Scale—hyperarousal symptoms.

* significant pre–post effect, independent of the type of treatment (CBT or EMDR).

§ significant group (CBT vs. EMDR)-by-time (pretreatment vs. posttreatment) interaction effects.

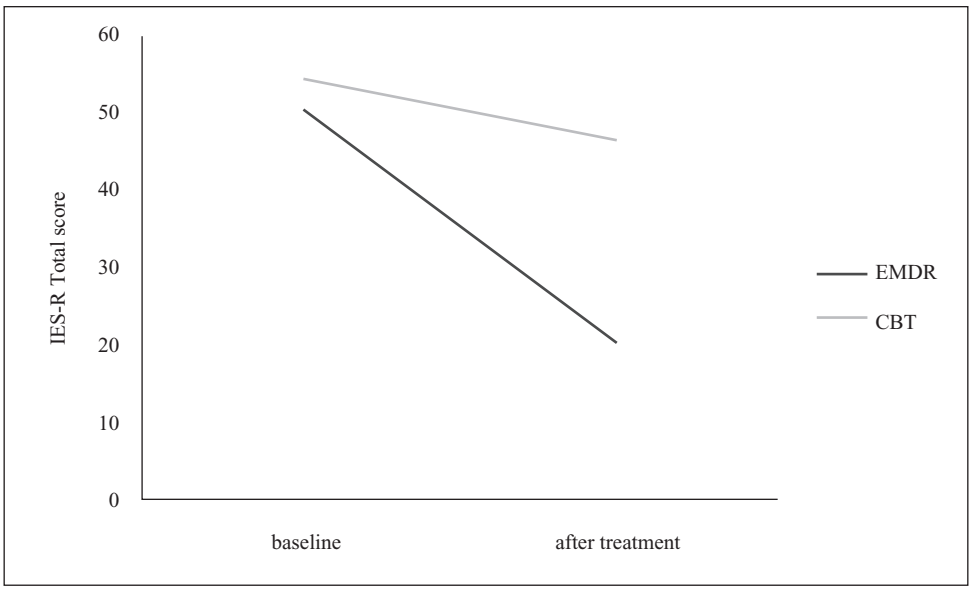

FIGURE 1. Interaction between time and treatment for IES-R total score.

We evaluated whether the different psychotherapy treatments (EMDR or CBT) administered to the patients during their cancer follow-up phase had a different impact on the psychological variables of interests. A repeated measures MANOVA was performed on the preintervention and postintervention clinical scores (QPF-R, STAI-1, STAI-2, BDI-II, IES-R Total, CAPS Criterion B, C, and D) comparing group and time effects and interactions between group and time.

The RM-MANOVA yielded a significant pre–post main effect ($F[8, 12] = 13.547$, $p < .001$; $\eta_p^2 = .900$) and a significant interaction between the pre–post measures and the treatment condition ($F[8, 12] = 4.855$, $p = .007$; $\eta_p^2 = .764$).

Significant time effects were found across both groups on all variables except for STAI-2 (trait anxiety), indicating that the mean participant scores improved from time 0 (preintervention) to time 1 (postintervention; see Table 1).

Group-by-time interaction effects were found for the IES-R total scores ($F[1, 19] = 14.041$, $p < .001$; see Figure 1) and for the CAPS Criterion B scores ($F[1, 19] = 7.584$, $p = .013$; see Table 1 and Figure 2). No group-by-time interactions were found for the

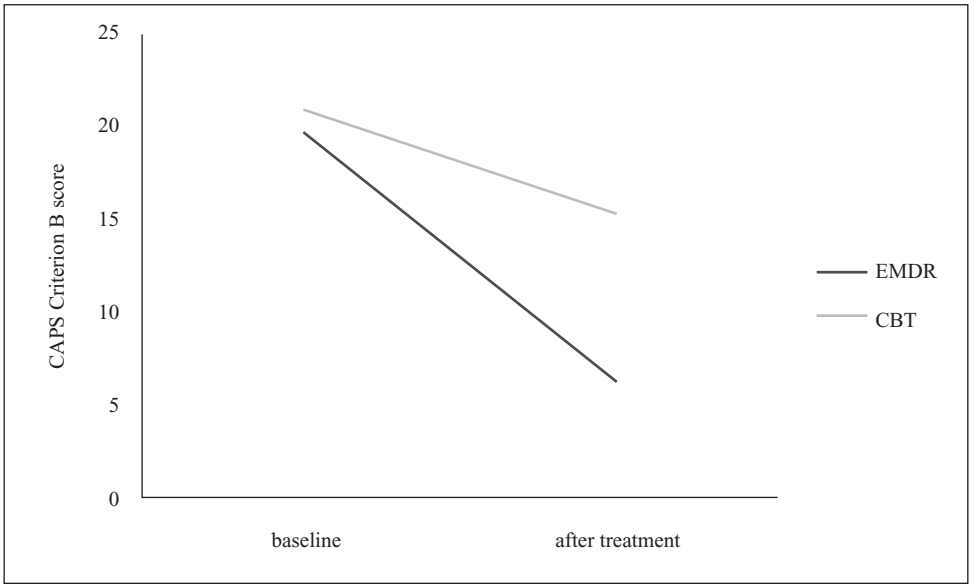

FIGURE 2. Interaction between time and treatment for CAPS Criterion B score.

QPF-R, STAI-1, BDI-II, IES-R, CAPS-C, and CAPS-D, indicating that changes on these measures were similar for both treatment groups.

Planned post hoc analyses of simple effects of pre–post were conducted for the IES-R by GLM pairwise comparisons using the Sidak adjustment for multiple comparisons (see Figure 1). Results indicated that the IES-R total score at posttreatment ($M = 20.56$, $SE = 4.880$) was significantly lower than the pretreatment score for the EMDR group ($M = 50.91$, $SE = 3.020$), mean difference $= -30.364$ (95% CI [-38.945, -21.782]), $p < .001$. There was no difference between the posttreatment ($M = 46.60$, $SE = 5.12$) and pretreatment scores ($M = 17.73$, $SE = 1.497$) for participants who had received CBT treatment, mean difference $= -8.100$ (95% CI [-17.100, 0.900]), $p = .075$. This indicates that the improvements over time were significantly greater in the EMDR treatment group than in the CBT group (see Figure 1).

The analysis of simple effects reveals also a significant difference between EMDR and CBT posttreatment IES-R scores: the IES-R scores of the EMDR group ($M = 20.55$, $SE = 4.88$) are significantly lower than the scores of the CBT group ($M = 46.60$, $SE = 5.12$), mean difference $= -26.055$ (95% CI [-40.865, -11.244]), $p = .002$.

Planned post hoc analyses of simple effects were also conducted for the CAPS intrusion subscale (see Figure 2). The analysis of simple effects indicated that the Criterion B score at posttreatment ($M = 6.18$, $SE = 1.95$) was significantly lower than the pretreatment score for the EMDR group ($M = 19.56$, $SE = 2.40$), mean difference $= -13.364$ (95% CI [-17.435, -9.292]), $p < .001$. There was also a difference between the posttreatment ($M = 15.30$, $SE = 2.04$) and pretreatment scores ($M = 20.90$, $SE = 2.51$) for participants who had received CBT treatment, mean difference $= -5.600$ (95% CI [-9.870, -1.330]), $p = .013$.

Although both groups had an improvement in intrusive symptoms, the comparison between CAPS Criterion B posttreatment scores showed that the EMDR group scored significantly lower ($M = 6.18$, $SE = 1.95$) as compared to the CBT group ($M = 15.30$, $SE = 5.04$), mean difference $= -9.118$ (95% CI [-15.029, -3.207]), $p = .004$.

Furthermore, a binary logistic regression analysis was performed in order to detect the possible influence of the treatment type (EMDR vs. CBT) and the influence of the clinical variables to the presence of PTSD after the treatment sessions. It was showed that the presence of PTSD after the treatment was significantly associated only with the treatment type (EMDR vs. CBT; $R^2 = .71$; $OR = 0.011$, CI 95% [0.001, -0.205]; $p = .002$). The contribution of the other demographical and clinical variables did not reach statistical significance. The absence of PTSD after the treatment was associated with a higher likelihood of having undergone an EMDR psychotherapy treatment. Specifically, 10 out of 11 patients treated with EMDR did not have PTSD after the treatment, whereas 9 of 10 patients treated with CBT maintained a PTSD diagnosis at the postintervention evaluation (Fisher's Exact Test; $p < .001$, $\eta_p^2 = .809$).

Efficacy of EMDR Treatment in the Two Different Stages of Disease (Active Treatment of Cancer vs. Follow-up)

As a secondary aim, we evaluated also whether EMDR treatment has a different impact depending on whether patients were in active treatment for their cancer or whether they were in follow-up care.

The 21 patients were divided as follows: 10 of them were in an active cancer treatment phase (9 females and 1 male), whereas the other 11 were in a follow-up phase (all females). The mean age of the patients was similar in both groups (53.40, $SD = 8.59$ for the patients in the active treatment phase and 50.82, $SD = 7.64$ for the patients in the follow-up phase). There were no differences in clinical variables between the two groups at baseline (see Table 2).

The RM-MANOVA yielded a significant pre–post main effect ($F[8, 12] = 22.900$, $p < .001$; $\eta_p^2 = .939$), whereas no significant interaction was found between the pre–post measures and the different cancer treatment phase (active treatment vs. follow-up) condition ($F[8, 12] = .885$, $p = .555$; $\eta_p^2 = .371$). Significant time effects were found across both groups on all variables except for STAI-2 (trait anxiety), indicating that regardless of the stage of disease group, scores improved from Time 0 (preintervention) to Time 1 (postintervention). Therefore, the EMDR treatment can be considered effective regardless of the stage of disease.

Almost all the patients (20 out of 21, 95.2%) did not have PTSD after the EMDR treatment.

Discussion

Efficacy of EMDR Treatment Compared With CBT in the Follow-up Phase of the Cancer Disease

The most significant result emerging from this study is that most patients in the cancer follow-up phase treated with EMDR were able to overcome their

TABLE 2. Clinical Variables of the Groups Treated With EMDR at Pre and Posttreatment

	Pretreatment		Posttreatment		
	Active Cancer Treatment ($N = 10$)	Follow-up Cancer Treatment ($N = 11$)	Active Cancer Treatment ($N = 10$)	Follow-up Cancer Treatment ($N = 11$)	Sig.
QPF-R	58.50 (9.70)	57.45 (13.55)	48.30 (9.65)	48.45 (12.18)	*
STAI-1	43.70 (3.37)	44.73 (5.42)	42.70 (3.50)	40.00 (3.41)	*
STAI-2	46.10 (5.65)	45.82 (6.15)	43.30 (4.55)	43.55 (5.70)	
BDI-II	27.00 (7.70)	25.73 (10.89)	15.50 (8.33)	14.45 (9.30)	*
IES-R total	48.50 (14.74)	50.91 (9.45)	28.60 (9.38)	20.55 (17.85)	*
CAPS Criterion B	20.70 (6.82)	19.55 (8.15)	6.20 (3.08)	6.18 (6.95)	*
CAPS Criterion C	22.50 (4.09)	28.36 (12.19)	7.40 (3.89)	10.45 (7.54)	*
CAPS Criterion D	19.90 (9.25)	24.00 (8.15)	6.60 (4.22)	9.91 (5.61)	*

Note. Data are mean (*SD*) or *N* (%). QPF-R = Psychophysiological Questionnaire—Brief Version; STAI-1 = State-Trait Anxiety Inventory—state anxiety; STAI-2 = State-Trait Anxiety Inventory—trait anxiety; BDI-II = Beck Depression Inventory-II; IES-R total = Impact of Event Scale—Revised total score; CAPS Criterion B = Clinician-Administered PTSD Scale—intrusion symptoms; CAPS Criterion C = Clinician-Administered PTSD Scale—avoidance symptoms; CAPS Criterion D = Clinician-Administered PTSD Scale—hyperarousal symptoms.

* significant pre–post effect, independent of the phase of the disease (active treatment vs. follow-up)

PTSD diagnosis after eight therapy sessions; on the contrary, almost all patients in the same stage of disease but treated with CBT still had a diagnosis of PTSD 1 month after the end of the psychotherapeutic treatment.

EMDR treatment significantly reduced symptoms of posttraumatic stress measured with the IES-R total score whereas CBT did not have this effect. The intrusive symptoms as measured by Criterion B of the CAPS reduced significantly both for patients treated with EMDR and with CBT, although in the group treated with EMDR, there is a greater decrease. The group of patients treated with EMDR had both lower IES-R and CAPS intrusive symptom subscale scores after the psychological treatment compared with the group of patients treated with CBT.

Anxiety, depression, and psychophysiological reactions improved in both groups, showing that both types of psychotherapy are effective on these symptoms in a limited number of sessions.

Efficacy of EMDR Treatment in the Two Different Stages of Disease (Active Treatment of Cancer vs. Follow-up)

EMDR treatment was effective both in the phase of active cancer treatment and during the follow-up of the disease. All patients showed a clinical improvement regarding PTSD, anxiety, depression, and psychophysiological reactions.

Limitations and Conclusions

The study also has several limitations. The number of included patients treated with CBT or EMDR is not large.

Another limitation is that there were no fidelity checks on the treatment sessions. Finally, all patients in each group received their treatment from only one therapist giving rise to the possibility that the differences could be because of differences in clinical skills with nonspecific treatment variables such as the development of therapeutic alliance or other factors.

Future research could be designed to address some of the research questions not fully answered in this study and correcting the limitations of this study, for example, should include a greater number of patients treated and should involve more therapists in each treatment group. Future studies should also include treatment fidelity checks. Finally, they should provide for a follow-up of at least 6 months after the end of treatment to show the stability of the treatment effects across the different conditions.

Although our results can only be considered preliminary, this pilot study suggests that in cancer patients undergoing follow-up care, EMDR had an advantage over CBT in eliminating the diagnosis of PTSD. EMDR was significantly more effective than CBT in reducing scores on the IES-R and the CAPS intrusive symptom subscale, whereas both psychotherapies appear to be equally effective on trait anxiety, depression, and psychophysiological reactions.

Our study suggests that EMDR could be a viable therapy for cancer patients with a PTSD diagnosis both in an active treatment phase and in follow-up.

These positive results in both treatment conditions show that it is of crucial importance that cancer patients have access to psychological support and to specific treatments that have been shown to be effective, to enable patients to manage the many difficulties of adjustment to being a cancer survivor, and to help them begin a positive process of psychological resilience.

Our data can contribute to a greater knowledge among medical practitioners in relation to psychological symptoms that may result from cancer disease, which could be precursors to a PTSD diagnosis. Having this information can lead to a prompt referral for psychotherapy.

As shown in this study, specific psychotherapy with EMDR and with CBT can be effective even with a limited number of sessions. Future studies with a larger sample size are needed to confirm and extend the results of this preliminary investigation.

To conclude, our study suggests that both EMDR and CBT therapies are effective in treating many psychological symptoms in oncological patients, but our results suggest that EMDR could be a more effective therapy for cancer patients with a PTSD diagnosis, in particular for intrusive symptoms, both in an active treatment and in a follow-up stage of the disease.

References

Andersen, B. L., Kiecolt-Glaser, J. K., & Glaser, R. (1994). A biobehavioral model of cancer stress and disease course. *The American Psychologist*, *49*, 389–404.

American Psychiatric Association. (1987). *Diagnostic and statistical manual of mental disorders* (3rd ed., Rev. ed.). Washington, DC: Author.

American Psychiatric Association. (2000). *Diagnostic and statistical manual of mental disorders* (4th ed., text rev.). Washington, DC: Author.

Arabia, E., Manca, M. L., & Solomon, R. M. (2011). EMDR for survivors of life-threatening cardiac events: Results of a pilot study. *Journal of EMDR Practice and Research*, *5*, 2–13.

Beck, A. T., Rush, A. J., Shaw, B. F., & Emery, G. (1979). *Cognitive therapy of depression*. New York, NY: Guilford Press.

Beck, A. T., & Steer, R. A. (1993). *Manual for the Revised Beck Depression Inventory*. San Antonio, TX: Psychological Corporation.

Bisson, J. I., Ehlers, A., Matthews, R., Pilling, S., Richards, D., & Turner, S. (2007). Psychological treatments for chronic post-traumatic stress disorder. Systematic review and meta-analysis. *The British Journal of Psychiatry: The Journal of Mental Science*, *190*, 97–104.

Blake, D. D., Weathers, F. W., Nagy, L. M., Kaloupek, D. G., Gusman, F. D., Charney, D. S., & Keane, T. M. (1995). The development of a Clinician-Administered PTSD Scale. *Journal of Traumatic Stress*, *8*, 75–90.

Bruce, M. (2006). A systematic and conceptual review of posttraumatic stress in childhood cancer survivors and their parents. *Clinical Psychology Review*, *26*, 233–256.

Butler, L. D., Koopman, C., Classen, C., & Spiegel, D. (1999). Traumatic stress, life events, and emotional support in women with metastatic breast cancer: Cancer-related traumatic stress symptoms associated with past and current stressors. *Health Psychology*, *18*, 555–560.

Castrogiovanni, P., & Traverso, S. (2006). Per una definizione della traumaticità dell'evento. *Nòos*, *44*, 123–149.

Chemtob, C. M., Tolin, D. F., van der Kolk, B. A., & Pitman, R. K. (2000). Eye movement desensitization and reprocessing. In E. B. Foa, T. M. Keane, & M. J. Friedman (Eds.), *Effective treatments for PTSD: Practice guidelines from the International Society for Traumatic Stress Studies* (pp. 139–154). New York, NY: Guilford Press.

Cordova, M. J., Studts, J. L., Hann, D. M., Jacobsen, P. B., & Andrykowski, M. A. (2000). Symptom structure of PTSD following breast cancer. *Journal of Traumatic Stress*, *13*, 301–319.

DuHamel, K. N., Ostrof, J., Ashman, T., Winkel, G., Mundy, E. A., Keane, T. M., . . . Redd, W. (2004). Construct validity of the posttraumatic stress disorder checklist in cancer survivors: Analyses based on two samples. *Psychological Assessment*, *16*, 255–266.

Ellis, A. (1994). *Reason and emotion in psychotherapy, revised and updated*. Secaucus, NJ: Carol Publishing Group.

Foa, B. E., Keane, T. M., Friedman, M. J., & Cohen, J. A. (2008). *Effective treatments for PTSD: Practice guidelines from the International Society for Traumatic Stress Studies* (2nd ed.). New York, NY: Guilford Press.

Foa, E. B., & Tolin, D. F. (2000). Comparison of the PTSD symptom scale-interview version and the Clinician-Administered PTSD Scale. *Journal of Traumatic Stress*, *13*, 181–191.

Friedberg, F. (2004). Eye movement desensitization in fibromyalgia: A pilot study. *Complementary Therapies in Nursing and Midwifery*, *10*, 245–249.

Grant, M., & Threlfo, C. (2002). EMDR in the treatment of chronic pain. *Journal of Clinical Psychology*, *58*, 1505–1520.

Jackson, J. C., Hart, R. P., Gordon, S. M., Hopkins, R. O., Girard, T. D., & Ely, E. W. (2007). Post-traumatic stress disorder and post-traumatic stress symptoms following critical illness in medical intensive care unit patients: Assessing the magnitude of the problem. *Critical Care*, *11*, R27.

Mehnert, A., & Koch, U. (2007). Prevalence of acute and post-traumatic stress disorder and comorbid mental disorders in breast cancer patients during primary cancer care: A prospective study. *Psycho-oncology*, *16*, 181–188.

Morasso, G. (2002). Nuove prospettive in psico-oncologia. In *Formazione, psicologia, psicoterapia, psichiatria* (pp. 2). Roma, Italy: Grin SRL.

National Cancer Institute, at the United States National Institutes of Health. (2012a). *Post-traumatic Stress Disorder (PDQ®) Overview* [health professional version]. Retrieved from http://www.cancer.gov/cancertopics/pdq/supportivecare/post-traumatic-stress/HealthProfessional

National Cancer Institute, at the United States National Institutes of Health. (2012b). *Post-traumatic Stress Disorder (PDQ®) Overview* [patient version]. Retrieved from http://www.cancer.gov/cancertopics/pdq/supportivecare/post-traumatic-stress/Patient/page2Duke

Onofri, A. (2012). EMDR in psichiatria. Introduzione al supplemento. *Rivista di Psichiatria*, *47*(Suppl. 2), 1–3.

Pancheri, P., Chiari, G., & Michielin, P. (1985). *Questionario Psicofisiologico, Forma ridotta*. Florence, Italy: Organizzazioni Speciali.

Rothbaum, B. O., Astin, M. C., & Marsteller, F. (2005). Prolonged exposure versus eye movement desensitization and reprocessing (EMDR) for PTSD rape victims. *Journal of Traumatic Stress*, *18*, 607–616.

Schneider, J., Hofmann, A., Rost, C., & Shapiro, F. (2008). EMDR in the treatment of chronic phantom limb pain. *Pain Medicine*, *9*, 76–82.

Shapiro, F. (1995). *Eye movement desensitization and reprocessing: Basic principles, protocols and procedures*. New York, NY: Guilford Press.

Shapiro, F. (2001). *Eye movement desensitization and reprocessing: Basic principles, protocols and procedures* (2nd ed.). New York, NY: Guildford Press.

Smith, S. K., Zimmerman, S., Williams, C. S., Benecha, H., Abernethy, A. P., Mayer, D. K., . . . Ganz, P. A. (2011). Post-traumatic stress symptoms in long-term non-Hodgkin's lymphoma survivors: Does time heal? *Journal of Clinical Oncology*, *29*, 4526–4533.

Spielberger, C. D., Gorsuch, R. L., & Lushene, R. E. (1970). *Manual for the State-Trait Anxiety Inventory*. Palo Alto, CA: Consulting Psychologists Press.

Taylor, S., Thordarson, D. S., Maxfield, L., Fedoroff, I. C., Lovell, K., & Ogrodniczuk, J. S. (2003). Comparative efficacy, speed, and adverse effects of three PTSD treatments: Exposure therapy, EMDR, and relaxation training. *Journal of Consulting and Clinical Psychology*, *71*, 330–338.

Weathers, F. W., Keane, T. M., & Davidson, J. R. (2001). Clinician-Administered PTSD Scale: A review of the first ten years of research. *Depression and Anxiety*, *13*, 132–156.

Weiss, D. S., & Marmar, C. R. (1997). The Impact of Event Scale—Revised. In J. P. Wilson & T. M. Keane (Eds.), *Assessing psychological trauma and PTSD* (pp. 399–411). New York, NY: Guilford Press.

Acknowledgments. The current study was funded by the Scientific Director of the National Cancer Institute (Istituto Regina Elena–Istituto San Gallicano [IRE–ISG]) in Rome from 2009–2011.

We deeply thank the Department of Digestive Surgery, Thoracic Surgery, Department B of Medical Oncology, and UOSD of Area di Supporto alla Persona in IRE–ISG (Rome) for letting us work with patients and for informing them about the study.

We thank Dr. Diana Giannarelli (IRE–ISG, Roma) for processing collected data and elaborating statistical analysis.

The authors wish to thank Lesley Pritikin for her revision of the text.

Correspondence regarding this article should be directed to Liuva Capezzani, UOSD Psichiatria–Area di Supporto alla Persona, IRE–ISG (Istituto Fisioterapici Ospitalieri [IFO]), Via Elio Chianesi, 53, 00144 Roma—Italy. E-mail: Liuva@libero.it or Capezzani@ifo.it