ORIGINAL ARTICLE

Malignant Melanoma

Effects of a Brief, Structured Psychiatric Intervention on Survival and Recurrence at 10-Year Follow-up

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Background: The influence of psychiatric intervention on cancer outcome remains a topic of considerable debate. We previously reported the survival benefits for 68 patients with malignant melanoma 5 to 6 years following their participation in a structured psychiatric group intervention. In this article, we report the effects of the intervention on disease outcome in these same patients at the 10-year follow-up.

Methods: In this univariate analysis, the survival and recurrence distributions for the intervention and control groups were estimated using the Kaplan-Meier method, and were tested for equality by the log-rank test. The multivariate analysis used the Cox proportional hazards regression model with the following prognostic factors: age, sex, Breslow depth, tumor site, and treatment status (ie, intervention group vs control group).

Results: When analyzed as single covariates, differences between the intervention and control groups were not significant for outcome at the 10-year follow-up. However, being male and having a greater Breslow depth were predictive of poorer outcome. Analysis of multiple covariates also revealed that sex and Breslow depth were significant for recurrence and survival. In addition, participation in the intervention was significant for survival. After adjusting for sex and Breslow depth, participation in the intervention remained significant for survival.

Conclusions: These findings suggest that the survival benefit of the intervention has weakened since the 5- to 6-year follow-up; however, it has not entirely disappeared. At the 10-year follow-up, participation in the intervention remained predictive of survival when statistically controlling for the effects of other known prognostic indicators. Despite the potential health benefits, we do not propose that psychiatric intervention be used in lieu of standard medical care, but as one of its integral components.

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THROUGHOUT THE last 20 years, many investigators have attempted to establish a direct link between psychosocial group intervention and physical health outcomes in patients with cancer. Although the psychological benefits from such interventions are well-documented,[1] there is evidence both for and against the hypothesis that these interventions can alter the course of disease. Of primary interest is the answer to the question, "Can participation in such a group extend patient survival time?" Results from earlier studies on this topic have been widely discounted on the basis of flawed research designs. Of the more recent investigations, 10 have demonstrated scientifically sound methodology.[2] In 5 of these studies, investigators were unable to detect a relationship between psychological intervention and survival time.[3-8] However, 2 of those 5 studies were analyses of the same patient sample at different time points.[4,5] In contrast, the results of 5 investigations lend support to the hypothesis that participation in a psychological intervention can improve survival rates in patients with cancer.[9-13] The discrepancy in findings among these investigations has produced lively debate in the field.[14]

We have previously reported the results of an investigation, 1 of the 5, which demonstrated a positive relationship between a brief psychosocial intervention and cancer outcome.[10] Participants in the randomized controlled experimental study were initially recruited to evaluate the effects of the group intervention on health and psychological outcomes.[15,16] All patients had been recently diagnosed with early-stage malignant melanoma. At the 6-month follow-up, those patients who participated in the intervention experienced a reduction in psychological distress, an increase in longer-term effective coping, and an altered natural killer lym-

phoid cell system relative to those patients in a control group. Subsequently, we reported 5- to 6-year survival and recurrence rates for the 68 patients with stage I malignant melanoma who were involved in the original study.[10] Those patients assigned to receive the intervention (n=34) showed a trend toward a longer recurrence-free state ($P=.09$) and a statistically significant lower death rate ($P=.03$) relative to those assigned to the control group (n=34). In addition to participation in the intervention, sex, Breslow depth, and affective distress and coping at study entry were predictive of recurrence and survival. This article reports the effects of the intervention on recurrence and survival in these same 68 patients with stage I malignant melanoma, at approximately 10 years following the intervention.

METHODS

SUBJECTS

Details regarding the participants are reported in the original study and in the 5- to 6-year follow-up studies.[10,15,16] As cancer outcome varies greatly by stage, stage II patients were excluded from the survival analyses, reducing the number of original patients (N=80) in each arm of the study by 6. As a result, 68 patients with stage I disease were available for both the 5- to 6-year survival analysis, and for this new 10-year follow-up.

TREATMENT

Medical treatment for all stage I patients was limited to surgical excision of the primary melanoma site. Patients were recruited postsurgically and were randomly assigned to either a control condition or an experimental condition. The patients in the control group did not receive the psychological or educational intervention and had no contact with the intervention group leaders. Both the intervention and control group participants had the same follow-up schedule.

The patients in the intervention group participated in structured group meetings.[15,17] Groups of 7 to 10 patients met for 1½ hours weekly for 6 weeks. The intervention consisted of 4 components: (1) health education (eg, melanoma, nutrition, exercise, sun exposure); (2) stress management (eg, general stress information, personal stress awareness, relaxation techniques); (3) enhancement of coping skills (eg, problem solving, general coping alternatives, theoretical and personal application of solutions); and (4) psychological support (from group members and staff).[15,17] Attendance in the groups was almost 100%. No patient missed more than 1 session.

STATISTICAL ANALYSIS

Analyses involved 2 main outcome variables: (1) the time from surgery to recurrence and (2) the time from surgery to death. Covariates in the analysis included age, sex, Breslow depth, and tumor site. We first tested the effect of the intervention on recurrence and survival. In the univariate analysis, the survival and recurrence distributions for each study group were estimated using the Kaplan-Meier method, and they were tested for equality by the log-rank test.[18,19] Second, a multivariate analysis with the Cox porportional hazards regression model[19,20] was conducted with age, sex, Breslow depth, tumor site, and treatment status (ie, intervention vs control group) as prognostic factors.

RESULTS

DEMOGRAPHICS

As reported earlier,[10] the experimental (16 males, 18 females) and control (17 males and 17 females) groups did not differ significantly with respect to sex ($P=.81$). In addition, Breslow depth ($P=.98$) and tumor site ($P=.35$) were not significantly different between experimental and control group members. The groups did differ significantly with respect to age, however, as those in the experimental group (mean age=45.7 years) were significantly older than those in the control group (mean age=39.3 years) ($P=.02$).

RECURRENCE AND SURVIVAL

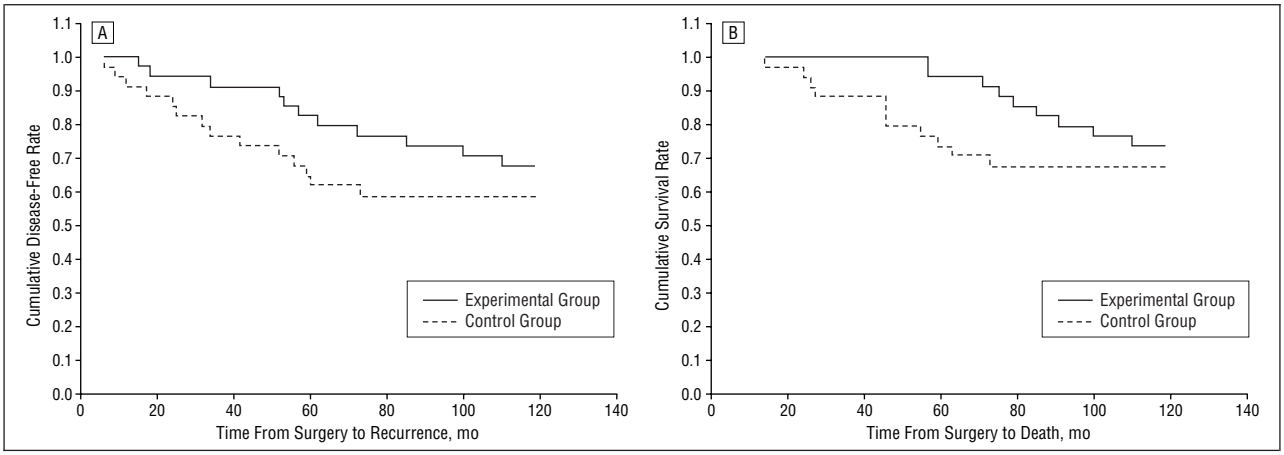
By the 10-year follow-up, 11 of the original 34 patients in the control group had recurrences and subsequently died, and 3 others had recurrences. In the experimental group, 9 of the original 34 patients had recurrences and later died, and 2 additional participants had recurrences. (Of the 20 total deaths, 2 were non–melanoma-related. One control group patient died in a motor vehicle accident, and 1 intervention group patient suffered a heart attack. The recurrence and survival data gathered until the times of death for both patients, however, are included in the present analyses.) Survival function estimates for each subject group are shown in the **Figure**. At 10-year follow-up, a log-rank test revealed that the difference between the intervention and control groups was not significant for either outcome (recurrence, $P=.31$; survival, $P=.39$).

OUTCOMES USING SINGLE COVARIATES

The significant risk factors for recurrence and survival in malignant melanoma are age, sex, initial Breslow depth, and site of the original tumor.[21] Specifically, being older, being male, having a Breslow depth of greater than 1.5 mm, and having the primary tumor on the trunk of the body all indicate poorer prognosis. These risk factors were used as single covariates in the Cox regression model. Age and site of original tumor were not predictive of outcome. However, sex (ie, being male) was significant for both greater recurrence ($P=.005$) and poorer survival ($P=.001$). Likewise, greater Breslow depth was significant for poorer outcome (recurrence, $P<.001$; survival, $P<.001$).

OUTCOMES FOLLOWING TREATMENT USING MULTIPLE COVARIATES

All of the covariates (ie, age, sex, Breslow depth, and site of tumor) were entered into the Cox model, as was the treatment condition (ie, intervention vs control). Using stepwise entry of variables, Breslow depth was found to be significant for recurrence ($P=.001$) and survival ($P=.001$). Sex was also predictive of outcome (recurrence, $P=.014$; survival, $P=.002$). Finally, while participation in the intervention appeared to have no effect on recurrence, it was significant for survival ($P=.05$) (**Table**).



Recurrence (A) and death (B) data for patients with malignant melanomas.

Cox Regression Model With Multiple Covariates*

	Recurrence			Survival		
Variable	Estimated β	Estimated SE	*P* Value	Estimated β	Estimated SE	*P* Value
Breslow depth	.551	0.164	.001	.852	0.201	<.001
Sex	1.121	0.456	.01	1.955	0.639	.002
Treatment (group intervention)	. . .	. . .	NS	−1.055	0.534	.05

*Ellipses indicate not applicable, and in the case of *P* value, not significant.

Those patients who participated in the intervention survived longer than those in the control group when the effects of other known prognostic indicators were statistically controlled.

COMMENT

Our original study demonstrated that a brief structured psychoeducational group intervention could enhance coping and decrease distress for some patients with early-stage malignant melanoma.[15] It is important to note that the original study was not designed to assess the effects of the intervention on recurrence and survival rates. This fact, along with the small number of patients enrolled, severely limits the validity of any generalizations based on this study. However, the results of the 10-year survival analyses are important to the ongoing debate regarding the influence of psychosocial interventions on cancer outcomes.

INTERVENTION EFFECTS ON RECURRENCE AND SURVIVAL

Overall, the present analyses suggest that the survival benefits of participation in the psychoeducational intervention diminish with time. As stated previously, at the 5- to 6-year follow-up, those in the intervention group had a significantly better survival rate, and there was a definite trend toward a lower recurrence rate. At the 10-year follow-up, however, the survival benefit of the intervention, in terms of total numbers, was no longer significant, and the trend toward fewer recurrences was no longer apparent. This change is evident in the number of events (ie, recurrences and deaths) that occurred in both conditions during the 4 to 5 years following the original survival analyses. Specifically, while the experimental group had 4 additional recurrences and 6 more deaths during this period, the control group experienced only 1 more recurrence and 1 additional death among its members.

RELATIONSHIP OF INDIVIDUAL RISK FACTORS TO OUTCOME

Lower survival rates and shorter recurrence-free intervals in patients with malignant melanoma have been associated with being older, having the tumor on the trunk of the body, having a lesion with a Breslow depth of 1.5 mm or greater, and being male. The results of this 10-year follow-up study essentially duplicate those of the 5- to 6-year follow-up with regard to these risk factors. Breslow depth was the strongest prognostic indicator for both recurrence and survival for all patients, followed by sex.

RELATIONSHIP OF MULTIPLE FACTORS TO OUTCOME

When the risk factors and group status (ie, intervention vs control) were included as multiple covariates, stepwise regression showed that Breslow depth and sex were significant for both recurrence and survival. The only other factor of significance was the intervention; however, it was predictive only of survival, not of recurrence. Those patients with smaller Breslow depths who were female and who attended the group intervention survived longer. Despite the predictive power of Breslow depth and sex,

when these risk factors were controlled for in the analysis, the intervention effect was still significant for survival. These results are similar to those of the 5- to 6-year survival analyses, except that sex has now emerged as a multivariate factor for outcome and participation in the intervention, and although it is no longer predictive of recurrence, it remains significant for survival time.

In comparing results from the earlier multivariate survival analyses with those of the present, the effects of the intervention on outcome are more easily understood when described as relative risks (RRs). When controlling for other risk factors, at 5- to 6-year follow-up, participation in the intervention lowered the risk of recurrence by more than 2½ fold (RR=2.66), and decreased the risk of death approximately 7-fold (RR=6.89). At the 10-year follow-up, a decrease in risk of recurrence was no longer significant, and the risk of death was 3-fold lower (RR=2.87) for those who participated in the intervention.

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