Self-Examination of Patients with Malignant Melanoma in the Aftercare: Relevance of Psychosocial Factors and Instructions by the Physicians

Selbstuntersuchungen von Patienten mit malignem Melanom im Rahmen der ambulanten Nachsorge: Bedeutung psychosozialer Faktoren und der ärztlichen Anleitung zur Selbstuntersuchung

I. Zschocke^a J. Rhein^b H. Grimme^b B. Stein^a F. A. Muthny^c M. Augustin^b

^aAbteilung Psychotherapie und psychosomatische Medizin, Psychiatrische Universitätskliniken Freiburg, ^bUniversitäts-Hautklinik Freiburg, ^cInstitut für Medizinische Psychologie, Universität Münster

Key Words

Malignant melanoma · Skin cancer · Prevention · Self-examination · Coping

Summary

Background: Several studies indicate that the prognosis of malignant melanoma (MM) can be improved if tumor progression, e.g. local recurrences and lymph node metastases, is detected at an early stage. Thus, instructed self-examination by the patients is recommended in aftercare. Although clinical experience shows that many patients do not sufficiently perform self-examination, no studies have so far focused on self-examination behavior. **Objective:** 1) To assess the self-examination behavior of patients with MM in aftercare, 2) to investigate factors that could explain the self-examination behavior. **Methods:** Cross-sectional study on 324 patients with MM in aftercare. Validated questionnaires evaluating the disease-related strain, coping with illness, and behavior and attitudes towards self-examination were handed to the patients. **Results:** 62% of the patients consider self-examination important. However, the operation site and pigmented lesions are inspected on a regular basis by only 29.6% of the patients, the lymph nodes are regularly self-examined by 9.9% of the patients. 73.2% of the patients claim that they have not been instructed by the physicians how to perform self-examinations. Patients who had been instructed in self-examinations rated the importance of self-examinations significantly higher. In this group, the frequency of self-examinations correlated with prognostic markers such as tumor depth and Clark level. By contrast, in the group of patients who had not been instructed, the frequency of self-examinations correlated with psychosocial strain. **Conclusions:** Although self-examinations in the aftercare are of considerable importance, most patients are not instructed and are not used to performing self-examinations. Patients who had been instructed show a more adequate and reasonable self-examination behavior.

Schlüsselwörter

Malignes Melanom · Hauttumor · Prävention · Selbstuntersuchung · Krankheitsverarbeitung

Zusammenfassung

Hintergrund: Verschiedene Studien deuten darauf hin, daß die Prognose des malignen Melanoms (MM) verbessert werden kann, wenn die Tumorphase, d.h. lokales Wiederauftreten und Lymphknoten-Metastasen, in einem frühen Stadium entdeckt wird. Im Rahmen der Nachsorge wird deshalb eine angeleitete Selbstuntersuchung durch den Patienten empfohlen. Obwohl die klinische Erfahrung zeigt, daß viele Patienten diese Selbstuntersuchung nicht ausreichend durchführen, gibt es bisher noch keine Studien über das Selbstuntersuchungs-Verhalten von Patienten. **Fragestellung:** 1. Die Beurteilung des Selbstuntersuchungs-Verhaltens von Patienten mit MM im Rahmen der Nachsorge, 2. Ermittlung von Faktoren, die das Selbstuntersuchungs-Verhalten erklären. **Methoden:** Querschnittsstudie an 324 Patienten mit MM in der Nachsorge. Validierte Fragebogen zur Beurteilung der krankheitsbedingten Belastung, der Krankheitsverarbeitung und des Verhaltens bei und der Einstellung gegenüber der Selbstuntersuchung wurden den Patienten ausgeteilt. **Ergebnisse:** 62% der Patienten halten die Selbstuntersuchung für wichtig. Operationsnarbe und pigmentierte Hautstellen werden jedoch nur von 29,6% der Patienten regelmäßig untersucht, die Lymphknoten nur von 9,9%. 73,2% der Patienten geben an, sie seien nicht von den Ärzten angeleitet worden, Selbstuntersuchungen durchzuführen. Patienten, die nach eigenen Angaben Anleitung dazu erhalten haben, schätzten die Bedeutung der Selbstuntersuchungen signifikant höher ein. In dieser Gruppe korrelierte die Häufigkeit der Selbstuntersuchungen mit prognostischen Markern, wie Tumortiefe und Clark-Level. Im Gegensatz dazu korrelierte in der Patientengruppe ohne Anleitungen die Häufigkeit von Selbstuntersuchungen mit der psychischen Belastung. **Schlußfolgerungen:** Obwohl Selbstuntersuchungen in der Nachsorge von besonderer Bedeutung sind, geben die meisten Patienten an, nicht dazu angeleitet worden zu sein und sind in der Durchführung solcher Untersuchungen ungeübt. Personen mit Anleitung zeigen ein angemesseneres Verhalten bei der Selbstuntersuchung.

Introduction

Malignant melanoma (MM) is a melanocytic tumor affecting mainly the skin. It is diagnosed in adults of all ages, most commonly between 50 and 60 years. The incidence of the tumor has been increasing steadily all over the world within the last 40 years (Australia: [22]; USA: [1]; Europe: [4, 15]). The prognosis of MM depends mainly on the tumor thickness and the histologic level. Accordingly, early detection of MM is a main issue in cancer treatment. Thus, MM screening has become part of public education and prevention campaigns all over the world [8, 23]. In order to increase the effectiveness and to reduce the costs of the screening programs, they have been partly supplemented by education campaigns teaching full-body self-examination in the population [16, 23].

These preventive measures have been very effective with respect to reduction of the incidence of malignant skin tumors. Moreover, more tumors are now detected at an early stage [10, 14].

Beside early tumor detection, another focus of tumor prevention is the early recognition of tumor progression in melanoma aftercare. There is evidence that early detection and operation of local metastases prolongs survival time of MM patients [33]. The 10-year survival rate of MM patients without metastases is about 75% [13]. It decreases to 20–40% in patients with loco-regional metastases and to 3% in patients with distant metastases [18]. Hence, the aftercare of MM patients focuses on the detection of tumor progression at an early stage. For this reason, in Germany like in most Western countries, guidelines were developed to frame the aftercare of MM patients [25]. According to these guidelines, MM aftercare is recommended for a period of 10 years after primary excision or any tumor progression. In Germany, like in many countries, aftercare is intense during the first 5 years. E.g., in medium-risk MM, follow-ups are recommended every 3 months. Controls in the sixth to tenth year after diagnosis are carried out once a year.

The self-examination of the patients, including the site of the primary tumor, lymph nodes and pigmented lesions all over the body, is part of MM aftercare. The patients should be instructed by the dermatologist how to perform the self-examination. The fact that 40–50% of the patients discover lymphatic metastases on their own, underlines the importance of self-examination [7, 26, 36] especially in the later period of MM aftercare, when the intervals are prolonged. Whereas these studies investigated the effects of aftercare and self-examination on the course of the tumor, no studies have so far focused on the factor that influence self-examination behavior. Clinical experience indicates that there are interindividual differences in the motivation and compliance of self-examination. Several factors may contribute to low self-examination, including sociodemographic variables such as gender, age and education as well as psychosocial factors.

Many studies have revealed considerable disease-related psy-

chosocial stress experienced by MM patients [2, 5, 6]; (overview: [29]). Numerous studies indicate that the individually experienced psychological strain due to cancer depends on the coping strategies a person has developed. Several different coping strategies have been described (Overview: [28]) and a distinction between favorable and non-favorable coping strategies in cancer has been undertaken (Overview: [19]). Several studies on coping with MM have been performed [11, 12, 21, 27, 30, 37]. Main results of the studies were

- 1) the detection of repressive coping as a major coping strategy in MM-patients [21, 27],
- 2) differences between the coping activity of MM patients after primary excision and of patients in aftercare [37],
- 3) prognostically beneficial coping reactions found in MM patients of stage I and II [12] and
- 4) positive effects of psychosocial interventions on the course of disease mediated by effective coping and emotional status [11].

Whereas the meaning of psychosocial stress and coping in patients with MM has been investigated in numerous studies, no studies so far have investigated the relationships between psychosocial factors on the one hand and preventive behavior and self-examination on the other hand.

Thus, the present study was designed to address the following questions:

- 1) How many of the MM-patients perform self-examinations?
- 2) Does the practice of self-examination correlate with sociodemographic, clinical or psychosocial parameters?
- 3) To which degree have melanoma patients in the aftercare been instructed to perform full-body self-examinations?
- 4) Does the instruction from the physicians to perform self-examinations influence the patients' self-examination?

Patients and Methods

A cross-sectional study was conducted in melanoma aftercare of the Department of Dermatology, University Hospital of Freiburg (Germany) in order to explore the self-examination of MM patients. Almost all of the MM patients in aftercare had been operated previously in the Dermatology Department and were thus familiar with the clinic. The initial patient information at the beginning of the melanoma aftercare was mostly transmitted by the treating dermatologists on ward. No special patient education programs were offered to the patients.

Patients in their second to tenth year of aftercare, e.g. 2 to 10 years after primary excision, were included in the study. 324 patients who were participants in a consecutive study that had been performed 2 years before were asked to participate in the study and informed about the survey by letter. In case of agreement to participate in the study, the patients were asked

to complete a questionnaire and to undergo a medical examination in the MM aftercare service. Written informed consent was obtained from the patients, who were given assurance of their anonymity. As a matter of survey by letter and the fact that the study the patients had been participating in, had taken place two years in advance, 160 patients were excluded from the study, resulting in complete data for 164 patients.

The distribution of sociodemographic and clinical parameters of the sample is shown in table 1.

Participants and refusers showed significant differences with respect to tumor depth, in that participants had an average MM infiltration of 1.32 mm versus 1.97 mm in the refusers. All other variables were equally distributed.

The following questionnaires were given to the MM patients:

1. Hornheide Questionnaire on Malignant Skin Tumors (HQ) [35]

This inventory was developed specifically for patients with MM and other malignant skin tumors. It determines the degree of psychosocial strain and subsequently the need for intervention in skin tumor patients, employing the following 8 dimensions: physical well-being, emotional well-being, fear of tumor progression, tension/restlessness, social support, insecurity, support from physicians, occupational and financial problems. The scores achieved on each scale are added up to a total score, which indicates the need for psychosocial intervention. The degree of disease-related psychosocial strain is derived from the individual scores.

2. The Freiburg Questionnaire on Coping with Illness (FQCI) [24]

The FQCI was developed for the assessment of coping behavior. It was applied in a validated, shortened version (FQCI-LIS) in the present study, using 35 items to determine the following aspects of coping: depressive coping, active coping, distraction, search for religious meaning and minimization.

3. Questions with Regard to Full-Body Examination of the Patients

Four questions were formulated specifically for the purpose of this study. The patients are asked if they had been instructed to perform a full-body self-examination to control tumor progression. Secondly, the patients should evaluate the relevance of self-examination during MM aftercare. Finally, the patients are asked how often they have examined their body with respect to a) the site of the primary tumor, b) the lymph nodes and c) other pigmented lesions anywhere on the body surface.

Table 1. Clinical data of the participants of the study, n = 164

	%
Sex, f : m	59.8 : 40.2
<i>Melanoma type</i>	
Superficial spreading MM	59.8
Lentigo maligna MM	6.1
Nodular MM	16.5
Akro-lentiginous MM	1.8
Amelanotic MM	2.4
Other	8.5
Uncertain	4.9
<i>Tumor thickness</i>	
<0.75 mm	38.4
<1.5 mm	33.3
>1.5 mm	28.3
<i>Clinical stage/Clark level</i>	
Stage I	31.0
Stage II	46.2
Stage III (regional/lymph node metastases)	21.2
Stage IV distant metastases	1.3
<i>Time passed since tumor diagnosis</i>	
2–4 years	29.5
4–7 years	35.7
7–10 years	34.8

Statistical Analysis

Statistical analysis was performed with SPSS 6.0 for Windows. The questionnaires (FQCI, HQ) were analyzed using validated scales. Significances were calculated by t-Test for independent random samples on interval scale level. Correlations were calculated by the Pearson's coefficient. Data on a nominal and ordinal scale level were analyzed by means of the Chi-square-test. Differences were defined to be significant on a 5% level for all computations.

Results

Self-Examination

Taken together, 59.2% of the MM patients consider full-body self-examination to be important or very important (fig. 1). By contrast, about 16% regard the self-examination as neither important nor unimportant and 24.7% percent regard the self-examination as not important.

However, significantly more patients (39.6%) regularly ('often' or 'very often') examine the operation site and pigmented lesions on their body. 31.3% quote to examine themselves from time to time. 23.2% claim to examine themselves rarely, and 6.1% of the patients state they never examine these areas.

Concerning self-examination of the regional lymph nodes, the majority of the patients (67.9%) does not perform self-examinations at all (fig. 2). 11.1% say both, that they examine themselves rarely or from time to time. Only 9.9% examine their lymph nodes often or very often.

The differences between patients performing self-examinations of either the operation site or the lymph nodes and patients who do not perform self-examinations were calculated statistically. The two groups did not differ in terms of any sociodemographic variables such as age, sex and education nor in terms of somatic variables such as tumor depth or Clark level and the time that had passed since the tumor diagnosis (data not shown).

Instruction of Full-Body Self-Examination

Fifty-five out of 164 MM patients (26.8%) report that they had been instructed by a physician in performing full-body self-examination within MM aftercare. 119 patients (73.2%) claim to have not been instructed.

Statistical calculations revealed no differences between patients who had been instructed and those who had not been advised to perform self-examinations. The two patients groups did not differ from one another with respect to age, sex, and education nor any somatic variables such as tumor depth, Clark level or time since diagnosis (data not shown).

Table 2. Effects of instructions by the physicians on the practice of self-examination

	Instructed by the physician		Test	Significance
	yes (n= 45)	no (n = 119)		
Patients' estimation of full-body self-examination (mean) ¹	2.57	2.25	2.38 ^a	*
Frequency of self-examination of primary tumor site and pigmented lesions (mean) ²	3.42	3.0	1.91 ^a	**
Frequency of self-examination of lymph nodes, % ³	51.2	26.1	7.24 ^b	*

¹ Likert scale: not important = 1, very important = 3.

² Likert scale: not at all = 1, very often = 5.

³ Dichotomous scale: 1 = yes, 2 = no.

^a t-Test for independent variables.

^b Chi² test.

* p < 0.05, ** p < 0.01.

Patients who have been instructed consider self-examination significantly more relevant (table 2) and show significantly higher frequency of self-examination than patients not having been instructed.

Correlation between Self-Examination and Psychosocial Parameters

In order to assess clinical, sociodemographic and psychosocial parameters that correspond with self-examination behavior, the correlation analyses were performed separately for the patients who had been instructed and the non-instructed patients.

I) Instructed patients: In the group of instructed patients (n = 45), the frequency of self-examination of lymph nodes correlated strongly with tumor anxiety as well as with the tumor depth and the Clark level (table 3). The self-examination of pigmented lesions and the site of operation did not correlate with any clinical or other parameter such as age, education, coping or psychosocial strain.

II) Not-instructed patients: In the group of patients who reportedly had not been instructed by the physicians, the frequency of self-examination of either the lymph nodes, the sites of the primary tumor or pigmented lesions correlated significantly with psychosocial stress: Patients who performed self-examination more frequently are more negatively reminded of the tumor, show more tumor anxiety, are more disturbed and show greater social insecurity. Moreover, the frequency of self-examination of lymph nodes is correlated with a perceived lack of support by the physicians, occupational and financial problems as well as with the overall tumor-specific stress (global score of the Hornheide Questionnaire). Contrary to the instructed patients, no correlations could be found between self-examination and somatic parameters such as tumor depth and Clark level.

There was no correlation between the frequency of self-examination and any of the coping strategies in either patient group.

Table 3. Correlation between self-examination of lymph nodes and somatic, sociodemographic, and psychosocial parameters in the group of patients who (a) had been instructed (n = 49) and (b) had not been instructed (n = 119) on how to perform self-examination by their physicians

Variable	Pearson's coefficient/significance	
	instructed	not instructed
<i>Somatic parameters</i>		
Tumor level	0.31*	0.07
Tumor depth	0.45**	0.17
Time since diagnosis	0.08	-0.18
<i>Hornheide Questionnaire (HQ) psychosocial strain in 8 dimensions</i>		
Physical well-being	0.00	0.12
Emotional well-being	0.14	0.16
Tumor anxiety	0.51***	0.23**
Restlessness	0.24	0.06
Lack of social support	0.23	0.12
Insecurity	0.15	0.23*
Lack of support from physicians	-0.02	0.22*
Occupational/financial problems	-0.14	0.21*
HQ global score	0.19	0.20*
<i>Freiburg Questionnaire on Coping with Illness (FQCI)</i>		
Depressive coping	0.21	0.00
Active coping	0.11	0.10
Distraction	0.29	0.17
Religious meaning	-0.07	0.07
Minimization	0.12	0.11
<i>Questions concerning the self-examination</i>		
Self-examination is important	0.24	0.48***
When practicing self-examination, I feel uncomfortably, reminded of the tumor	0.56***	0.32***

*p < 0.05, **p < 0.01, ***p < 0.001.

Discussion

The early detection of tumor progression, especially lymph node metastases, influences the prognosis of the melanoma disease. Since the self-examination of patients with MM has been shown to be of definite importance for the course of disease after the initial operation, the melanoma guidelines recommend the inclusion of self-examinations in aftercare (Orfanos 1994). For this, precise instructions by the dermatologist as well as good patient insight into the importance of self-examinations are crucial. In practice, however, many patients lack good compliance with respect to self-screening.

Thus, the present study was performed in order to assess the self-examination behavior of MM patients and to identify somatic as well as psychosocial factors that could predict compliance with the physician's instructions.

The results of the present study show that in routine aftercare at a university dermatology clinic, only a quarter of the MM patients obviously had been instructed to perform the recommended self-examinations. Since patients with a lack of memory and mental acuity were excluded from study, it seems unlikely that this result is biased by a lack of memory. Also, the coping strategies 'distraction' and 'denial' of the FQCI were not significantly increased in those patients who reported to have not been instructed (results not shown).

The results suggest that patient instructions on how to perform self-examinations should be better integrated into the schedule of MM aftercare. If the finding of only about 25% of

patients having been instructed were biased by a lack of the patients' memory, this loss of memory would suggest that the instructions should be intensified in initial patient education sessions or repeated regularly during aftercare.

According to the present data, patients who have been instructed in self-examinations practise these self-examinations significantly more often. Moreover, the frequency with which these patients perform self-examinations varies according to the somatic characteristics of the tumor, particularly according to the prognosis. This seems a more reasonable behavior than in the group of non-instructed patients, where the frequency of self-examination correlates with the psychological status rather than with the objective somatic parameters. In the latter group, patients with a good prognosis but high psychosocial strain tend to perform self-examinations which are unnecessary and which add to the patients' fears. On the other hand, patients with a bad prognosis but little psychosocial strain tend to not undertake self-examinations, though this would be beneficial.

Taken together, these findings indicate that instructions by the dermatologists lead to a more adequate patient behavior. They particularly underline the great importance of specific patient instructions for self-examination from the dermatologists.

Beside the practical benefit of self-examinations for the early detection of recurrences, they also contribute to a more active coping behavior and the acquisition of autonomy and self-responsiveness. From the psychotherapeutic point of view, these consequences cannot be overestimated.

References

- 1 American Cancer Society: Cancer Facts and Figures. 1996.
- 2 Augustin M, Zschocke I, Dieterle W, Schöpf E, Muthny FA: Bedarf und Motivation zu psychosozialen Interventionen bei Patienten mit malignen Hauttumoren. *Z Hautkrankheiten* 1997;72:333–338.
- 3 Baider L, Perez T, Kaplan De-Nour A: Gender and adjustment to chronic disease: A study of couples with chronic cancer. *Gen Hosp Psychiatry* 1989; 1:1–8.
- 4 Blum A, Ellwanger U, Garbe C: Das Maligne Melanom der Haut. Analyse der Daten des Zentralregisters Malignes Melanom der Deutschen Dermatologischen Gesellschaft, 1983–1995. Krebsverband Baden-Württemberg e.V., 1996.
- 5 Brandberg Y, Bolund C, Sigurdardottir V: Anxiety and depressive symptoms at different stages of malignant melanoma. *Psycho-Oncology* 1992;1:71–78.
- 6 Brandberg Y, Mansson-Brahme E, Ringborg U, Sjöden PO: Psychological reactions in patients with malignant melanoma. *Eur J Cancer* 1995;31A: 157–162.
- 7 d'Hoedt B, Stroebe W, Stutte H, Rassner G: Nachsorge des malignen Melanoms an der Tübinger Hautklinik; in: Orfanos CE, Garbe C (eds): Das maligne Melanom der Haut. München, Zuckschwerdt, 1990, pp 304–311.
- 8 Davis NC, Herron JJ: Queensland melanoma project: organization and a plea for comparable surveys. *Med J Aust* 1966;1:643–644.
- 9 Derogatis L, Abelloff M, Melisaratos N: Psychological coping mechanisms and survival time in metastatic breast cancer. *JAMA* 1979;242:1504–1508.
- 10 Elwood M, Gallagher R: Skin cancer epidemiology study in the 1996. The Third Symposium on the Epidemiology of Melanoma and Non-melanocytic Skin Cancer. *Melanoma Research* 1997;7:74–77.
- 11 Fawzy FI, Fawzy NW, Hyun CS, Elashoff R, Guthrie D, Fahey JL, Morton DL: Malignant melanoma. Effects of an early structured psychiatric intervention, coping, and affective state on recurrence and survival 6 years later. *Arch Gen Psychiatry* 1993;50:681–689.
- 12 Foltys MJ, Knopf B: Untersuchungen zur psychologischen Krankheitsbewältigung bei Patienten mit malignem Melanom. *Z Hautkr* 1991;67:239–241.
- 13 Garbe C, Büttner P: Die Prognose des primären malignen Melanoms; in: Orfanos CE, Garbe C (eds): Das maligne Melanom der Haut. München, Zuckschwerdt, 1990, pp 41–59.
- 14 Garbe C, Büttner P, Ellwanger U, Bröcker EB, Jung EG, Orfanos CE, Rassner G, Wolff H: Das Zentralregister Malignes Melanom der Deutschen Dermatologischen Gesellschaft in den Jahren 1983–1993. Epidemiologische Entwicklungen und aktuelle therapeutische Versorgung des malignen Melanoms. 1995.
- 15 Garbe C: Epidemiologie des malignen Melanoms in Deutschland; in: Macher E, Bröcker EB, Kolde G (eds): Tumoren der Haut: Jahrbuch der Dermatologie 1994/95. Stuttgart, Biermann 1994, pp 113–120.
- 16 Girgis A, Campbell EM, Redman S, Sanson Fisher RW: Screening for melanoma: a community survey of prevalence and predictors. *Med J Aust* 1991; 154:338–343.
- 17 Greer S, Morris T, Pettingale: Psychological Response to Breast Cancer: Effect on Outcome. *Lancet* 1979;2:785–787.
- 18 Häfner AC, Garbe C, Burg G, Büttner P, Orfanos CE, Rassner G: The prognosis of primary and metastasising melanoma. An evaluation of the TNM classification in 2495 patients. *Br J Cancer* 1992; 66:856–861.
- 19 Heim E: Coping – Erkenntnisstand der 90er Jahre. *PPmP* 1998;9/10:321–337.
- 20 Heim E: Coping und Adaptivität: Gibt es geeignetes oder ungeeignetes Coping? *Psychother Med Psychol* 1988;38:8–18.
- 21 Kneier AW, Temoshok L: Repressive coping reactions in patients with malignant melanoma as compared to cardiovascular disease patients. *J Psychosom Res* 1984;28:145–155.
- 22 Marks R, Hill D: The public health approach to melanoma control. Prevention and early detection. International Union against Cancer (UICC), 1992.

- 23 Marks R: Melanoma prevention: is it possible to change a population's behavior in the sun? *Pigment Cell Res* 1994;7:104–106.
- 24 Muthny FA: Freiburger Fragebogen zur Krankheitsverarbeitung. Weinheim, Beltz, 1989.
- 25 Orfanos CE, Jung EG, Rassner G, Wolff HH, Garbe C: Stellungnahme und Empfehlungen der Kommission malignes Melanom der Deutschen Dermatologischen Gesellschaft zur Diagnostik, Behandlung und Nachsorge des Malignen Melanoms der Haut – Stand 1993/4. *Hautarzt* 1994;45:285–291.
- 26 Rassner G, d'Hoedt B, Stroebe W, Schippert W: Melanomnachsorge: Integriertes Nachsorgekonzept der Tübinger Hautklinik sowie Ergebnisse einer Umfrage zur Melanomnachsorge an deutschen Hautkliniken. *Hautarzt* 1990;41(Suppl X):94–97.
- 27 Rogentine GN, van Kammen DP, Fox BH, Docherty JP, Rosenblatt JE, Boyd SC, Bunney WE: Psychological factors in the prognosis of malignant melanoma: A prospective study. *Psychosom Med* 1979;41:647–655.
- 28 Rüger U, Blomer AF, Förster W: Coping – Theoretische Konzepte, Forschungsansätze, Meßinstrumente zur Krankheitsbewältigung. Göttingen, Verlag für Medizinische Psychologie im Verlag Vandenhoeck, 1990.
- 29 Söllner W, Zschocke I, Augustin M: Melanopatienten: Psychosoziale Belastung, Krankheitsverarbeitung und soziale Unterstützung. *PPmP* 1998; 9/10:338–348.
- 30 Söllner W, Zschocke I, Zingg-Schir M, Rumpold G, Fritsch P, Stein B, Augustin M: Interactive patterns of social support and individual coping strategies in melanoma patients and their correlations with adjustment to illness. *Psychosomatics* 1999 (accepted for publication 10/98).
- 31 Sommer T, Sommer G: Fragebogen zur Sozialen Unterstützung – F-SOZU22. Deutsche Gesellschaft für Verhaltenstherapie, Materialien, 1989.
- 32 Spiegel D, Bloom J, Yalom I: Group Support For Patients with Metastatic Cancer. *Arch Gen Psychiatry* 1981;38:527–533.
- 33 Stroebe W, Schlagenhauff B, Meier F, Breuninger H, Carl M, Fierlbeck G, Garbe C, Zimmermann C, Rassner G: Nachsorge bei Melanopatienten; in Garbe C (ed): *Dermatologische Onkologie*. Berlin, Springer, 1997, pp 407–413.
- 34 Temoshok L, Heller BW, Sagbiel R, Blois M, Sweet D, DiClemente R, Gold M: The relationship of psychosocial factors to prognostic indicators in cutaneous malignant melanomas. *J Psychosom Res* 1985; 29:139–153.
- 35 Tilkorn M, Mawick R, Sommerfeld S, Strittmatter G: Lebensqualität von Patienten mit bösartigen Gesichts- und Hauttumoren. Entwicklung eines Fragebogens und erste Ergebnisse einer Studie. *Rehabilitation* 1990;29:134–139.
- 36 Weiss M, Loprinzi ChL, Creagan ET, Dalton RJ, Novotny P, O'Fallon JR: Utility of follow-up tests for detecting recurrent disease in patients with malignant melanomas. *JAMA* 1995;274:1703–1705.
- 37 Zschocke I, Augustin M, Muthny FA: Krankheitsverarbeitung bei Patienten mit malignem Melanom in verschiedenen Krankheitsphasen. *Psychomed* 1996;8:83–88.