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**Psychological characteristics of early-stage melanoma patients:
a cross-sectional study on 204 patients**

Running heading: Psychological characteristics of early-stage melanoma

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Abstract

Background: the presence of psychological distress has a negative impact not only on cancer patients' quality of life, but also on the course of the disease, with slower recovery and increased morbidity. These issues are of particular importance in melanoma patients (MP), who remain at risk of disease progression for many years after diagnosis.

Objectives: to investigate psychological distress, coping strategies and their possible relationships with demographic-clinical features in patients with early-stage melanoma in follow-up. The investigation focused in particular on whether the psychological profile differed between patients at different melanoma stages.

Methods: data of 118 patients with melanoma in the Tis-Ia stages (MP Tis-Ia) and 86 patients with melanoma in the Ib-IIa-IIb stages (MP Ib-II) were gathered through a self-administered survey and compared using a cross-sectional design.

Results: the results evidenced a high percentage of anxiety (25%) and distress symptoms (44%), while depressive symptoms seemed less frequent (8%).

Psychological distress was higher in women than in men, and in patients with a higher educational level. Nevertheless, no significant differences between MP_Tis-Ia and MP_Ib-II were found. With regard to coping style, the patients in this sample adopted predominantly positive and active strategies. Correlational analyses showed that maladaptive coping strategies such as behavioral disengagement, denial, self-distraction and self-blame were most strongly related to increased levels of psychological distress.

Conclusions: the high presence of anxiety and distress symptoms, their relationship, and the use of negative coping strategies underline the importance of psychological distress screening also in early-stage MP, including at long-term follow-up.

Keywords: melanoma, psychological distress, depression, anxiety, coping strategies.

Introduction

The incidence of cutaneous melanoma, the fastest-growing solid tumor, which accounts for over 79% of skin cancer-related deaths, has increased dramatically in the Western world [1,2]. In particular, although the 5-year survival rate is high with the early stages of melanoma (more than 96% in situ and 92% in stage I), the rate falls drastically to 67% in stage II and 49% in stage III [3,4]. What is more, patients with melanoma remain at risk of disease progression for many years [5]. Early diagnosis and continued adherence by the patient to follow-up examinations are therefore crucial.

The presence of psychological distress has a negative impact not only on cancer patients' personal and social quality of life, but also on the course of the disease, with slower recovery and increased morbidity [1,6,7]. In particular, distress present at follow-up may interfere with preventive behaviors (e.g. using sunscreen or avoiding sunlight) or adherence to prescribed therapy and rigorous periodic screening (e.g., regular skin examinations, appointments with dermatologists) [5,8]. These issues are of particular importance in MP, who remain at risk of disease progression for many years after diagnosis [9].

Most studies on psychological distress in MP have been conducted on advanced-stage patients, whereas few address the issue in those at an early stage [1,10,11].

This study focused on psychological distress, the coping strategies and their possible relationships with demographic-clinical features of early-stage MP. It also focused on whether the psychological profile differed between patients at Tis-Ia (MP_Tis-Ia) and Ib-II (MP_Ib-II) melanoma stages. Since MP_Ib-II patients have undergone a second, more invasive operation for a sentinel lymph node biopsy, and are generally required to attend a more thorough follow-up examination with more radiological analyses, it was hypothesized that the follow-up could be more distressing for them than for MP_Tis-Ia patients.

Methods

The present study was conducted using a cross-sectional design. Patients consecutively attending the Department of Surgical Dermatology at the “Città della Salute e della Scienza” Hospital of Turin for dermatological follow-up examinations and fulfilling the inclusion criteria were included in the study. These were: diagnosis of melanoma in situ (Tis stage), in the Ia, Ib, IIa and IIb stages, age over 18 and the ability to read and answer questionnaires. Of the 208 consecutive patients meeting the criteria, 204 gave their written consent and were enrolled. The study was approved by the Hospital Ethics Committee.

Psychological distress and the coping strategies were assessed using self-administered questionnaires. To evaluate psychological distress, the Hospital Anxiety and Depression Scale for depressive (HADS-D) and anxiety (HADS-A) symptoms and the Distress Thermometer (DT) for emotional distress were used [12,13]. The Coping Orientation to Problem Experiences Scale-brief version (Brief-COPE) was administered to evaluate positive reframing, self-distraction, expression, instrumental support, active coping, denial, religion, humor, behavioral-disengagement, emotional support, use of alcohol/drugs, acceptance, planning and self-blame [14].

The analyses were performed using the Statistical Package for Social Science - Version 20 (SPSS-20). Normal distribution of the continuous variables was evaluated using the Kolmogorov-Smirnov Test. The MP_Tis-Ia and MP_Ib-II groups were compared using the Chi-Square, T-test or Mann-Whitney U-Test appropriately. Spearman correlations were used to investigate possible associations; and Bonferroni corrections were applied.

Results

With regard to the socio-demographical features, the MP_Tis-Ia and MP_Ib-II groups differed significantly only in gender distribution. Contrary to our hypothesis, no statistically

significant differences in psychological distress or coping strategies were found between MP_Tis-Ia and MP_Ib-II patients (**Table 1**). From this point on, the two groups were analyzed together.

While only 8.8% of the patients (18/204) showed a clinically relevant level of depressive symptoms, 25% (51/204) presented a clinically relevant level of anxiety symptoms and 44.1% (90/204) showed relevant distress (DT). The mean scores showed that the most-used coping strategies were acceptance, active coping, planning and positive reframing; the least-used strategies were alcohol or drug use, denial and behavioral disengagement (**Table 1**). No significant correlations were found between psychological distress, age and time since diagnosis. A statistically significant higher level of symptoms of depression (M: 2.76(3.1); W: 3.69(3); $p=.007$), anxiety (M: 4.1(3.5); W: 5.79(4.4); $p=.007$) and distress (M: 2.97(2.7); W: 3.94(2.8); $p=.013$) was found in women (W) than in men (M), as was a significantly higher level of distress in patients with a higher (H) compared to a low/average (L/A) educational level (H: 3.79(2.9); L/M: 2.66(2.5); $p=.010$).

Since women were found to report higher levels of psychological distress, and in order to ensure that patient group differences in psychological distress would not be obscured by sex difference, the psychological distress comparisons between the MP_Tis-Ia and MP_Ib-II groups were performed again separately for the male and the female sub-groups.

The results confirmed that in both sub-groups there were no statistically significant differences in psychological distress between MP_Tis-Ia and MP_Ib-II patients (all $p > .05$).

Correlations analyses (**Table 2**) showed statistically significant positive correlations between “self-distraction”, “denial” and “behavioral-disengagement” and psychological distress (HADS-D/-A, DT): the higher the psychological distress, the more frequent the use of these coping strategies. In addition, statistically significant positive correlations were found between “self-blame” and both anxiety and DT, and between “expression” and DT.

“Positive reframing”, “acceptance” and “planning” showed statistically significant negative correlations with depressive symptoms, with higher symptoms in patients using these strategies less. Finally, “acceptance” showed a statistically significant negative correlation with anxiety symptoms.

Discussion

The Melanoma Guideline strongly recommends lifetime dermatological surveillance for patients with melanoma [9], who remain at risk of disease progression for many years [5]. The estimated lifetime risk of developing a second primary melanoma ranges from 4-8%, with a 5-year estimated cumulative risk rising to 11.4% [15,16]. Melanoma could thus be considered a chronic life-threatening disease [17].

A recent review of the literature highlighted that approximately a third of MP experience clinically relevant levels of psychological distress around the time of diagnosis and treatment [18]. Psychological distress may have considerable personal and family implications for patients with melanoma [18]. It has been associated not only with a lower quality of life, but also with delay in seeking medical advice and decreased adherence to post-treatment screening and preventive behaviors, which result in increased rates of recurrence and mortality [8]. The majority of these studies, however, did not differentiate between different stages, or focused less on the long-term periodic follow-up screening. Indeed, even though most patients with melanoma perceive follow-up screening as worthwhile and reassuring, it may also reactivate cancer-related fears [8].

The main finding of the present study is the high prevalence of anxiety and emotional distress symptoms occurring in early-stage MP in long-term follow-up, 25% and 44%, respectively. What is more, psychological distress seems to be higher in women than in men, and in patients with a higher educational level.

From a medical point of view, different disease severity means differences regarding the

long-term prognosis and follow-up implications [9]. Indeed, while the 5-year survival rate ranges from 96-92% in the Tis-Ia stages, it falls to 91-67% in the Ib-II stages [3,4].

In addition, patients in the Ib-II stages underwent more invasive surgery (such as a sentinel lymph node biopsy) and were required to periodically undergo more invasive medical screening (X-rays, ultrasound, CT or MRI scans) which could contribute to higher levels of psychological distress. Nevertheless, no significant differences between MP_Tis-Ia and MP_Ib-II were found in the psychological distress variables. Patient group differences in psychological distress were not obscured by sex difference.

Indeed, even though women were found to report higher levels of psychological distress, and in spite of the difference in sex distribution, no differences in the mean levels of psychological distress were found between female patients in Tis-Ia and Ib-II or between male patients in Tis-Ia and Ib-II.

This result suggests that the underlying fear of disease recurrence/metastasis may be the main factor behind the increased prevalence of distress in patients attending their scheduled visit, independently of disease stage, as suggested by Loquai and colleagues [11]. Our data also seem to be in line with the prevalence of psychological distress in patients with advanced melanoma (stages III/IV). Indeed, a recent review of the psychosocial outcome for patients with advanced melanoma suggested that approximately 15-30% experience clinical anxiety or depression, and that the proportion of these patients experiencing distress was even higher (around 50%) [19]. In order to clarify this issue, future studies should either compare psychological distress symptoms between patients with early- vs advanced-stage melanoma or use a longitudinal study design.

One variable demonstrating a close relationship with psychological distress is coping ability. The MP in this sample adopted predominantly positive and active strategies, and this fact was associated with lower levels of psychological distress. Furthermore, in line with the literature

[18], maladaptive responses as displayed through behavioral disengagement, denial, self-distraction and self-blame were most strongly related to increased levels of psychological distress.

Although we did not investigate the support of the health care system, we believe that the support of health care professionals is a very important factor in reducing psychological distress in these patients (as with other chronic illnesses). In line with our results and this last consideration, a recent study found not only that melanoma survivors experience anxiety during follow-up appointments, but also that they desire more information and psychosocial support from their health providers [20]. Since health care support has been found to be beneficial in reducing psychological distress in MP, health care providers should, in order to improve patient care, be encouraged and trained to continuously address changes in patients' psychosocial function.

In conclusion, the main finding of the present study is that emotional distress is highly present in patients with early-stage melanoma, especially women, including at long-term follow-up. In addition, psychological distress seems to be highly associated with a maladaptive coping style. These results highlight the need for regular psychological distress screening in all phases of cancer care.

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Table 1. Socio-demographic and clinical data of the whole sample (T-Sample: N=204) and comparison of the MP_Tis-Ia (N=118) and MP_Ib-II (N=86) groups.

		T-Sample	MP_Tis-Ia	MP_Ib-II	p
Age (Mean (SD)) ^a		53.1 (13.1)	52.9 (13.7)	53.3 (12.2)	.84
Age at diagnosis (Mean (SD)) ^a		49.2 (13.0)	48.8 (13.5)	49.8 (12.4)	.61
Time since diagnosis (Mean (SD)) ^b		46.8 (40.5)	49.8 (45.6)	42.7 (32.1)	.99
Gender N (%) ^c	<i>Male</i>	96 (47.1%)	46 (39.0%)	50 (58.1%)	.007
	<i>Female</i>	108 (52.9%)	72 (61.0%)	36 (41.9%)	
Educational level N (%) ^c	<i>Low/average</i>	57 (28.1%)	31 (54.4%)	26 (45.6%)	.56
	<i>High</i>	146 (71.9%)	86 (58.9%)	60 (41.1%)	
Work status N (%) ^c	<i>Employed</i>	129 (63.2%)	73 (61.9%)	56 (65.1%)	.63
	<i>Unemployed</i>	75 (36.8%)	45 (38.1%)	30 (34.9%)	
Marital status N (%) ^c	<i>Married</i>	160 (78.4%)	93 (78.8%)	67 (77.9%)	.88
	<i>Unmarried</i>	44 (21.6%)	25 (21.2%)	19 (22.1%)	
Psychological distress (Mean (SD)) ^b	<i>HADS-D</i>	3.25 (3.1)	3.37 (3.2)	3.09 (3.1)	.52
	<i>HADS-A</i>	5.00 (4.1)	5.16 (4.3)	4.77 (3.8)	.66
	<i>DT</i>	3.48 (2.8)	3.65 (2.9)	3.35 (2.6)	.41
Coping Strategies: Brief-COPE (Mean (SD)) ^b	<i>Positive reframing</i>	5.82 (1.9)	5.86 (1.9)	5.75 (2.0)	.73
	<i>Self-distraction</i>	4.60 (2.1)	4.58 (2.1)	4.62 (2.1)	.95
	<i>Expression</i>	4.83 (1.8)	4.99 (1.8)	4.61 (1.7)	.13
	<i>Instrumental support</i>	5.19 (1.9)	5.27 (2.0)	5.07 (1.8)	.43
	<i>Active coping</i>	6.73 (1.7)	6.82 (1.5)	6.60 (1.9)	.98
	<i>Denial</i>	2.72 (1.3)	2.74 (1.3)	2.69 (1.2)	.64
	<i>Religion</i>	4.94 (2.2)	4.86 (2.2)	5.06 (2.2)	.52
	<i>Humour</i>	4.16 (1.7)	4.20 (1.7)	4.09 (1.6)	.64
	<i>Behavioural-disengagement</i>	2.87 (1.3)	2.86 (1.2)	2.87 (1.4)	.57
	<i>Emotional support</i>	4.53 (1.9)	4.83 (2.1)	4.11 (1.8)	.015
	<i>Use of alcohol/drugs</i>	2.06 (0.5)	2.10 (0.6)	2.01 (0.1)	.31
	<i>Acceptance</i>	7.02 (1.4)	6.99 (1.4)	7.06 (1.4)	.75
	<i>Planning</i>	6.63 (1.8)	6.68 (1.6)	6.55 (1.9)	.90
<i>Self-blame</i>	5.22 (1.7)	5.33 (1.7)	5.07 (1.7)	.23	

^a T-test; ^b Mann-Whitney U-Test; ^c Chi-Square Test.

HADS-D: depression subscale of the Hospital Anxiety and Depressive Scale;

HADS-A: anxiety subscale of the Hospital Anxiety and Depressive Scale;

DT: Distress Thermometer.

Table 2: Correlations between psychological distress variables and coping strategies.

	HADS-D	HADS-A	DT
<i>Positive reframing</i>	-0.200*	-0.141	-0.050
<i>Self-distraction</i>	0.311**	0.363**	0.352**
<i>Expression</i>	0.056	0.152	0.231*
<i>Instrumental support</i>	-0.042	0.071	0.029
<i>Active coping</i>	-0.085	-0.015	0.048
<i>Denial</i>	0.249**	0.288**	0.163*
Brief- <i>Religion</i>	0.044	0.107	-0.05
COPE <i>Humour</i>	-0.091	-0.046	-0.036
<i>Behavioural-disengagement</i>	0.325**	0.217*	0.253**
<i>Emotional support</i>	0.075	0.159	0.165
<i>Use of alcohol/drugs</i>	0.098	0.089	0.137
<i>Acceptance</i>	-0.200*	-0.176*	-0.146
<i>Planning</i>	-0.187*	-0.094	-0.003
<i>Self-blame</i>	0.148	0.278**	0.184*

* $p < .017$; ** $p < .001$

Spearman's correlation coefficients are listed.

Brief-COPE: Coping Orientation to Problem Experiences Scale-brief version;

HADS-D/-A: Hospital Anxiety and Depressive Scale – Depression/Anxiety subscale;

DT: Distress Thermometer.