

# "Small" Melanomas

## Relation of Prognostic Variables to Diameter of Primary Superficial Spreading Melanomas

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In a consecutive series of 648 superficial spreading melanomas a significantly better 5-year disease-free survival rate was observed for patients whose primary tumors were 14 mm or less in diameter when compared with those 15 mm or larger in diameter. Other distinguishing features of the group of "smaller" superficial spreading melanomas were that they occurred in younger patients; were of shorter durations; were more common in women; occurred disproportionately on the lower limbs; were less elevated; tended to be round in shape; were thinner (Breslow); penetrated less deeply (Clark levels); showed less histologic regression; and developed fewer metastases. Based on these findings it is recommended that educational programs be undertaken for the medical profession and for the public to promote early diagnosis and prompt treatment of superficial spreading melanomas when they are small in diameter and more often curable. A color atlas of "small" melanomas is presented.

### INTRODUCTION

The most effective approach at the present time for the cure of cutaneous malignant melanomas is early diagnosis and total surgical removal. Whereas considerable data have been published on the histologic aspects, treatment, and prognosis of malignant melanomas, relatively little has been presented on early diagnosis.<sup>1,2</sup>

Raising the index of suspicion for early melanomas should help identify those lesions that are for the most part curable. The purpose of this report is to review our experience with "small" superficial spreading malignant melanomas of the skin. By "small" we have

arbitrarily chosen those lesions 14 mm or less in diameter. We realize that the diameter of the lesion, taken alone, is not as important as tumor thickness. However, measurement of the diameter of a pigmented lesion by a physician or by the patient, a simple procedure that can be accomplished in vivo, has proved to be an important clue that can identify a subset of malignant melanomas that have a better prognosis.

### MATERIALS AND METHODS

At the time of this study (May 1981) the NYU Melanoma Cooperative Group data base consisted of 1015 consecutive patients with all types and stages of malignant melanomas. There were 648 superficial spreading melanomas (SSMs) that were Stage I on entry into the series. For most calculations it was this group of 648 SSMs that was used. For some calculations SSMs in all stages were required (see footnote Table 1).

The measurement used in this study was the greatest diameter of the primary SSM, to the nearest millimeter. Most of the statistical calculations were by chi-square analyses using the Statistical Package for Social Sciences (SPSS version 8.0) at the Courant Institute of Mathematical Sciences, New York University. A series of variables was analyzed for association with "small" SSMs (14 mm or less in diameter) versus "larger" SSMs (15 mm or more in diameter).

### RESULTS

Table 1 presents all the variables which were found to be significantly related to diameter of primary lesions. Small superficial spreading melanomas (SSMs) were significantly thinner than larger SSMs as determined by the Breslow method<sup>3</sup> of micrometer measurement; they also invaded to less deep anatomical landmarks (Clark levels).<sup>4</sup> These smaller tumors occurred proportionately more often in younger patients and in women. By history, smaller SSMs were present for shorter durations than their larger counterparts. Clinically, small SSMs tended to be rounder and less

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*Presented at the Annual Meeting of the American Dermatological Association, The Homestead, Hot Springs, Virginia, May 2-6, 1982.*

**Table 1**  
Variables Found to Be Significantly Related to Diameter of the Primary Malignant Melanoma

Variable*	N	Diameter		p
		≤ 14 mm	≥ 15 mm	
<i>Sex</i>	616			0.001
Male		113 (39%)	172 (53%)	
Female		176 (61%)	155 (47%)	
<i>Age</i>	616			0.0001
≤ 39 years		97 (34%)	63 (19%)	
≥ 40 years		192 (66%)	264 (81%)	
<i>Duration of Lesion</i>	573			0.0009
≤ 24 months		168 (63%)	149 (49%)	
≥ 25 months		99 (37%)	157 (51%)	
<i>Shape</i>	586			0.0001
Round		229 (84%)	220 (70%)	
Irregular		43 (16%)	94 (30%)	
<i>Erosion/Ulceration</i>	478			0.002
Absent		201 (87%)	188 (76%)	
Present		30 (13%)	59 (24%)	
<i>Site</i>	609			0.0001
Head and neck		26 (9%)	29 (9%)	
Trunk		95 (33%)	161 (50%)	
Upper limbs		64 (22%)	60 (19%)	
Lower limbs		102 (36%)	72 (22%)	
<i>Elevation of Lesion</i>	480			0.03
0–5 mm		213 (97%)	241 (92%)	
≥ 6 mm		6 (3%)	20 (8%)	
<i>Thickness (Breslow)</i>	571			0.045
≤ 0.75 mm		106 (41%)	99 (32%)	
≥ 0.76 mm		156 (59%)	210 (68%)	
<i>Levels (Clark)</i>	605			0.003
I		17 (6%)	8 (3%)	
II		103 (36%)	94 (29%)	
III		80 (28%)	101 (31%)	
IV		81 (29%)	109 (34%)	
V		1 (1%)	11 (3%)	
<i>Clinico-Histologic Stage<sup>†</sup></i> (all stages included)	621			0.006
I		274 (96%)	301 (90%)	
II		11 (4%)	33 (10%)	
III		0 (0%)	2 (1%)	
<i>Clinical or Histologically Positive Nodes<sup>†</sup></i> (all stages included)	662			0.004
Absent		292 (96%)	322 (90%)	
Present		12 (4%)	36 (10%)	
<i>Histologic Regression</i>	501			0.005
Present		48 (21%)	87 (32%)	
Absent		184 (79%)	182 (68%)	
<i>5-Year Disease-Free Survival Last Status</i>	648	242 (88.3%)	301 (80.7%)	0.025
	576			0.015
Alive, no melanoma		269 (98%)	278 (93%)	
Dead of melanoma or alive with melanoma		7 (2%)	22 (7%)	

\* Only for Stage I disease except as noted.

† Stage based on clinical and/or histologic findings. When definitive histologic material was available, the pathologic findings took precedence. Stage I, local disease; Stage II, regional nodal disease; Stage III, disseminated disease.

elevated and occurred more commonly on the lower limbs. Erosion and ulceration were less often associated with small SSMs than with larger SSMs.

Based on histologic examination of the definitive surgical material (including lymphadenectomy specimens when performed) there was a significantly greater percentage of SSMs in Stage I when the lesions had small diameters than when they had larger diameters. By the same token, a significantly lower percentage of lymphadenectomy specimens contained metastases in patients who had small SSMs compared to larger SSMs. Histologic regression occurred in a significantly lower percentage of small SSMs than larger SSMs. At the time of last examination patients with small SSMs fared better than those with larger SSMs; that is, a significantly higher percentage of patients with the small tumors were alive without any evidence of melanoma. Most important, patients with SSMs 14 mm or less in diameter had a significantly greater cumulative 5-year disease-free survival rate than those with SSMs 15 mm or more in diameter (Fig. 1).

Other variables were also studied but did not prove to be statistically significant when comparing small with larger melanomas. In both the small and larger diameter groups virtually all (97% vs. 95%) were in Stage I (no regional node involvement or distant metastases present) when first evaluated; therefore, no significant difference was found ( $p = 0.28$ ). On initial physical examination, clinically positive nodes were rarely found whether the primary SSMs were of small or larger diameter (3% vs. 5%, respectively) and the difference was not significant ( $p = 0.19$ ). When patients in all stages of disease were evaluated for comparison of clinico-histologic stage at entry into the study, it was found that, although fewer patients within the subset of small SSMs had metastases, the difference was not statistically significant ( $p = 0.085$ ). When examined histopathologically it was noted that nevus cells were present in a similar percentage (23% vs. 21%) of small versus larger SSMs ( $p = 0.51$ ) and both small and larger SSMs were associated with host cellular responses in the same percentages (87%). Finally, no significant difference was found when comparing mitoses per high-power field in small versus larger SSMs ( $p = 0.39$ ).

## DISCUSSION

One of the most important anamnestic features characteristic of early malignant melanomas is change in the diameter of the lesion. Wick et al.,<sup>2</sup> based on their study of 786 patients with superficial spreading melanomas (SSMs), have shown that change in the size of the lesion was one of the most useful clues to early diagnosis. Change in size was noted by 71% of

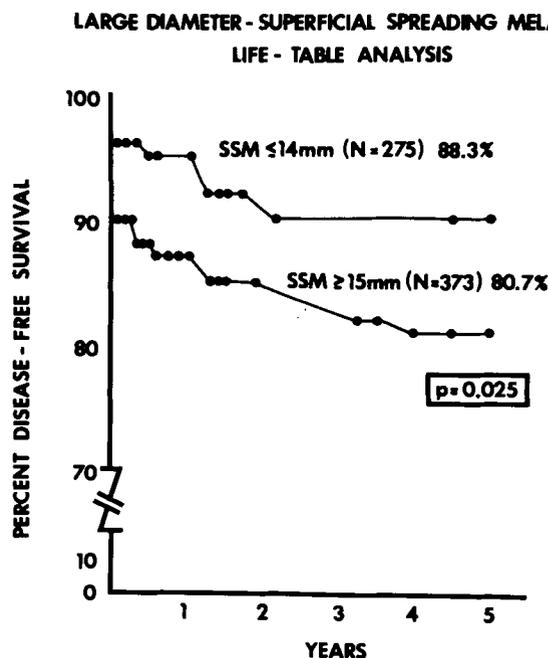
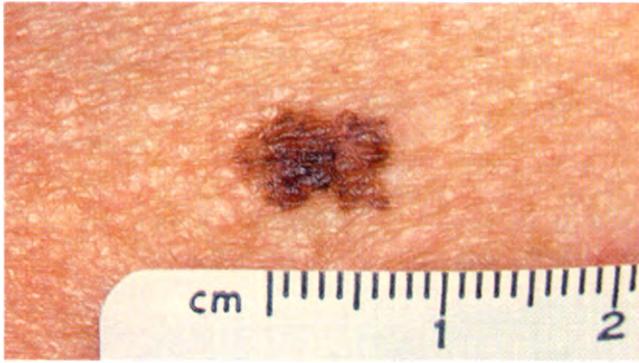


FIGURE 1. Five-year disease-free survival determined by the life-table analysis of Kaplan and Meier.<sup>24</sup>

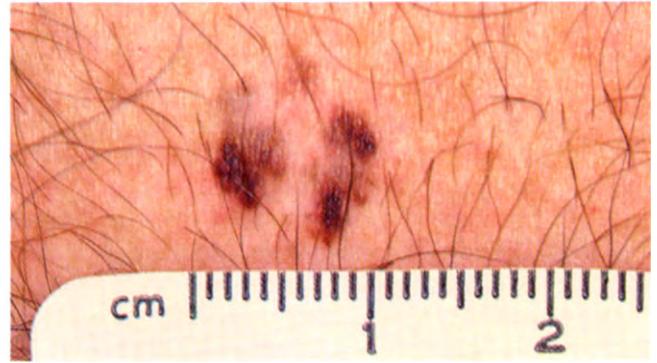
patients with early (Level II) lesions. These authors also reported a direct relationship between level and mean largest diameter of SSMs at the time of diagnosis as follows: Level II, 17.1 mm; Level III, 18.5 mm; Level IV, 21.2 mm; Level V, 28.1 mm.

Breslow<sup>5</sup> concluded that maximum tumor thickness is a very important prognostic determinant in Stage I disease, a conclusion with which we concur. However, tumor thickness is a measurement that can be assessed only after surgical removal of the lesion and subsequent histologic examination. What we are seeking in this report are data to support the concept that the diameter of the lesion can be used as one clinical clue to identifying SSMs with better prognosis. The results of our analyses indicate that diameter alone can be useful to identify such a subset of SSMs. Furthermore, determination of the diameter of a pigmented lesion is easily accomplished by physician or layman alike. It probably is the simplest and most useful precise measurement which can be helpful in recognizing early melanomas.

Earlier studies also noted a correlation between diameter and survival. Mackie et al.<sup>6</sup> reported that patients with lesions less than 2 cm in diameter do better than those with lesions larger than 2 cm. Cady<sup>7</sup> found that the larger the diameter of a melanoma the lower the rate of survival. For lesions 4.9 mm or less in diameter there was an 83% 6-year disease-free survival; for



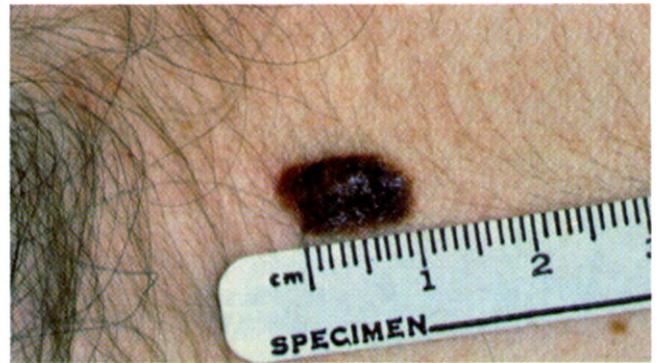
**FIGURE 2.** Superficial spreading melanoma, Level I (in situ), on the right deltoid area of a 71-year-old woman. This 7 × 11 mm, mottled light to dark brown, asymptomatic lesion was of 10 years' duration. According to the patient, it slowly enlarged and developed some "pointed edges" on its perimeter.



**FIGURE 3.** Superficial spreading melanoma with histologic evidence of regression, Level I (in situ), on the right anterior chest of a 41-year-old man. It was present less than one year. This 11 × 11 mm, macular, mottled tan to brown lesion developed loss of pigment in its central portion which, the patient stated, "caused the lesion to break up into small fragments."



**FIGURE 4.** Superficial spreading melanoma, Level II, 0.34 mm thick, on left arm of a 34-year-old woman. The lesion was said to have been present as a 3- to 4-mm uniformly brown area for 10 to 15 years. Two years prior to the time of the photograph, it enlarged peripherally and its color became variegated. In the two months before excision, the diameter doubled, itching developed, and the center lightened.



**FIGURE 5.** Superficial spreading melanoma, Level III, 1.4 mm thick, on the nuchal area of a 24-year-old woman. A pigmented lesion had been present at the site as long as she could remember. Several months prior to excision it became more elevated, began to itch and bled secondary to excoriation.



**FIGURE 6.** Superficial spreading melanoma, Level III, 1.2 mm thick, on the right side of the abdomen of a 53-year-old woman. She stated that a macular, uniformly light tan, irregularly margined lesion had been present at that site for at least 20 years. About 2 years prior to consultation a portion of the edge became elevated, darker in color, and itchy. The mottled dark brown to purplish-black portion measures 8 mm in diameter, beyond which extended a light tan macular area.



**FIGURE 7.** Superficial spreading melanoma, Level III, 0.9 mm thick, on the right subscapular area of a 51-year-old man. The patient stated that a lesion had been present at that site "for many years." He said that it had "not changed" but his wife insisted that he seek medical advice when the lesion "bled on her new white couch." It presented as a 6 × 9 mm, mostly elevated, pink to almost black reniform lesion partly covered with a sanguineous crust.

lesions 2 cm or greater this figure dropped dramatically to 18%. Among the many variables studied by Davis et al.,<sup>8</sup> diameter of tumor was found to correlate with a more favorable prognosis if the lesion was 2 cm or less. Veronesi et al.,<sup>9</sup> in their study of malignant melanoma of the limbs, found that the larger the diameter the worse the prognosis ( $p < 0.05$ ). However, for both groups of diameters studied ( $\leq 15$  mm vs.  $> 15$  mm), the 10-year survival rates were not significantly different if the patients had immediate lymph node dissections or delayed lymphadenectomies.

Of the recent multifactorial analyses of variables which predict outcome for patients with cutaneous malignant melanomas,<sup>10-18</sup> only Veronesi et al.<sup>18</sup> took tumor diameter into account. These authors found that there is a direct correlation between diameter of the lesion and 5-year survival when a univariate analysis is done, but this factor is not significant on step-wise multifactorial analyses. In the latter computation only sex and maximum tumor thickness correlated significantly with 5-year survival. Kopf et al.<sup>19</sup> reported diameter of the SSM to be a dominant variable related to thickness of the lesion on multivariate analysis.

The data presented here, which indicate that SSMs of smaller diameter have a significantly better survival rate, should serve as a stimulus to develop educational programs for the medical profession as well as for the public. The diameter of pigmented lesions is one clinical attribute that can be readily determined by anyone. Examples of superficial spreading melanomas of small diameter are presented in the accompanying color atlas (Figs. 2-7). There is no doubt that recognition of malignant melanomas when they are small in diameter would lead to a significant reduction in the current unacceptable nationwide mortality rate.<sup>20</sup> That such an effort can be rewarding is suggested by the recent study of Little et al.,<sup>21</sup> in which the authors demonstrated that malignant melanomas diagnosed in Queensland, Australia, in 1977 were more often superficial (Levels I and II), non-elevated, and of smaller diameters than those diagnosed between 1963 and 1969. In 1977, more than 50% of the primary melanomas they diagnosed were less than 10 mm in diameter. In our data base, only 20% of the SSMs were diagnosed when their diameters were less than 10 mm. Furthermore, Little et al.<sup>21</sup> attributed their high rates of survival, 85.5% for women and 73.6% for men,<sup>22</sup> to their successful efforts to familiarize both the medical profession and the laymen in Queensland with the recognition of early melanomas. Obviously, we in the United States are far behind this remarkable achievement. Currently, only 42% of the SSMs in our series are being diagnosed when the primary lesions are 14 mm or less in diameter and the overall relative 5-year

survival rate in the United States is 53% for men and 68% for women.<sup>23</sup>

Dr. Davis<sup>22</sup> aptly states, "Melanoma writes its message in the skin with its own ink, and it is there for all of us to see. Unfortunately, some see but do not comprehend." This is a challenge for all of us in the United States to embark on much more aggressive professional and lay educational programs since these efforts are highly likely to substantially reduce the mortality rate of cutaneous malignant melanomas.

#### ACKNOWLEDGMENTS

This work was supported by the Melanoma Funds of the Departments of Dermatology and Surgery of New York University School of Medicine; NIH Research Training Grant No. 5 T 32 AM 07190-05; National Institute of Occupational Safety and Health Grant No. R01 OH00915; National Cancer Institute Grant No. 2 RIO CA 1366-05; The Rudolf L. Baer Foundation for Diseases of the Skin; The Skin Cancer Foundation; Department of Energy Grant No. EY-76-C-02-3077; American Cancer Society Junior Faculty Clinical Fellowship Program; and Cancer Center Grant No. CA 16087. In addition, Dr. Rodríguez-Sains was supported by a Fellowship from the Heed Ophthalmic Foundation.

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