A retrospective study of 1- versus 2-cm excision margins for cutaneous malignant melanomas thicker than 2 mm

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Background: Most guidelines recommend at least 2-cm excision margin for melanomas thicker than 2 mm.

Objective: We evaluated whether 1- or 2-cm excision margins for melanoma (>2 mm) result in different outcomes.

Methods: This is a retrospective cohort study on patients with melanomas (>2 mm) who underwent tumor excision with 1-cm (228 patients) or 2-cm (97 patients) margins to investigate presence of local recurrences, locoregional and distant metastases, and disease-free and overall survival.

Results: In all, 325 patients with mean age of 61.84 years and Breslow thickness of 4.36 mm were considered for the study with a median follow-up of 1852 days (1995-2012). There was no significant difference in the frequency of locoregional and distant metastasis between the 2 groups (P = .311 and .571). The survival analysis showed no differences for disease-free (P = .800; hazard ratio 0.948; 95% confidence interval 0.627-1.433) and overall (P = .951; hazard ratio 1.018; 95% confidence interval 0.575-1.803) survival.

Limitations: The study was not prospectively randomized.

Conclusions: Our study did not show any significant differences in important outcome parameters such as local or distant metastases and overall survival. A prospective study testing 1- versus 2-cm excision margin is warranted. (J Am Acad Dermatol 2015;72:1054-9.)

Key words: disease-free survival; margin of excision; melanomas thicker than 2 mm; metastases; overall survival; recurrences.

One of the major controversies in the primary management of melanoma is how much surrounding normal-appearing skin should be excised around a primary cutaneous melanoma.[1-4] Balancing cosmesis, function, and morbidity with oncologic outcomes requires careful decision-making with respect to determination of the appropriate margins.[5] Inadequate excision margins increase the risk of local recurrence.[6] Conversely, unnecessarily large margins of excision generate greater morbidity and increased costs.[4] Overall survival, disease-free survival, and local recurrence rates are not improved by excision margins greater 2 cm.[7] Therefore, a 2-cm excision margin is recommended for melanomas thicker than 2 mm in most clinical guidelines.[4,7]

In our clinics a 1-cm excision margin is the approved standard by the regional melanoma board for melanoma thicker than 2 mm, whereas external consultants operated with a 2-cm excision margin.

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We analyzed in a retrospective study over a period of 16 years whether 1-cm surgical excision margin has caused any disadvantages in important outcome parameters, in comparison with 2-cm margins.

METHODS

Study population

We performed a population-based survey of melanoma management (registered in ClinicalTrials.gov, trial number NCT02088762) using a database of patients from the Bern University Hospital. The study period ranged from May 1995 to May 2012, with follow-up until the end of July 2013. All cases of single, primary, localized, cutaneous melanoma tumors with greater than 2-mm thickness without evidence of metastasis at the time of surgery and treated by excision of the lesion were included in the study. Patients without documented surgical margins or follow-up were excluded. This study was conducted in accordance with the standards of the Ethical Committee of the Canton of Bern (KEK number: 24-08-10) on human experimentation and with the Helsinki Declaration of 1975, as revised in 1983.

CAPSULE SUMMARY

- Most guidelines recommend at least 2-cm excision margin for melanomas thicker than 2 mm.
- A 1- versus 2-cm margin excision of melanomas thicker than 2 mm did not affect patient outcome.
- Further prospective trials looking at the impact of surgical margins on cost and morbidities are recommended.

Procedures

We collected data on patient gender, age, tumor location, tumor type, Breslow thickness, and presence of ulceration, and distant and locoregional metastases. All surgeons were board-certified and accredited members of an established cancer cooperative group.

During the 17-year time period, 2 consultants performed primary melanoma excision according to the current accepted guidelines, using a 2-cm margin (2-cm group). All other consultants excised all melanoma in accordance with our regional melanoma board—approved guideline with a 1-cm margin irrespective of Breslow thickness (1-cm group). Thus, the excision margins were dependent on the referral to the individual consultant. In all cases, sentinel lymph node biopsy specimens were taken. An experienced pathologist from the University Hospital Bern reviewed the excised tissues and the slides were also evaluated by a panel of melanoma pathologists, who independently reviewed a representative histologic section of each.

In the current study, local recurrences can represent either persistent disease caused by inadequate initial excision or true recurrence adjacent to the scar after adequate prior wide local excision and usually have an in situ component, or they may represent satellite metastases. Locoregional recurrence of melanoma after initial resection was defined as recurrence at the site of the primary lesion, regionally in the draining lymph node basin, or anywhere in between (local recurrence cases were not included).[8-10] Spreading from the original (primary) tumor to distant organs or distant lymph nodes was considered as distant metastases.[11]

Local recurrence rates, locoregional and distant metastases, death attributed to melanoma, disease-free survival, and overall survival were compared between the 2 groups.

Statistical analysis

All analyses were conducted using software (SPSS, Version 21.0, IBM Corp, Armonk, NY). All *P* values relate to 2-sided tests with an alpha level of 0.05. For categorical patient characteristics, Fisher exact test was used to detect differences between groups. Disease-free survival was estimated using the Kaplan-Meier method. The confidence intervals (CI) of hazard ratios for Cox regression and overall survival (for time-to-event variables) were calculated. *P* value was based on the log rank (Mantel-Cox) test to check whether the 2 groups had different overall survival functions. *P* value less than .05 was considered significant.

RESULTS

Of all patients with malignant melanoma treated in our center between May 1995 and May 2012, 325 (138 female, 187 male) patients with melanoma thicker than 2 mm with a median age of 61.84 ± 14.71 years (mean ± SD) fulfilled the inclusion criteria (Fig 1). The median follow-up for the patients was 1852 days. The mean ± SD Breslow depth of the study patients' primary melanoma tumors was 4.36 ± 3.99 mm (2.10-45.00 mm). A total of 220 lesions (67.7%) revealed an infiltration thickness 4 mm or less, whereas 105 (32.3%) were thicker than 4 mm. Nodular melanoma was the most frequent (68.3%) and amelanotic melanoma the least frequent (1.8%) type in our study