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Predictive factors for sentinel lymph nodes and non-sentinel lymph nodes metastatic involvement: a database study of 1,041 melanoma patients

Antoine Kibrité, M.D., F.R.C.S.C.[a,*], Héléne Milot, M.D., F.R.C.S.C.[b], Pierre Douville, M.D., F.R.C.P.C.[c], Éric J. Gagné, M.D., F.R.C.P.C.[c], Sébastien Labonté, M.D., F.R.C.P.C.[c], Juan Friede, M.D.[d], Francis Morin, M.D., M.Sc.[d], Jean-François Ouellet, M.D., F.R.C.S.C.[a], Joël Claveau, M.D., F.R.C.P.C., F.A.B.D.[e]

[a]Department of Surgery, CHU de Québec, Hôtel-Dieu de Québec, 11 Côte du Palais, Québec, QC G1R 2J6, Canada; [b]Department of General Surgery, Hôpital Le Royer, Baie-Comeau, Québec, QC, Canada; [c]Department of Medical Biology, [d]Medical Imaging Department, and [e]Department of Dermatology, CHU de Québec, Hôtel-Dieu de Québec, Québec, QC, Canada

KEYWORDS:
Melanoma;
Sentinel lymph node;
Breslow thickness;
Mitotic rate;
Lymphovascular invasion;
Lymphadenectomy

Abstract

BACKGROUND: Sentinel lymph node (SLN) biopsy may identify patients who may need completion lymphadenectomy and adjuvant therapy.

METHODS: Univariate and multivariate analysis were conducted for SLN status in a prospective cohort of 1,041 patients. A biopsy was recommended for melanoma greater than or equal to 1 mm thick or greater than or equal to .75 mm with poor prognostic features.

RESULTS: For sentinel node status, mitotic rate is very significant in univariate analysis. In multivariate analysis, Breslow, lymphovascular invasion, and primary site were significant. Breslow thickness greater than or equal to 2 mm and SLN with macroscopic burden greater than or equal to 2 mm are the only statistically significant variables predicting the non-SLN status in multivariate analysis.

CONCLUSIONS: The data confirm the importance of Breslow, lymphovascular invasion, and body site for SLN status. The cutoff of 2 mm for tumor load in SLN appears to be a simple technique to find the high-risk patients with further lymph node disease.

The current study was approved by all authors.

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The authors declare no conflicts of interest.

* Corresponding author. Tel.: +1-418-691-5370; fax: +1-418-691-5020.
E-mail address: drantoine.kibrite@sympatico.ca

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With minimal morbidity, sentinel lymph node (SLN) biopsy reliably detects subclinical nodal involvement, provides accurate and cost-effective staging, and identifies patients who may benefit from adjuvant therapy. Many papers were published in the last years in an attempt to identify clinicopathological factors[1–3] associated with a

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positive SLN, and then select the patients to whom we could offer a completion lymphadenectomy. Only a few variables were found to be reproducibly significant in multivariate analysis. Lymphovascular invasion (LVI), mitotic rate, Breslow thickness, ulceration, and satellitosis were reported as such. Breslow thickness and metastatic SLN status were found to be the most important prognostic indicators.[4,5] Recently, the mitotic rate was added to the American Joint Commission on Cancer (AJCC) staging system.[6] A prospective cohort study was conducted on 1,041 patients to evaluate the significant factors associated with positive sentinel and subsequent lymph nodes status.

Methods

Study population

A prospective database review was conducted on patients who underwent an SLN biopsy as part of their melanoma staging treatment and were followed from 1996 to 2010 at the melanoma clinic in the Centre Hospitalier Universitaire de Québec, Canada. A total of 1,041 patients with a confirmed diagnosis of melanoma consisting of a Breslow thickness greater than or equal to 1 mm or any melanoma with the presence of ulceration, lymphatic invasion, regression, unknown Breslow, ulceration, Clark level IV, or microsatellitosis were included. Consistent with published guidelines,[4,7] a SLN biopsy was recommended mainly for pathologic staging of the regional nodal basin(s) and possibly as treatment for these patients. Patients with incomplete data (n = 25), asynchronous melanomas (n = 9), and patients where technical problems were encountered (n = 7) were excluded from the main study (Fig. 1).

Lymphoscintigraphy and surgical sentinel lymph node biopsy techniques

SLN mapping was obtained with intradermal injections of .5 to 1 mCi of Tc99m-labeled antimony sulfide colloid.

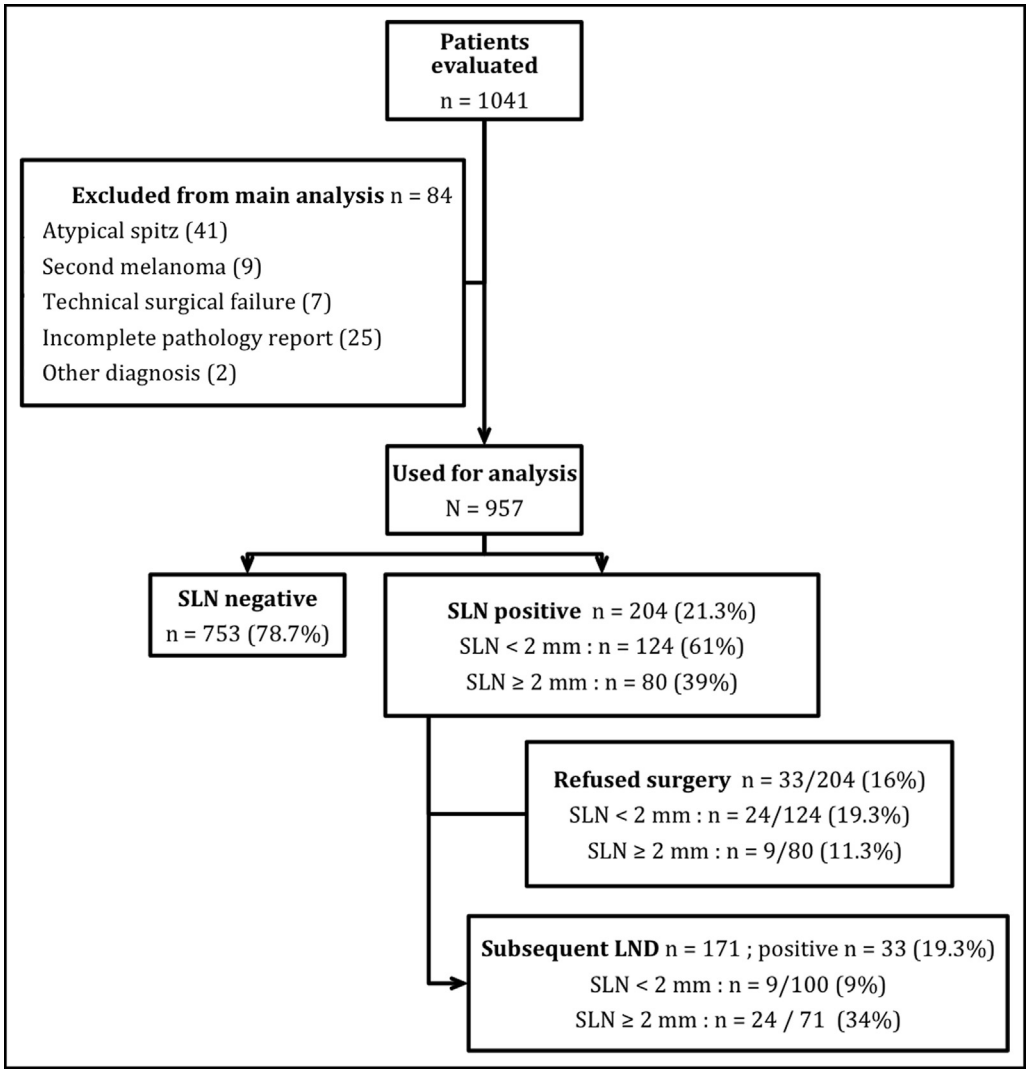

Figure 1 Flowchart of the study population.