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Use of Electronic Medical Records to Ascertain Depth of SEER-Reported Melanomas of Unknown Tumor Thickness

Cancer surveillance is important for monitoring disease trends and survival, forecasting future directions, and appropriately targeting strategies for prevention and screening. In the United States, the Surveillance, Epidemiology and End Results (SEER) Program is charged with maintaining records of all cancers reported annually in their respective populations, including melanoma, which is the sixth most common cancer in the United States.[1,2]

Table 1. Results from Review of Medical Records of HMO Patients With Melanoma Reported by the SEER Program as Having Tumors of Unknown Depth, 1984 Through 2008

Tumor Type	Cases, No. (%)
In situ	205 (59.2)
Invasive with available Breslow depth	44 (12.7)
Unknown or unavailable	97 (28.0)
Total	**346 (100)**

Abbreviations: HMO, health maintenance organization; SEER, Surveillance, Epidemiology and End Results Program.

Table 2. Results From Review of Medical Records of HMO Patients With Melanoma Reported by the SEER Program As Having Tumors of Unknown Depth by Tumor Behavior, 1984 Through 2008

	Behavior, No. (%)	
Tumor Type	In Situ	Malignant
In situ	192 (66.2)	13 (23)
Invasive with available Breslow depth, mm	25 (8.6)	19 (34)
<1.00	13 (4.5)	10 (18)
1.00-3.99	12 (4.1)	8 (14)
≥4.00	0 (0.0)	1 (2)
Unknown or unavailable	73 (25.2)	24 (43)
Total	290 (100)	56 (100)

Despite the rigorous methods applied by the SEER tumor registry, there remain limitations on the completeness of data. Approximately 4% of melanomas in the SEER program have no SEER summary stage, which is different from the American Joint Committee on Cancer (AJCC) stage, and approximately 12% of melanomas reported to SEER annually are missing information on tumor thickness.[1,3] An important component of AJCC staging, tumor thickness (aka Breslow thickness) is a key predictor of melanoma survival. These melanomas of unknown thickness represent either incomplete clinical information or inadequate abstracting of existing clinical documentation.[4]

To better understand the composition of melanomas with missing thickness in the SEER data, we examined the electronic medical records (EMR) of health maintenance organization (HMO) melanoma cases. The objectives of this examination were to (1) quantify how often actual tumor depth could be determined from the EMR of originally reported unknown-depth tumors; (2) determine the available abstracted Breslow depths and compare their distribution to that of the reported tumor registry depths; and (3) identify possible areas to target for improving tumor depth reporting by abstractors.

Methods. This study was approved by the Henry Ford Health System institutional review board. Data were requested from the Detroit SEER registry for melanoma cases (topography codes C440-C449; morphology code 8720-99) occurring between 1984 and 2008 among the approximately 450 000 HMO plan members annually during the period of interest. Between 1984 and 2008, there

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Table 3. Distribution by Thickness of Cases Ascertained by Medical Record Review of HMO Patients With Melanoma Previously Reported by the SEER Program With Unknown Depths Compared With Depth Distribution in the General Detroit SEER Registry and the Entire SEER-9 Program, 1984 Through 2008

	Cases, No. (%)			
Tumor Type	HFHS HMO With Previously Reported Unknown Depths	HFHS HMO With Previously Reported Known Depth	Detroit SEER Registry	Entire SEER-9 Program
In situ	205 (82.3)	408 (42.6)	3767 (40.8)	29 761 (38.2)
Invasive with available Breslow depth, mm				
<1.00	23 (9.2)	356 (37.2)	3747 (40.6)	32 906 (42.2)
1-3.99	20 (8.0)	153 (16.0)	1439 (15.6)	12 823 (16.4)
≥4.00	1 (0.4)	41 (4.3)	272 (2.9)	2488 (3.2)
Total	**249**	**958**	**9225**	**77 978**
χ^2 *P* value	Reference	<.001	<.001	<.001

Abbreviations: HFHS, Henry Ford Health System; HMO, health maintenance organization; SEER, Surveillance, Epidemiology and End Results Program.

were 1156 cutaneous melanomas reported by the HMO and the Detroit SEER. This included 346 melanoma cases with *unknown Breslow thickness*, defined as *EOD-10* (extent of disease length of 10 digits), recorded as unknown (999). The EMR of these 346 cases were reviewed in an attempt to ascertain tumor thickness.

Results. After careful review of the EMR, tumor thickness was ascertained for 249 cases with previously reported unknown depth (72%). Review of EMR failed to provide depth for 97 cases of unknown thickness (28%) (**Table 1**).

Ascertainment of missing melanoma depth data yielded cases in each of the traditional depth categories used in staging, regardless of behavior code (**Table 2**). When the distribution was compared with the distribution of all cases in the Detroit SEER and the entire SEER-9 program (**Table 3**),[3] the ascertained HMO cases that were originally reported as unknown depth included more in situ melanomas and fewer invasive melanomas (**Figure**). Most of these in situ melanomas were recorded in histopathology reports as lentigo maligna (61%).

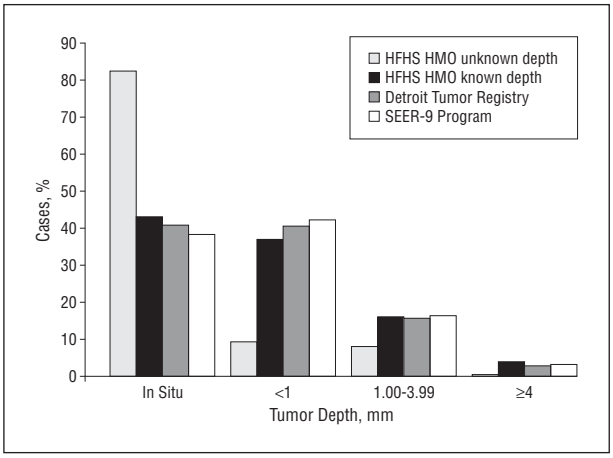

Figure. Comparison of the distribution by melanoma tumor depth of ascertained health maintenance organization (HMO) cases formerly reported by SEER as of unknown depth compared with overall known distribution of melanoma depths in the HMO population with known depth, the Detroit Tumor Registry, and the SEER-9 Program.[3] HFHS indicates the Henry Ford Health System; SEER, Surveillance, Epidemiology and End Results.

Comment. While demographic characteristics of patients with unstaged disease and missing components of staging have been quantified for select cancers, this study provides information on the distribution of missing cases by tumor prognostic category.[4,5] Review of HMO medical records allowed for tumor depth ascertainment for a large proportion of melanoma cases previously reported as unknown depth by SEER. The distribution of the thickness of these newly ascertained cases demonstrated a disproportionate number of in situ melanomas. The lentigo maligna type of melanoma in situ, was commonly recorded as an unknown depth.

Our study had several limitations. It was conducted at a single institution and so may not be generalizable. The distribution of melanomas with unknown thickness may not reflect the overall distribution of melanoma by thickness. The number of melanomas in situ, as reported by SEER, may be underestimated owing to misclassification, which has implications for the descriptive epidemiology of melanoma.

Future studies are recommended of melanomas of unknown thickness with the goal of identifying areas to improve melanoma reporting, including repeated examination in other settings, such as any of the 6 Cancer Research Network HMO institutions that overlap with SEER registries. Continuing education of registry abstractors may improve SEER registry completeness by focusing on ascertainment of melanoma in situ, including cases recorded as lentigo maligna.

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The Presence of IgM Antiphospholipid Antibodies in Patients With Henoch-Schönlein Purpura and Recurrent Palpable Purpura

Henoch-Schönlein purpura (HSP) is a primary small-vessel vasculitis characterized by nonthrombocytopenic palpable purpura over the lower extremities. Our research group previously speculated that IgM antiphosphatidylserine-prothrombin complex (anti-PSPT) antibodies could be implicated in disease susceptibility for livedo racemosa.[1] Others have reported the presence of antiphospholipid antibodies in patients with cutaneous vasculitis, including HSP.[2,3] Whether these antibodies represent an epiphenomenon or they are thrombogenic and/or vasculitic in origin in such patients is unknown.

Methods. We reviewed the records of Japanese patients with HSP who were seen at the Department of Dermatology, St Marianna University, Kawasaki, Japan, with the recurrent cutaneous manifestation of palpable purpura on their lower extremities between 2006 and 2010. The patients were diagnosed according to the criteria defined by the American College of Rheumatology[4] and the KAWAKAMI algorithm.[5] Recurrent palpable purpura was defined as the occurrence of slightly elevated purpura with palpable swelling numerous times during the 3-month follow-up. None of our patients demonstrated any evidence of a coexisting malignant neoplasm, other autoimmune disease, or viral hepatitis. Lupus anticoagulant (LAC) levels and/or the presence of anti-PSPT antibodies were measured according to previously described procedures.[1]

Results. We identified 12 consecutive patients with HSP and recurrent palpable purpura (4 men and 8 women), mean (SD) age, 32.7 (11.7) years) (**Table**). All patients demonstrated livedo racemosa over their lower extremities in association with the temporary disappearance of the palpable purpura (**Figure**). Seven of the 12 patients were shown to be LAC positive (58%). Eleven patients tested positive for IgM anti-PSPT antibodies (92%) but not IgG anti-PSPT antibodies. All the patients were LAC positive and/or demonstrated IgM anti-PSPT antibodies. Renal involvement was noted in 9 patients (75%), and gastrointestinal involvement was noted in 8 (67%). There were 7 patients with both renal and gastrointestinal involvement (58%) and also tested positive for IgM anti-PSPT antibodies.

Comment. We found that all patients with HSP except 1 woman with recurrent palpable purpura tested positive for IgM anti-PSPT antibodies. Livedo racemosa was found in all patients. We suggest that the link between recurrent palpable purpura and livedo racemosa in the present patients may be related to a common immunogenetic pathogenic pathway that includes IgM anti-PSPT antibodies.

Table. Clinical and Serologic Findings in Patients With HSP and Recurrent Palpable Purpura

Patient No./ Sex/Age, y	LAC	Anti-PSPT IgM	Arthralgia	Renal Involvement	Gastrointestinal Involvement
1/1/F9	–	15	+	+	+
2/28/M	+	28	+	–	–
3/57/F	+	16	+	+	+
4/34/M	+	–	+	–	+
5/38/F	–	21	+	+	+
6/21/F	–	13	–	+	+
7/31/F	+	13	+	+	+
8/29/M	–	16	+	+	+
9/46/F	+	11	+	+	–
10/44/F	–	13	+	+	+
11/21/M	+	28	+	+	–
12/24/F	+	16	–	–	–

Abbreviations: HSP, Henoch-Schönlein purpura; LAC, lupus anticoagulant; Anti-PSPT IgM antiphosphatidylserine-prothrombin complex IgM antibodies; plus sign, presence of clinical or serologic entity; minus sign, absence of clinical or serologic entity.

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