Head & neck primary cutaneous melanoma patients stratified by CP-GEP (Merlin Assay): risk of nodal metastasis and long-term survival outcome

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Introduction

Primary cutaneous melanoma (CM) of the head and neck often yields false-negative results from sentinel lymph node biopsies (SLNB). Consequently, these melanomas exhibit higher recurrence rates than those on other body parts. In this study, we investigate the capability of CP-GEP to stratify patients' risk for nodal metastasis and evaluate their long-term survival outcomes.

Methods

Patients with primary CM of the head and neck who underwent SLNB between 2004 and 2021 at two US centers were included in this study. CP-GEP integrates Breslow thickness, the patient's age at diagnosis, and the expression of eight genes from the primary CM tissue. The CP-GEP model produces a binary output: High Risk or Low Risk.

Results

Out of 250 head and neck CM patients included in the analysis, there was a 14.0% SLNB positivity rate. CP-GEP classified 147 patients (58.8%) as High Risk. These patients exhibited a higher SLNB positivity rate of 22.4% and accounted for 14 of the 19 melanoma-specific deaths (73.7%). Meanwhile, CP-GEP categorized 103 patients as Low Risk, leading to a 41.2% reduction in SLNB with a Negative Predictive Value (NPV) of 98.1%. The five-year Melanoma-Specific Survival (MSS) rates were 82.4% for High Risk patients and 95.5% for Low Risk patients.

Conclusion

CP-GEP has the potential to categorize primary CM patients of the head and neck based on their risk for nodal metastasis and long-term survival outcomes. Notably, CP-GEP can help identify patients with tumors in surgically challenging locations who potentially may avoid SLNB surgery, while more accurately pinpointing those truly at risk for melanoma-specific death.