Trends in Melanoma Patient Survival Based on Tumor Depth and Anatomic Location

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Skin cancer is the most common cancer. Melanoma composes less than 4% of total cases but is the cause of most skin cancer deaths. However, in the United States, melanoma has the fifth highest rate of incidence of all cancers with an average 93.5% 5-year survival rate. However, when melanoma spreads either to regional lymph nodes or to distant organs, the prognosis drops significantly, so there is a critical need to identify patients at risk for tumor spread. The objective of this research project is to determine the correlation between tumor depth and anatomic location with metastasis outcomes. We identified a cohort of 923 Stage 1 & 2 patients (those without lymph node metastases) from the Indiana University Simon Cancer Center Registry with an average follow up of 4 years (Std. dev = 3.2). We retrieved the clinicopathologic descriptions of their melanomas using a database from the IU Pathology department. Patients were stratified by tumor stage, location, and depth of invasion, and survival rates were analyzed Cox proportional hazard models and log-rank tests. Kaplan-Meier plots were generated with the *survminer* package. The results of the study indicate that there is no difference in metastasis for patients with similar levels of tumor invasion but different anatomic locations. Unexpectedly, multivariate cox regression showed that mitotic count was a stronger predictor of metastasis than tumor invasion. These results indicate that there is a need for bioinformatic tools to more accurately quantify semi-quantitative measures of tumor morphology. This would allow for rigorous research and higher precisions prognostic tools.