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Abstract

Trends of skin cancer incidence following transplantation in the United States

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Background

Skin cancer is the most common malignancy occurring after organ transplantation. Although previous research has reported an increased risk of skin cancer in solid organ transplant recipients (OTR), no study has estimated the post-transplant population-based incidence in the US. The objective of this study is to determine the incidence and evaluate the predictors of post-transplant skin cancer, including squamous cell carcinoma (SCC), melanoma (MM), and Merkel cell carcinoma (MCC) in a cohort of US OTR receiving a primary transplant in 2003 or 2008.

Methods

Design: A multi-center retrospective cohort study with 5- and 10-year follow-up periods.

Setting: The Transplant Skin Cancer Network (TSCN) comprises 26 transplant centers across the US.

Participants: Adult recipients of a primary transplant performed at 26 centers in 2003 or 2008 identified through the Organ Procurement and Transplantation Network (OPTN) database (N=10,649) were selected. Recipients of all organs except intestine were included.

Main outcome and measurements: Skin cancer outcomes were determined through detailed medical record review. Data on predictors were obtained from the OPTN database. The incidence rates (IR) for post-transplant skin cancer overall and for SCC, MM, and MCC were calculated per 100,000 person-years. Potential risk factors for post-transplant skin cancer were tested using multivariate Cox regression analysis to yield adjusted hazard ratios (HR).

Results

There were 10,649 organ transplant recipients that contributed 59,923 years of follow-up. The IR for post-transplant skin cancer overall was 1408 per 100,000 person-years. The specific subtype rates for SCC, MM, and MCC were 1328, 122, and 4 per 100,000 person-years, respectively. The statistically significant risk factors for post-transplant skin cancer were: pre-transplant skin cancer (HR 4.69, 95% confidence interval [CI] 3.26-6.73) male gender (HR 1.56, 95% CI 1.34-1.81), white race (HR 9.04, 95% CI 6.20-13.18), age at transplant ≥ 50 (HR 2.77, 95% CI 2.20-3.48), and being transplanted in 2008 vs. 2003 (HR 1.53, 95% CI 1.22-1.94).

Conclusion

Post-transplant skin cancer is common, with elevated risk imparted by increased age, white race, male gender, and thoracic organ transplantation. Understanding the risk factors for post-transplant skin cancer is fundamental to targeted screening and prevention in this high-risk population.