

Midwest Surgical Association

Pediatric melanoma in New Mexico American Indians, Hispanics, and non-Hispanic whites, 1981–2009

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Abstract

BACKGROUND: Pediatric melanoma rates are increasing nationally. Our purpose was to determine the incidence of melanoma in New Mexico's (NM's) American Indian, Hispanic, and non-Hispanic white children.

METHODS: A retrospective review (1981 to 2009) of the NM Tumor Registry was conducted. Melanomas diagnosed in children ≤ 19 years of age were identified. Average annual age-adjusted incidence rates per million were calculated.

RESULTS: Sixty-four cases were identified. Rates per million were 7.4 for non-Hispanic whites, 2.1 for Hispanics, and 3.3 for American Indians. Fifty-nine percent were women. Fifty-five (86%) cases were localized, 6 (9%) were regional, and 1 (3%) case was metastatic. Majority of cases (49/64; 77%) occurred in children >14 years of age. American Indians presented with thicker melanomas as compared to whites and Hispanics.

CONCLUSIONS: Incidence rates for pediatric melanoma in NM are highest for non-Hispanic whites. Distant metastasis is uncommon. Melanoma in children is rare, but practitioners must be aware of its occurrence for prompt diagnosis and treatment.

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Melanoma remains a significant health concern in the United States as there will be an estimated 76,690 cases diagnosed in 2013 with approximately 9,480 deaths.¹ Incidence rates of melanoma in the adult population have been increasing in the United States and Europe. Melanoma in the pediatric population is very rare. In fact, melanoma represents only 1% to 3% of all malignancies in patients younger than 20 years of age.² As in adults, however, the

incidence of melanoma in children and adolescents is also increasing. Surveillance, Epidemiology and End Results (SEER) data analysis shows that between the years 1992 and 2004, the incidence of melanoma in the pediatric population increased at a rate of 2.8%.³ Thus, this deadly form of skin cancer remains a significant cause of morbidity and mortality.

New Mexico (NM) has a unique and diverse ethnic population. According to 2010 US Census data, $<40\%$ of the population in NM is white, with the remaining 47% being Hispanic, 10% American Indian, and about 2% African American.⁴ Thus, NM is considered a minority-majority state. Additional states may achieve this status as the Hispanic population is one of the fastest growing

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segments of our society. With the rising incidence of pediatric melanomas, in order to decrease the morbidity and mortality in the pediatric population, it is important for clinicians to promptly identify and treat melanoma in children of all ethnicities. The purpose of this study was to determine the incidence of melanoma in NM's American Indian, Hispanic, and non-Hispanic white population who were aged 19 years or less during the time period 1981 to 2009.

Methods

Data sources

This investigation was based on the existing records from the NM Tumor Registry (NMTR), a population-based cancer registry that was established in 1966. The NMTR is a founding member of the National Cancer Institute's SEER Program and has continuously participated in the SEER Program since 1973. In the NMTR – as in the SEER Program in general – highly trained abstractors systematically review pathology reports, medical records, death certificates, and other sources to obtain information about patient demographics, tumor characteristics, first course of cancer-directed therapy, health care providers, and vital status. Race/ethnicity is determined from specific statements contained in medical records. In addition, surnames are used to identify individuals of Hispanic ancestry, and receipt of treatment provided and/or paid for by the Indian Health Service is used to identify American Indians. Tumor characteristics including histology, behavior, and primary anatomic sites were coded according to the International Classification of Disease for Oncology-Third Edition. Cancer surveillance in NM is conducted in accordance with prevailing standards established by the SEER Program, the North American Association of Central Cancer Registries, and the American College of Surgeons.

Eligible cases

The investigators identified all incident cases of cutaneous malignant melanomas (International Classification of Disease for Oncology-Third Edition histology codes 8720 to 8790 and anatomic site codes C44.0 to C44.9) that were diagnosed among NM residents who were 0 to 19 years of age during the time period 1981 to 2009; in situ melanomas were excluded from the analysis. This time period was chosen to correspond to readily available population estimates that were prepared by the US Census Bureau for the purposes of cancer surveillance. The definition of pediatric melanoma ranged from birth to 21 years of age in various published reports. For the purpose of our study, we chose the upper age limit to be 19 years as most recent studies conducted using the available databases have used 19 years as their upper age limit.

Data analysis

The average annual age-specific and age-adjusted incidence rates per million were calculated in accordance with standard epidemiological methods. The average annual age-adjusted incidence rates were calculated by the direct method using the age distribution of the projected US population for the calendar year 2000 as the standard population. Incidence rates were calculated for 3 time periods: 1981 to 1990, 1991 to 2000, and 2001 to 2009. Annual population estimates for NM residents by race/ethnicity, sex, and 5-year age group served as denominators for rate calculations and were based on US Census Bureau data. Incidence rates and the corresponding 95% confidence intervals (CIs) were calculated using the SEER*Stat software from the National Cancer Institute. Stage of disease at diagnosis was documented from statements on pathology reports and other medical records. Categories of stage of disease at diagnosis are consistent with those documented in the SEER Program's Summary Staging Guide. For the purposes of this analysis, stage of disease at diagnosis was classified as an ordinal variable (ie, in situ, localized, regional, distant, or unknown). Localized cases were those with no satellite lesions or lymph node metastasis, while regional cases were with either presence of satellite lesions and/or lymph node involvement. Temporal changes in the stage distribution were assessed with the Cochran–Armitage trend test.

Results

Ethnicity

A total of 64 incident cases of melanoma were identified among non-Hispanic whites, Hispanics, and American Indians in NM during the time period from 1981 to 2009. No cases were identified among other racial/ethnic groups during this time period in NM. Non-Hispanic whites had the highest incident rate of 7.4 per million (95% CI = 5.4 to 10). This was followed by American Indians and Hispanics with incident rates of 3.2 per million (95% CI = 1.2 to 6.8) and 2.1 per million (95% CI = 1.2 to 3.5), respectively (Fig. 1).

Sex

An overall female predominance (59.38%, $n = 38$) was seen among the identified melanoma cases in children. Fig. 1 shows the incidence rates in males and females for each ethnic group that were analyzed for this study.

Age

The age at which the melanomas were diagnosed were divided into 2 groups: 0 to 14 years and 15 to 19 years. Fifteen cases were diagnosed in the 0- to 14-year age group

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