

A Secondary Analysis of SEER Data: Association between Gender, Race and Melanoma Stage in U.S Adults from 1973 to 2011

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Abstract

Melanoma is a neoplasm arising from melanocytes. It is the fifth common cancer in the United States; it is the main cause of deaths from skin cancers. There is improvement in five-year survival rates for melanoma from 82% in 1975 to 92% in 2004; however the overall mortality rate remains unchanged. Objective: Our study aims to assess the association of gender and race to the stage of melanoma at diagnosis in US population. Materials & methods: We used data from SEER from 1973 to 2011. We excluded from the analysis by using SPSS duplicate patients and subjects less than 18 years old. The study includes 227,509 melanoma patients. Main study variables included gender, race and stage. Unadjusted and adjusted logistic regression was used to adjust for potential confounders. OR and 95%CI were calculated. Results: Males diagnosed with melanoma were older compared to females (mean= 58.5 and 55.2 years old respectively, p-value= <0.001). Black patients were diagnosed at a younger age than whites and other races (mean=46.3, 57.4, and 55.2 years old respectively, p-value= <0.001). Black melanoma patients have the highest proportion of deaths compared to whites and other races (39.4%, 13.7% and 21.0% respectively). Patients diagnosed at late stage of melanoma were more likely to be males and black. After adjusting by potential confounders, males were 22% (OR=1.2, 95%CI=1.2-1.3) more likely to be diagnosed at late stage compared with females. White patients were 80% (OR=0.2, 95%CI=0.1-0.2) less likely to be diagnosed at late stage compared with black patients. In the adjusted model, patients who were diagnosed at a later stage were more likely to die from melanoma and the primary site of diagnosed were NOS/overlapping lesion of the skin and the lower extremities (OR= 19.8, OR= 1.3, OR=9.9 respectively p-value= <0.001). Conclusion: Males were more likely to have late stage melanoma than females. Blacks were more likely to have late stage melanoma than whites. Gender and racial differences in the stages of melanoma might be explained by access to healthcare inequities or distinct etiological pathways. It remains a matter of future research.

Key words: Melanoma, Gender, Race, Stage, Adults, US.

INTRODUCTION

Melanoma is a neoplasm arising from melanocytes, where the production of melanin produced from specialized cell in the epidermis [1,2]. Among all skin cancers, the most aggressive life threatening skin disease is melanoma [3]. It is the fifth common cancer in the United States although melanoma accounts for less than 2% of skin cancers; it is the main cause of deaths from skin cancers [4]. Australia and New Zealand in comparison to other areas world widely

have the highest incidence of melanoma [5]. Although the incidence is predominantly among non-Hispanic white populations, especially in women and late adolescent as we will discuss later [6]. More than half of all melanomas develop de novo but it can develop on pre-existing moles such as a congenital, acquired, or atypical nevus [7]. There is improvement in five-year survival rates for melanoma from 82% in 1975 to 92% in 2004; however the overall mortality rate remains unchanged. The prognosis of a melanoma depends on the following factors: the depth of invasion,

the presence or absence of ulceration, and the nodal status at diagnosis. Other important factors that also affect survival of the melanoma survival include age, lymph node involvement, and extra-nodal extension [8]. Cutaneous melanoma is mostly a disease of whites, however when it occurs in other races, outcomes are clearly poorer [9, 10]. Melanoma can be cured if detected in its early localized stage but metastatic melanoma still to be a therapeutic challenge [11]. There are no studies available which assess the association of gender and race to the stage of melanoma over a period of more than 35 years in the U.S.

OBJECTIVE

Our study aims to assess the association of gender and race to the stage of melanoma at diagnosis in US population.

MATERIAL AND METHOD

This study was a secondary analysis of data from the National Cancer Institute's Surveillance, Epidemiology, and End Results (SEER) Program, which provides information on cancer statistics in an effort to reduce the burden of cancer among the U.S. Population [12] Subjects diagnosed with primary cutaneous melanoma from 1973 to 2011 were included in this study. We excluded from the analysis by using SPSS (version 22) duplicate patients and patients less than 18 years old [Figure 1]. The study included 227,509 melanoma patients (final sample size). Our main study variables included gender, race and stage. Potential confounders included were age at diagnoses, origin, number and site of primary and cause-specific death. Race was grouped as White, Black, or Other (Asian or Pacific Islander, American Indian/Alaska Native, and other unspecified). Stage at the time of diagnosis was categorized as early (in

situ, localized and regional), and late (distant). Unadjusted and adjusted logistic regression was used to adjust for potential confounders. OR and 95%CI were calculated. A P-value less than 0.05 was considered statistically significant.

RESULTS

Males diagnosed with melanoma were older compared to females (mean=58.5 and 55.2 years old respectively, p-value= <0.001). Head and neck and trunk are common primary sites of melanoma in male (30.3% and 31.9% respectively p-value=<0.001) while in female's is extremities (lower limbs and hip=28.7% and upper limbs and shoulder=25.6% p-value= <0.001) [Table1.1]. Black patients were diagnosed at a younger age than whites and other races (mean=46.3, 57.4, and 55.2 years old respectively, p-value= <0.001). Primary site is significantly different between races; the most common primary sites for black are NOS "not otherwise specified"/Overlapping lesion (when a tumor overlaps the boundaries of two or more categories or subcategories and its point of origin cannot be determined) of skin (31.3% p-value= <0.001) and lower limbs and hips (29.6% p-value= <0.001), while in white patients are trunk (28.5% p-value= <0.001) and head and neck (25.9% p-value= <0.001). Black melanoma patients have the highest proportion of deaths compared to whites and other races (39.4%, 13.7% and 21.0% respectively) [Table1.2]. Patients diagnosed at late stage of melanoma were more likely to be males and black [figures 2,3]. After adjusting by potential confounders, males were 22% (OR=1.2, 95%CI=1.2-1.3) more likely to be diagnosed at late stage compared with females. White patients were 80% (OR=0.2, 95%CI=0.1-0.2) less likely to be diagnosed at late stage compared with black patients. In the adjusted model, patients who were diagnosed at a later

stage were more likely to die from melanoma and the primary site of diagnosed were NOS/overlapping lesion of the skin and the lower extremities (OR= 19.8, OR= 1.3, OR=9.9 respectively p-value= <0.001) [Table1.3].

CONCLUSION

Males were more likely to have late stage melanoma than females. Blacks were more likely to have late stage melanoma than whites. Gender and racial differences in the stages of melanoma might be explained by access to healthcare inequities or distinct etiological pathways. It remains a matter of future research.

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