Lung cancer survival in American Indians, Hispanic and non-Hispanic Whites in New Mexico, USA

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Background

New Mexico (NM) is the fifth largest state in geographic area, yet is ranked 46th in population size, which means that many individuals live in rural areas and in regions that are physically distant from high-quality cancer-care related care. New Mexico’s resident population is comprised of Hispanic whites (HW-47%), non-Hispanic whites (NHW-41%), American Indians (AI-10%), and other racial/ethnic groups (3%).

Lung cancer incidence rates for NM NHW are similar to the national average, but are lower among the state’s HW and AI.

We conducted the present analysis to characterize lung cancer cause-specific survival in NM. We hypothesized that survival rates would vary by race/ethnicity groups and by urban/rural residence at time of diagnosis.

Methods

We identified all incident and malignant cases of cancers of the lung and bronchus (ICD-O-3 site codes C34.0-C34.9, behavior code 3) diagnosed among NM residents from 1990–2009 from hospital records of the population-based New Mexico Tumor Registry (NMR). The end-point of the study period was chosen to allow for at least 5 years of follow-up in all study subjects. Cases with lymphoma, Kaposi’s sarcoma, and mesotheliomas were excluded from the analysis, as were other non-carcinomas. The analysis was further restricted to NHW, HW, and AI due to the small number of cases in other racial/ethnic groups. Finally, the analysis was restricted to histologically-confirmed cases with active follow-up and those whose lung cancer was the only or first of multiple primary cancers, in accordance with prevailing standards.

Cause-specific survival was calculated in accordance with methods outlined by Howlader et al. (2010), using standard Kaplan-Meier and Cox Proportional Hazards techniques.

Age at diagnosis, sex, SEER historic stage, race/ethnicity, marital status, histologic type, and diagnosis year are standard variables in the NMR. Measures of Education and Poverty were derived from aggregate census tract-level data from the decennial censuses of 1990, 2000, and 2010 and were assigned to individual subjects based on their place of residence at diagnosis and time period of diagnosis. Similarly, Rural-Urban Commuting Area (RUCA) Codes were assigned according to place of residence and time period of diagnosis. History categories are those defined by Lewis et al. (2014).

Results

Cause-Specific Survival for Incident Lung Cancer Cases in New Mexico, 1990-2009

(5-year follow-up)

Conclusions

• Lung cancer is a highly fatal disease (8,546 deaths in 10,592 cases) with calculated median survival time of 9 months
• By Cox proportional hazards model, urban vs. rural place of residence at diagnosis did not significantly influence cause-specific survival after adjustment for multiple factors
• Racial/ethnic differences in cause-specific survival were not statistically significant
• Improvements in cause-specific survival over time were statistically significant, but modest

Limitations

• Relatively small number of cases may constrain interpretation of some results
• Variables representing socioeconomic status for each patient were based on aggregate census tract data from the place of residence at time of diagnosis

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