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Incidence patterns for primary malignant spinal cord gliomas: a Surveillance, Epidemiology, and End Results study.

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Abstract

Object Primary malignant spinal glioma represents a significant clinical challenge due to the devastating effect on clinical outcomes in the majority of cases. As they are infrequently encountered in any one center, there has been limited population-based data analysis on the incidence patterns of these aggressive tumors. The objective of this study was to use publically available Surveillance, Epidemiology and End Results (SEER) program data to examine the overall incidence and incidence patterns over time with regard to age at diagnosis, sex, race, primary site of tumor, and histological subtype in patients in whom primary malignant spinal cord gliomas were diagnosed between 1973 and 2006. **Methods** The study population of interest was limited to primary, malignant, pathologically confirmed spinal cord gliomas based on data drawn from the SEER 9 standard registries for patients diagnosed between 1973 and 2006. Variables of interest included age at diagnosis, sex, race, primary site of tumor, and histological subtype of tumor. The SEER*Stat 6.5.2 program was used to calculate frequencies, age-adjusted incidence rates with 95% CIs, and annual percentage change (APC) statistics with a 2-sided p value. In addition, linear correlation coefficients (R(2)) were calculated for the time association stratified by variables of interest. **Results** The overall age-adjusted incidence rate for primary malignant spinal gliomas was 0.12 per 100,000, which increased significantly over the study period (APC = 1.74; p = 0.0004; R(2) = 0.36). The incidence was highest in patients diagnosed at ages 35-49 (0.17 per 100,000), males (0.14 per 100,000), whites (0.13 per 100,000), and those with ependymomas (0.07 per 100,000). Over the study period, the incidence of ependymomas increased significantly (APC = 3.17; p < 0.0001; R(2) = 0.58) as did the incidence of these tumors in whites (APC = 2.13; p = 0.0001) and for both males (APC = 1.90, p value < 0.0001) and females (APC = 1.60, p < 0.0001). The authors found no significant changes in the incidence over time by age of diagnosis. **Conclusions** This study demonstrates an increasing overall incidence of primary, malignant spinal cord glioma over the past 3 decades. Notably, for ependymoma the incidence has increased, whereas the incidence of most other glioma subtypes remained stable. This may be due to improved diagnostic and surgical techniques, changes in histological classification criteria, and changes in neuropathology diagnostic criteria. Although primary, malignant spinal cord gliomas are rare, an improved understanding of the incidence will assist investigators and clinicians in planning potential studies and preparing for allocation of resources to care for these challenging patients.

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