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Presentation Title: Antihistamine and anti-inflammatory drug use associated differently for high-grade versus low-grade gliomas
Presentation Start/End Time: Sunday, Apr 02, 2006, 8:00 AM -12:00 PM
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Poster Section: 21
Poster Board Number: 22
Author Block: *Michael E. Scheurer, Margaret Wrensch, Randa A. El-Zein, Michelle Moghadassi, Rei Miike, Kenneth D. Aldape, Melissa L. Bondy.* M. D. Anderson Cancer Center, Houston, TX, University of California, San Francisco, San Francisco, CA

Introduction: First-generation antihistamines cross the blood-brain barrier with high affinity and have significant sedative effects. In addition, histamine (H-1) receptors affected by these drugs are found on glial cells and appear to have an effect in the neural inflammatory response. *We found an increased risk for anaplastic astrocytoma (AA) and low-grade glioma (LGG) among cases reporting the use of antihistamines.* We also confirmed the protective effect of anti-inflammatory use previously reported for glioblastoma (GBM), but did not find similar effects for AAs or LGGs.

Methods: Data collected as part of the Harris County Adult Glioma Study and the Bay Area Adult Glioma Study were pooled for the purpose of this analysis. This allowed the inclusion of 830 brain tumor cases and 831 frequency-matched controls. Due to differences in reporting, proxy-reported cases (n=197) were excluded from this analysis. Additional cases (n=23) with missing or ambiguous histology were also excluded. Of the remaining cases, there were 339 cases of GBMs, 117 cases of AAs, and 154 cases of LGGs. Logistic regression models were built comparing each histologic grade to all controls. All models were adjusted for the matching variables (age, sex, race) and study series.

Results: *Antihistamine use was associated with an increased risk for AAs (OR 2.73; 95%CI: 1.60-4.65) and LGGs (OR 1.86; 95%CI: 1.11-3.11); however, not for GBMs.* Anti-inflammatory use was associated with a reduced risk for GBMs (OR 0.69; 95%CI: 0.51-0.94); however, not for other histologic grades. A history of asthma or allergies was protective for all histologic types (GBM OR 0.65; 95%CI: 0.46-0.92; AA OR 0.49; 95%CI: 0.28-0.85; LGG OR 0.64; 95%CI: 0.40-1.02). A history of chicken pox was protective for GBMs (OR 0.60; 95%CI: 0.42-0.87) and AAs (OR 0.42; 95%CI: 0.25-0.72) but not for LGGs (OR 0.78; 95%CI: 0.45-1.37).

Conclusions: While it is apparent that inflammatory processes play a role in the development of gliomas, *these data point to potentially different pathways for GBMs when compared to AAs and LGGs.* This report is the first analysis to examine the effects of antihistamines on the development of gliomas. It also confirms prior reports of a protective effect of anti-inflammatory use for GBMs; however, it is the first to show that this protection is not extended to AAs and LGGs. Since AAs and LGGs arise by molecular pathways distinct from GBMs, it is possible that these causative factors are related to specific molecular subtypes of glioma. The relationship of these pathways with neural inflammation deserves further investigation.

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