

# Association between autoimmune diseases and glioblastoma: results from national inpatient database

Nahshon A. Puente<sup>1\*</sup>, Mahasin Osman<sup>2</sup>, Sadik A. Khuder, PhD<sup>3</sup>

<sup>1</sup>College of Medicine and Life Sciences, The University of Toledo, Toledo, OH 43614

<sup>2</sup>Division of Hematology and Oncology, Department of Medicine, The University of Toledo, Toledo, OH 43614

<sup>3</sup>Division of Internal Medicine, Department of Medicine, The University of Toledo, Toledo, OH 43614

\*Corresponding author: [Sadik.Khuder@utoledo.edu](mailto:Sadik.Khuder@utoledo.edu)

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**Background:** Glioblastoma multiform (GBM) is the most frequent malignancy among primary brain tumors in adults and has one of the worst 5-year survival rates among all human cancers. Certain autoimmune diseases (AID) and their treatments may increase the risk of cancer. Studies report conflicting data about the effects of AID on the risk of GBM.

**Objectives:** To evaluate the effect of AID on the risk of GBM.

**Methods:** Discharge data for 2020 Nationwide Inpatient Sample, Healthcare Cost and Utilization Project (HCUP), which approximates a 20% stratified sample of all US hospitalizations, were analyzed. Cases of AID and GBM were identified using the ICD10 codes. Autoimmune comorbidity index was used for the combined autoimmune diseases. Weighted Multivariable logistic regression was used to examine the association between GBM and AID and adjusting for sociodemographic characteristics. Adjusted odds ratios (AOR) and 95% confidence intervals (CI) were calculated using SAS survey logistic regression procedure.

**Results:** Among 6,471,165 admissions, 178,254 patients were identified with AID. The prevalence of GBM in patients with AD was 0.07% compared to 0.12% in patients without AID (AOR = 0.653, CI= 0.546-0.782, p = 0.0016). Significant reduction was found for rheumatoid arthritis (RA), lupus, and scleroderma. The highest reduction in the risk of GBM was for scleroderma. No significant differences were found for Sjogren's syndrome, psoriasis, sarcoidosis, thyroiditis, multiple sclerosis, or other AID.

**Conclusion:** In the US, among hospitalized adults diagnosed with AID, patients with RA, lupus, and scleroderma are significantly less likely to have GBM. This reduction could be attributed to the effect of anti-AID drugs administered to the patients, or the nature of the activated pathways in AID that naturally antagonize neoplastic activation.