

Gut microbiota alterations affect glioma growth and innate immune cells involved in tumor immunosurveillance.

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Glioma is a CNS tumor with few therapeutic options. Recently, host microbiota has been involved in the immune modulation of different tumors, but no data are available on the possible effects of the gut-immune axis on brain tumors.

Here we investigated the effect of gut microbiota alteration in a syngeneic (GL261) mouse model of glioma, treating mice with a cocktail of antibiotics and evaluating the effects on tumor growth, microbe composition, natural killer (NK) cells and microglia phenotype.

We report that antibiotic treatment altered i) the intestinal microbiota at family level ii) reduced the cytotoxic NK cell subsets and iii) altered the expression of inflammatory and homeostatic genes and proteins in microglia. All these findings could contribute to the increased growth of intracranial glioma that was observed after antibiotic treatment. These results demonstrate that chronic antibiotic administration alters microbiota composition and contributes to modulate brain immune state paving the way to glioma growth