2041 **Poster Session**

Analysis of tumor progression among patients with glioma after COVID-19 infection.

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Background: As of January 2023, there have been 6.7 million worldwide deaths attributed to SARS-CoV-2 COVID-19, which has impacted outcomes and medical care for all patients. Relatively little is known about the direct effects mediated by the virus on CNS tumor biology, despite the fact that viral neurotropism is well described, various coronavirus receptors have been observed in glioblastoma (GBM) tissues, and differential monocytic infiltration has been proposed to dysregulate the immune microenvironment. We detected a trend of rapid progression following COVID-19 infection among several patients with primary brain tumor patients and sought to systematically evaluate the pace of progression among infected patients in our institution. **Methods:** A single-institutional database of COVID-19 patients and an electronic medical record (EMR) search tool were used to identify a total cohort of 67 patients with glioma for retrospective analysis. This included 38 GBMs, 18 IDH-mutant gliomas, 5 ependymomas, 2 pilocytic astrocytomas, 1 diffuse midline glioma, 1 diffuse hemispheric glioma, and 1 ganglioglioma patients, each of whom had a documented COVID-19 infection between June 2020-December 2022. Hyperprogression was defined as tumor increase ≥40% compared to previous scan using RECIST size criteria. **Results:** Thirty-nine (58%) patients experienced tumor progression following COVID-19 infection at a median of 34 days (range=1-734 days) after testing positive for COVID-19. Twenty-two (56%) had received COVID-19 vaccine before their infection and 5 (13%) had asymptomatic infections. Twenty-two patients had measurably increased tumor area by a median of 63% (range=10-2,900%), 18 of which constituted hyperprogression;16 patients developed multifocal disease, 8 developed new nodular enhancement, 3 developed leptomeningeal disease (LMD), and 2 experienced increased infiltrative disease alone. Ten patients' presentation with new glioma was preceded by COVID-19 infection by a median of 31 days. GBM patients represented the majority of progression events, among whom 59% progressed within 60 days of documented infection (median 25 days). This subgroup of GBM with rapid progression within 60 days had a mOS from infection of 5.2 months; 89% had TERT promotor mutations and 42% had MGMT promoter methylation. **Conclusions:** Glioma patients appear to have disease progression at an accelerated pace in the first two months after COVID-19 infection. This suggests that glioma patients should continue observing strict precautions to prevent infection and should be clinically monitored vigilantly after infection, with consideration for short interval imaging during treatment. These preliminary data warrant further investigation exploring changes of immune cell infiltration in the tumor microenvironment and the possible correlation between tumor progression and COVID-19. Research Sponsor: None.