Glioblastoma in Pregnant Patient with Pathologic and Exogenous Sex Hormone Exposure and Family History of High-Grade Glioma

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Introduction: Glioblastoma (GBM) incidence is higher in males, suggesting sex hormones may influence GBM tumorigenesis. Patients with GBM and altered sex hormone states could offer insight into a relationship between the two. Most GBMs arise sporadically, but reports describing familial GBM suggest genetic predispositions exist. However, no existing reports examine GBM development in the context of both supraphysiologic sex hormone states and familial predisposition.

Methods: We present a case of GBM in a pregnant patient with a family history of GBM, detail the patient's clinical presentation, and review the literature describing relationships among sex hormones, genetics, and glioblastoma.

Results: A 35-year-old female with polycystic ovary syndrome and undergoing in-vitro fertilization (IVF) treatment presented with seizure and headache. Imaging revealed a right frontal brain mass. The patient underwent a right frontal craniotomy with maximal surgical debulking of the mass. She was discharged after 4 days and later underwent dilation and curettage and began Stupp protocol. Molecular and histopathological analysis of the resected tumor supported a diagnosis of IDH-wild type GBM. Her family history was significant for GBM. Current literature indicates testosterone promotes GBM cell proliferation, while estrogen and progesterone effects vary with receptor subtype and hormone concentration, respectively.

Conclusion: Sex hormones and genetics likely exert influence on GBM development and progression that may compound with concurrence. Here we describe a case of GBM in a young patient with a family

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history of glioma and atypical sex hormone exposure due to endocrine disorder and pregnancy assisted by exogenous IVF hormone administration.

