CLINICAL VIGNETTE

A Case of Gliomatosis Cerebri

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Case

A 49-year-old male with a history of seizure disorder presented to the emergency department for increasing frequency of seizures. He had been evaluated by neurology and started on levetiracetam 750mg BID and was compliant with his medications. The patient had been having five seizures daily involving upper extremity clenching, urinary incontinence, and a two to three minute post ictal period. He was living with his sister who noticed that he was also having daily hallucinations, increased agitation, and difficulty with his short term memory. She reported visual hallucinations for the past week. Every night he was talking, yelling, and fighting in his bedroom with non-existent people. In the emergency room he had a witnessed seizure and was admitted and was loaded with levetiracetam 1000mg and placed on continuous EEG 72 hour monitoring.

Medical records were obtained from the previous neurological evaluation form five months prior including normal CT brain and MRI. CSF was negative for infection. EEG was negative for any epileptic seizure activity.

His admission MMSE was 23/30 with poor recall and concentration. Overnight his EEG was negative for any epileptic activity. Urine toxicology was negative and pseudoseizure suspected given the timing of his seizures relative to his stressors and no seizure activity documented during the hospitalization.

Psychiatry was consulted for the management of visual hallucinations. He denied any visual hallucinations and reports that the documented visual hallucinations were a miscommunication. He had been under several life stressors including substance abuse, lack of employment, and financial dependence from his family. No antipsychotic meds were started.

MRI brain was repeated and was notable multiple areas of subtle white and gray matter T2 and Flair abnormalities in the bilateral frontotemporal lobes, edema appearing in the bilateral frontotemporal areas and basal ganglion, with one discrete small 7 mm enhancing ring lesion in the left temporal area, highly suspicious gliomatosis cerebri type 2. HIV and Cocci were negative. Lumbar puncture and CSF panel was negative for any infectious etiology. Blood panel for infectious etiology was also negative. CT chest abdomen and pelvis was negative for any malignancy.

Neurosurgery was consulted for brain biopsy for definitive diagnosis. The risk of biopsy outweighed the benefits because the lesion was small, deep, and next to cerebral vasculature. Therefore, a stereotactic brain biopsy was performed in the right temporal lobe without any complications. Levetiracetam was discontinued and patient was started on devalproex 1500mg daily. He was discharged with follow up in neurosurgery for brain biopsy results.

The right temporal lobe biopsy was positive for diffuse astrocytoma (WHO grade II/IV). IDH1/IDH2 analysis showed no evidence of mutation. The patient was notified of his diagnosis and referred for whole brain radiation therapy and followed oncology for consideration of treatment with chemotherapy and radiation. He was also started on temezolamide 75mg/m2 with reduced seizure frequency by 90%.

He was tolerating his chemotherapy and radiation for four months. He had two follow up visits and without reported complications. However, post radiation treatment MRI brain was notable for worsening bilateral frontotemporal hyperintensities, and an enlarging left temporal lesion with three new left frontal enhancing lesions. Unfortunately, the patient died in his home two weeks later.

Discussion

Gliomatosis cerebri (GC) is a rare, extensively infiltrating glial brain tumor that affects all age groups. GC is more common in males with median age ranges from 46 – 53 years.[1] Gliomatosis ceribri is classified as a special pattern of growth and is categorized under various subtypes of gliomas. GC can also affect multiple lobes of the brain. There are no classical symptoms of GC owing to the extensive and unpredictable invasion of tumor cells bilaterally and deep within the brain. Common presenting symptoms may include focal weakness, sensory deficits, seizure, altered mental status, memory deficits with "dementia like" features, and progressive headache.[2]

Diagnosis is made primarily with MRI and histopathologic confirmation of an astrocytic process. Brain MRI shows a T1 weighted intensity and T2 weighted or FLAIR hyperintensity in the involved areas of the brain.[3] The histologic grading includes grades II through IV gliomas. GC classically has a diffuse, irregular parenchymal infiltration of glial cells.[4]

The prognosis is poor despite aggressive treatment with 26-52% surviving less than one year.[2] Surgical resection is generally not an option due to multiple lobe involvement. Radiation has an unclear benefit, and chemotherapy has no proven efficacy.[5] Major obstacles toward establishing standardized treatments include rarity of the disease, lack of in depth understanding of the tumor biology, variation across histopathologic grading, variability in patient outcomes, and lack of response to therapies.[2]

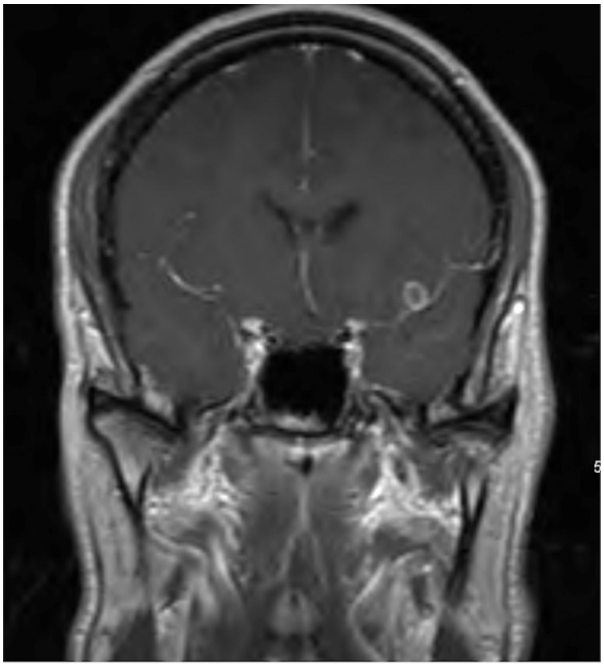

Figure 1A: Exhibits a single 7 mm enhancing ring lesion in the left temporal area.

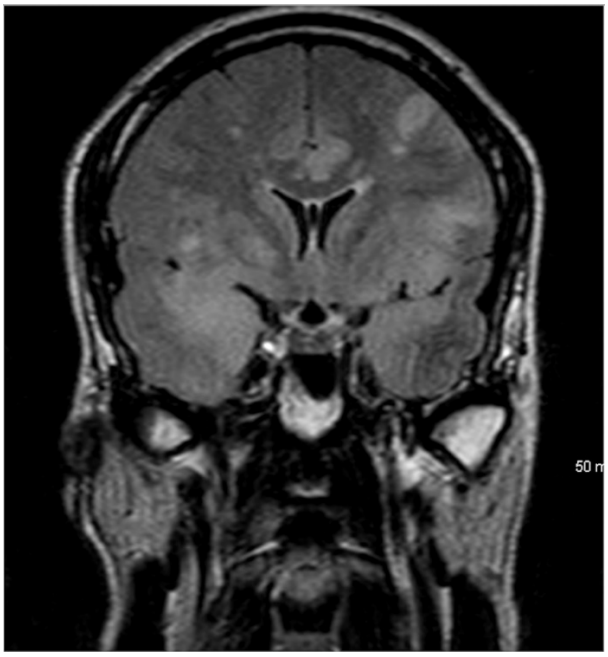

Figure 1B: Image reveals the Flair abnormalities in the bilateral frontotemporal lobes.

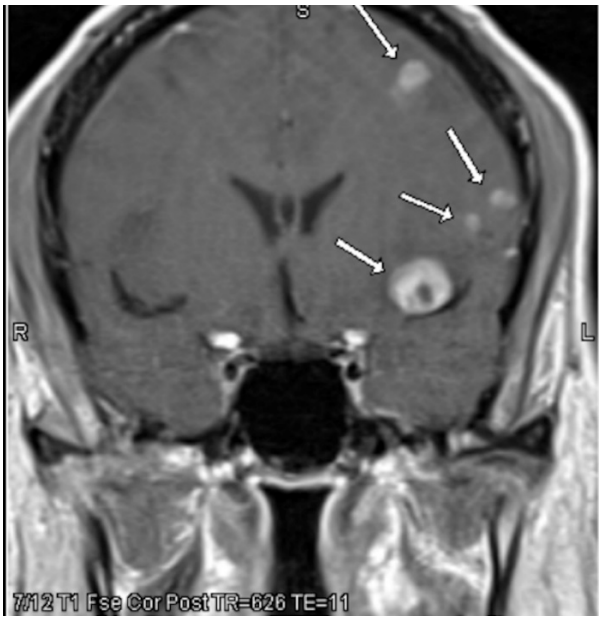

Figure 2: Reveals the enlarging ring enhancing lesion noted on his initial presentation, with an additional three newly appearing left frontal enhancing lesions indicating worsening infiltration of the tumor despite aggressive treatment regimen.

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