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Case Report: Glioblastoma Tumor Presenting with Mild Changes in Memory

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Case Report: Glioblastoma Tumor Presenting with Mild Changes in Memory

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Abstract:

We report a case of a 66-year-old female who presented to the ED with generalized headache and mild confusion, who was diagnosed with high-grade glial neoplasm. The differential diagnosis of headache is vast, but without red flags or symptoms is generally from a benign cause and easily treatable. However, even in the context of a normal neurologic physical exam, symptoms such as confusion, forgetfulness, and behavioral changes should merit imaging in the workup. Glioblastoma is the most common brain tumor, accounting for 47.7% of all cases, with an incidence of 3.21 per 100,000 population. Median age of diagnosis is 64 years, more commonly in men. Treatments include radiation, chemotherapy, and surgical resection.

Case Presentation:

Mrs. K is a 66-year old female who presented to the ED with chief complaint of generalized headache. She has a PMHx of Hypertension and Hypothyroidism. Patient stated she had a distant history of migraine headaches and her presentation to the ED was similar to her migraine headaches in the past week. Her husband who was with her at bedside reported the patient had been exhibiting increased confusion over the past week that had been waxing and waning. For example, it was highly abnormal for her to forget that she poured herself a glass of water or whether she took her medications that day. No surgical or social history. There was no family history of neurologic disease or neurologic malignancies. Review of systems unremarkable.

The patient's vital signs were as follows: heart rate 85 beats per minute, respiratory rate 18 breaths per minute, blood pressure 137/76 mmHg and a temperature 97.7 degrees F. The physical exam was unremarkable, including neurologic exam of all Cranial Nerves. Her lab work including CBC, CMP, TSH was unremarkable. UA, EKG, CXR were also unremarkable. Patient was given a headache cocktail including: 1L Normal saline, 4mg Metoclopramide, 10mg Dexamethasone, and 12.5mg Diphenhydramine IV. This completely resolved her headache symptoms. Patient's husband felt as if her visit to the ED did not solve why she was exhibiting confusion and forgetful behavior, so the decision was made to obtain a computerized tomography (CT) scan of the head without contrast. The CT scan showed a Heterogenous mass extending across the posterior corpus callosum, in keeping with high-grade glial neoplasm. No evidence of intracranial hemorrhage, and no midline shift.

A call was made to the neurologist who recommended admission and further testing via MRI. During her admission her MRI showed neoplasm extending across the splenium of corpus callosum, representative of a high-grade Glioblastoma. She was started on Dexamethasone and Levetiracetam for seizure prophylaxis. The next day patient was taken to the OR by neurosurgery who performed a craniotomy with resection of the Glioblastoma.

Discussion:

The patient presented with headache and confusion that was demonstrated on CT scan & MRI scan to be due to a high grade Glioblastoma.

Incidence of Glioblastoma

The cause of Glioblastoma does not appear to be well-known. It is noted in the literature that underlying genetics, and environmental exposures can increase the risk of developing glioblastoma [1]. Underlying genetic disorders such as neurofibromatosis, Li-Fraumeni syndrome, Tuberous Sclerosis, and Turcot syndrome have been shown to increase likelihood of developing Glioblastoma [2]. Individuals with increased exposure to smoking, pesticides, and working in petroleum, and rubber manufacturing have also shown increased association [2]. Glioblastoma has also been associated with viruses such as Human Herpes Virus-6 and Cytomegalovirus [3]. Studies have delved into exposure to radiation through medical imaging, formaldehyde, and cell phones. However these have shown poor correlation to developing Glioblastoma [4].

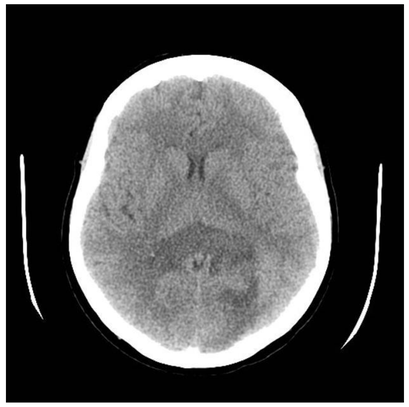

Figure 1: CT scan, axial view, showing a heterogeneous mass extending across the posterior corpus callosum

St-Amant, M. Glioblastoma NOS (splenium). Case study, Radiopaedia.org. (accessed on 15 Apr 2022) https://doi.org/10.53347/rID-19254

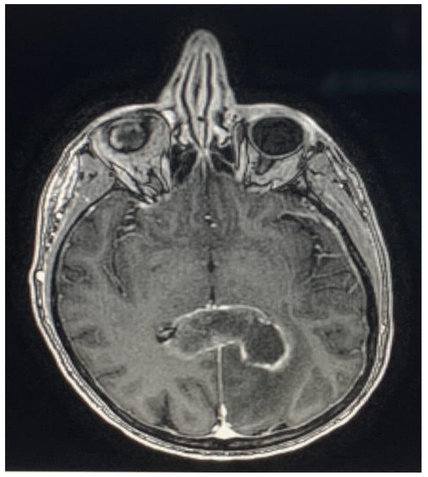

Figure 2: MRI scan, showing a heterogeneous mass extending across the splenium of corpus callosum, measuring 5.8 x 3.3 x 2.3 cm.

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Discussion:

Pathophysiology:

The pathophysiology of Glioblastoma is not yet completely understood. What is known is Glioblastomas arise from glial cells. Studies have shown astrocytes, oligodendrocytes, and neural stem cells have also served as cells of origin [5]. Glioblastomas are developed from small areas of necrotic tissue that are surrounded by anaplastic cells. These cells can exhibit classic expansion across the corpus callosum, producing a butterfly glioma appearance [6].

Presentation of Glioblastoma:

Glioblastoma can present as an array of symptoms including: persistent headaches, vision abnormalities, nausea/vomiting, changes in personality, and changes in memory [7].
Most patients with Glioblastoma are asymptomatic until the tumor increases in size producing symptoms [8]. Other symptoms include seizures, however, the extent of symptoms produced depends on the location of the tumor [2].

Laboratory studies:

Lab work, as was similar in this case, is generally unremarkable. Other comorbidities can affect lab values. However, Glioblastoma does not appear to have any elevations in any specific laboratory marker.

Imaging:

The American Association of Neurological surgeons agrees that MRI imaging followed by CT imaging is the best means to diagnose Glioblastoma. MRS can be used to examine the tumor's chemical composition, followed by histopathology status post craniotomy [8].

Surgical Treatment:

Neurosurgeons performing Craniotomy provides benefits of decreasing the size of the tumor [2].

Radiation & Chemotherapy:

Radiation allows to selectively eliminate remaining tumor cells s/p craniotomy that have compromised the surrounding normal brain tissue. Chemotherapy via the drug Temozolomide is used simultaneously with Radiation [8].

Conclusions:

We wanted to present this case of Glioblastoma to emphasize the importance of careful history taking of a headache patient. Often, those closest to the patient may notice subtle behavioral changes or changes in mentation that should be taken into account when making decision for further imaging of a headache patient. This patient was at her baseline until one week prior to arriving in the ED, and in the ED had a normal neurologic exam. However, her significant other was instrumental in pointing out subtle changes that were not even noticed by the patient and prompted additional evaluation via CT imaging.

This addition to the history was very important in the decision to obtain further imaging which then discovered a mass. Due to this imaging, the patient was able to receive earlier care for a new cancer diagnosis.