ORIGINAL RESEARCH PAPER

Medicine

KEY WORDS: Glioma, Magnetic Resonance Imaging

HIGH-GRADE GLIOMA: ONE YEAR AFTER

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ABSTRACT

This article illustrates the case of a 59-year-old immunocompromised man with a sudden diplopia and headaches whose in-depth study, including an Magnetic Resonance Imaging, didn't show any changes. About a year later, the patient presents with asthenia, drowsiness, amnesia, verbosity, repetitive speech, and dysarthria, a Cranioencephalic Computed Tomography was performed and subsequently a Magnetic Resonance Imaging which revealed an intra-axial tumor formation in the medial right temporal lobe, compatible with high-grade glioma. This case illustrates that gliomas can emerge and evolve in a short period of time, especially within immunocompromised people. Despite of recent study and complementary exams, the symptoms and the Immunocompromised status, were essential to diagnostic orientation.

BACKGROUND

Glioblastoma is a malignant brain neoplasm with diffuse growth, corresponding to grade IV astrocytoma, the highest and most aggressive grade.[1] Cases are more common in men and in the Caucasian race, with an average age of diagnosis of 64 years.[2] Over 90% of cases develop rapidly, with symptom progression in days or weeks. The remaining 10% have a gradual progression from low-grade gliomas, also known as IDH-mutated astrocytomas, WHO grade 4.[1]

Symptoms may include mood and personality changes, sensory-motor deficits, aphasia, seizures, fatigue, neuro-cognitive slowing, confusion, memory loss or symptoms of increased intracranial pressure such as headaches, nausea, vomiting, and dizziness.[3]

The diagnosis of glioblastomas is suggested by changes in Magnetic Resonance Imaging (MRI) or Computed Tomography (CT), these methods also being useful for treatment planning. [3] The image reveals a heterogeneous enhancing mass with surrounding edema, often with areas of central necrosis.[1,4]

Tissue diagnosis is mandatory, and usually obtained by stereotactic biopsy or after tumour resection.[5]

Case Presentation

Caucasian man, 59 years old, with a history of hypertension, dyslipidemia, cardiomyopathy, thrombotic microangiopathy and renal transplant in 2017 due to hypertensive nephroangiosclerosis. He is medicated with Tacrolimus 2.5mg once a day, Mycophenolate mofetil 500mg once a day and 250mg once a day, Prednisolone 5mg once a day, Carvedilol 6.25mg twice a day, Clonidine 0.15mg twice a day, Ramipril 10mg once day, Amlodipine 10mg once a day, Allopurinol 100mg once a day, Linagliptin 5mg once a day, Atorvastatin 20mg + Ezetimibe 10mg once a day, and Acetylsalicylic acid 100mg once a day. He denies known allergies, smoking habits, alcohol consumption, or drug use.

On November 30, 2020, he suddenly developed binocular diplopia and headaches, prompting him to visit the Emergency Service.

He denied alteration of consciousness, dysarthria, dyspnea, vertigo, weakness, sensory changes, and gait imbalance. Following inconclusive imaging, analytical studies and lumbar puncture, and considering the sudden onset in an immunocompromised patient, he was admitted to the Neurology Department. During the 20-day hospitalisation, he underwent multiple diagnostic tests, including cranioencephalic CT angiography, carotid and vertebral Doppler ultrasound, and laboratory studies, without significant findings, and was discharged on December 18, still experiencing diplopia. He was followed up in the Neurology Outpatient Clinic, where further analytical and imaging studies were performed, including cranioencephalic MRI on January 5, 2021 - Figure 1, showing no significant changes.

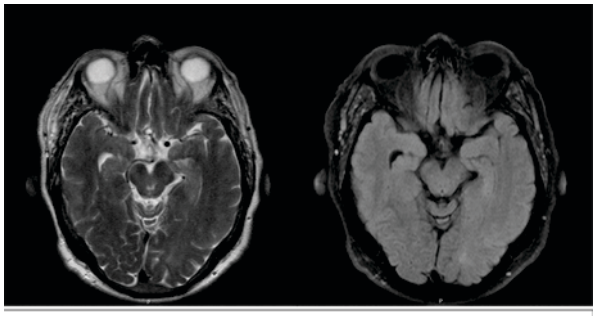

Figure 1 – MRI from 5th january 2021

It was assumed to be a trochlear nerve palsy of microvascular origin. Given the resolution of the case, he was discharged from follow-up in clinic on July 17, 2021.

On December 2, 2021, he attended a scheduled appointment at his Health Unit due to a month-long history of drowsiness, which he and his family attributed to receiving the third dose of the SARS-CoV-2 vaccine. The brief neurological examination showed no abnormalities. Laboratory tests and an electrocardiogram were requested.

On December 6, 2021, he returned to the scheduled appointment to discuss the results of the tests. On this occasion, he has verbiage, with repetitive speech and slurred language. No other abnormalities were observed on physical examination. Consequently, a cranioencephalic CT scan was requested, revealing a large expansive lesion in the right internal and sublenticular temporal region, intra-axial, with irregular contours, cystic-necrotic features measuring approximately 40x36mm in the axial plane, with relatively marked surrounding vasogenic edema, exerting mass effect on adjacent structures. The most likely diagnostic hypothesis was a high-grade malignant glial tumor, namely glioblastoma, to be further clarified by MRI.

A priority appointment for Neurosurgery was requested, and the warning signs that should prompt observation in the Emergency Department were explained.

On January 13th, the patient presented to the emergency department due to a seizure and was admitted to the Neurosurgery service. During the hospitalization, on January 18th, a new MRI was performed - Figure 2, which confirmed the presence of a right medial temporal intra-axial tumor formation, including a medial necrotic-cystic solid measuring approximately 4.6cm, and another more lateral,

predominantly cystic with 3.5cm. There was extensive vasogenic edema and it caused deformation of the adjacent tissue, deviation of the chiasm, and midline shift. The most likely diagnostic hypothesis is a high-grade malignant glial tumor.

On February 15th, there was a change in consciousness and worsening of motor deficits, with left hemiplegia and a picture of respiratory failure due to infection by the SARS-CoV-2 virus, with bacterial superinfection. The patient eventually passed away, and additional histological studies were not possible.

Figure 2 – MRI from 18th January 2022

CONCLUSIONS

The clinical case described presents a situation of a lesion compatible with a high-grade malignant glial tumor, particularly a glioblastoma.

Although it involves a typical patient, being a Caucasian man in his sixth decade of life, the particularity of this case lies in the fact that the patient had a MRI one year before the diagnosis without any abnormalities, already presenting neurological symptoms at the time.

The MRI from January 2021, prompted by sudden diplopia and headaches, showed no significant changes, unlike the MRI performed about a year later, in January 2022, which already revealed the suspicious lesion. The presentation of high-grade gliomas can involve prolonged neurological symptoms and initial diagnostic failures. However, a comprehensive study was conducted in response to the initial complaints, which did not show any abnormalities.

The initial drowsiness, initially dismissed by family members, turned out to be the first suspicious symptom during the year 2022, later followed by slurred speech, repetitive speech, and verbosity. Despite the nonspecific symptoms, the appearance of new symptoms, along with the fact that the patient was immunocompromised, raised suspicion of neurological pathology, particularly cerebral, leading to imaging exams that culminated in the probable diagnosis of a high-grade glioma.

This case highlights the importance of clinical suspicion for timely diagnosis, as it will affect the patient's prognosis, which, in this case, did not occur. It is noteworthy, however, that the final histological diagnosis of the tumor in question could not be obtained, as the patient passed away before its completion.

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