

Recurrent Diffuse Astrocytoma in a Young Male with Right Hemiparesis: A Case Report

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Abstract- Astrocytomas are a group of primary brain tumors originating from astrocytes and commonly affecting young adults. This case report presents a 32-year-old male with recurrent left frontoparietal and right-sided diffuse Grade II astrocytoma. The patient experienced progressive neurological symptoms including altered sensorium, right-sided weakness, incontinence, and inability to walk or speak. He had undergone two previous gross total excisions (GTEs) in 2020 and 2023. Imaging in 2025 confirmed recurrence, and a third GTE was performed. Multidisciplinary management including surgery, medication, ventilator support, and physiotherapy was provided. This case emphasizes the importance of early imaging, surgical intervention, and neuro-rehabilitation in recurrent gliomas.

I. INTRODUCTION

Diffuse astrocytoma (World Health Organization Grade II) is a slow-growing glioma that typically presents in the third to fourth decade of life and is known for its infiltrative growth and potential for malignant transformation. These tumors are challenging to manage due to their tendency to recur despite surgical resection and radiotherapy. Clinical features include seizures, neurological deficits, and cognitive decline, often reflecting tumor location and progression.

Recent studies highlight the recurrence of low-grade gliomas and their impact on patient quality of life. Diffuse astrocytomas frequently recur as higher-grade lesions, necessitating close monitoring and multimodal therapy [1,2]. Early surgical intervention has been associated with prolonged survival and improved neurological outcomes [3]. Multidisciplinary management, including physiotherapy and supportive care, is critical in reducing morbidity.

II. CASE REPORT

A 32-year-old male presented to the outpatient department with a six-month history of altered sensorium and progressive neurological deterioration. He had been

experiencing right-sided weakness for the past two years, which gradually worsened and led to complete hemiparesis. For the past two months, the patient had been unable to walk without support and was non-verbal. He also had a history of generalized tonic-clonic seizures, bowel and bladder incontinence, and functional dependence for daily activities. Initially diagnosed in 2020 with a diffuse astrocytoma (WHO Grade II) in the left frontoparietal region, he underwent gross total excision (GTE), followed by radiotherapy for two years. The tumor recurred in 2023, requiring a second GTE. Imaging in April 2023 revealed a cystic lesion in the left frontoparietal region and a solid lesion on the right side, suggestive of further recurrence. Due to continued clinical decline, he was planned for a third surgical intervention, which was performed on 18 June 2025.

The patient was diagnosed in 2020 with a diffuse Grade II astrocytoma involving the left frontoparietal region and underwent gross total excision (GTE). Postoperatively, he developed generalized tonic-clonic seizures (GTCS) and right hemiparesis within six months. He received radiotherapy for two years, with no chemotherapy. In 2023, tumor recurrence was diagnosed, and a second GTE was performed. Over the following months, the patient experienced worsening of neurological symptoms including bowel and bladder incontinence, altered cognition, and reduced mobility.

III. ASSESSMENT

An MRI conducted on 26 May 2025 showed a cystic lesion in the left frontoparietal region and a solid lesion on the right side, suggestive of recurrence. Laboratory investigations pre- and postoperatively showed stable hematological and biochemical parameters. There were no indications of infection, coagulopathy, or electrolyte imbalance, supporting overall physiological stability.

IV. TREATMENT AND OUTCOME

A third gross total excision (GTE) was performed on 18 June 2025. Postoperatively, the patient required ventilator support for a few days. Throughout the immediate recovery period, his vital signs remained stable, and no major complications were noted. However, the pre-existing right-sided hemiparesis persisted. A postoperative chest X-ray revealed infiltrates in the right lung, suggestive of mild pulmonary involvement, likely attributable to prolonged immobilization or ventilator-associated changes.

V. POST-OPERATIVE

A multidisciplinary approach was implemented postoperatively to support recovery and prevent complications. Medical management involved the administration of proton pump inhibitors, antibiotics, antiemetics, antiepileptics, corticosteroids, and multivitamin supplements to address surgical stress, prevent infections, control seizures, and reduce cerebral edema. Simultaneously, a structured rehabilitation plan was initiated, including the use of an air mattress to prevent pressure ulcers, passive and active-assisted range-of-motion exercises, joint mobilization techniques, and daily wheelchair ambulation to promote circulation and maintain functional mobility.

VI. DISCUSSION

Recurrent diffuse astrocytomas pose significant challenges due to their infiltrative nature and potential for neurological deterioration. This case underscores the progressive course of low-grade gliomas, particularly when associated with delayed or incomplete resection. Recurrence after GTE is not uncommon and often requires repeat surgical intervention for symptom relief and disease control [4,5].

Current literature supports the benefit of early and maximal safe resection in improving progression-free survival [6]. However, repeated surgeries, especially in eloquent brain areas, increase the risk of permanent deficits such as hemiparesis or aphasia [7].

In this patient, repeated resections were necessary due to symptomatic progression and radiological evidence of recurrence. The absence of chemotherapy in the treatment course reflects an individualized approach, possibly influenced by histopathological factors and patient tolerance.

Pulmonary complications and functional decline were addressed through early physiotherapy and mobility support. Rehabilitation following neurosurgery is

increasingly recognized for its role in reducing complications, restoring independence, and improving neurological function [8].

VII. CONCLUSION

Recurrent diffuse astrocytoma in young adults can lead to progressive neurological disability and impaired quality of life. Multimodal treatment including surgical resection, vigilant postoperative monitoring, and comprehensive rehabilitation is essential for optimizing outcomes. This case highlights the importance of individualized care and long-term follow-up in managing recurrent gliomas.

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