CASE REPORT

Recurrence of Benign Astrocytoma in a Benign form 20 Years after Surgery and Radiotherapy Treatment

MUMTAZ ALI, JEHAN ZEB, NASEER HASSAN
Department of Neurosurgery, Lady Reading Hospital (LRH), Peshawar – Pakistan

ABSTRACT

A 43 years old male primary school teacher presented with the chief complaints of headache for 20 days, double vision for 20 days, unsteady gate and 04 episodes of vomiting in last 20 days before presentation. He had presented 20 years back with the same complaints and on workup he was found to have posterior fossa tumor with resultant hydrocephalus. He had undergone ventriculoperitoneal shunting followed by posterior fossa craniectomy with tumor excision followed by radiotherapy. Histopathology examination of his biopsy done at that time was showing grade II Astrocytoma.

Key Words: *Cerebellar Astrocytoma, Glioma, Karnofsky performance status (KPS), Intra axial.*

INTRODUCTION

Astrocytoma is the tumor of astrocytic cells, one of the (supporting) non-parenchymal cells of the brain and spinal cord. They are the most common primary intra axial brain tumors. They have been classified into **ordinary** (including fibrillary, gemistocytic and protoplasmic types) and **special** astrocytoma (which includes pilocytic, microcystic cerebellar and sub ependymal giant cell) (SEGA) depending on the predominant cell type. World health organization (WHO) has classified these into four grades from grade I to grade IV taking into consideration histological feature as for any other tumor i.e. cellular **atypia, mitosis** in the tumor, **microvascular** proliferation and **necrosis**.[1]

Grade I

WHO grade I is reserved for the special forms of astrocytoma.

Grade II

Grade II is for the diffuse astrocytomas which have cytological **atypia** as the only histological feature. They are also known as low grade gliomas. Amongst them fibrillary type is the most common one. The gemistocytic type is particularly prone to progress to WHO grade III and IV. The most favorable prognosticating factor of the low grade glioma is the young age while poor prognosis is associated with increased intra cranial pressure, altered consciousness, significant neurological deficit, short duration of symptoms before diagnosis and enhancement on imaging studies.

Grade III

WHO grade III tumor are **anaplastic tumors** having **anaplasia** and **mitotic** activity in addition to cytological atypia.

Grade VI

Grade VI tumor are named as glioblatoma (GBM) having **microvascular proliferation** and / or **necrosis** in addition to the aforementioned features.

CASE REPORT

We report the case of a 43 years old primary school teacher who presented with 20 days history of severe generalized headache which is on/off and non-radiating. The pain used to increase with straining and decrease with pain killers.

Our patient also complained of double vision during the last 20 days.

He had 04 episodes of projectile vomiting in those

20 days period.

20 years back the patient had similar complaints and on workup he was found to have a tumor in right cerebellar region with resultant acute hydrocephalus. His hydrocephalus at that time was relieved with ventriculoperitoneal shunt and some 02 months after that, posterior craniectomy was done and gross total resection was carried out, the biopsy result showed grade II astrocytoma. Post-operative the patient had deve-loped left convergent squint and purposeless move-ments of his right upper limb.

The patient had received 30 cycles of radiotherapy after the availability of the biopsy report.

Patient had no major history of chronic drugs use and no allergy. He has no significant family history of any chronic disease in the family.

On examination he was vitally stable with no signs of meningitis and no systemic abnormalities. His higher mental functions were normal with normal speech. He had falling tendency to the right during walking though he was able to adjust himself and prevented a fall. His cranial nerves were all normal except his left eye having convergent squint. His motor and sensory system were normal with normal spinal examination but he had all the signs of a cerebellar disease i.e. vertical and horizontal nystagmus, Past pointing and abnormal finger to nose and finger to finger test. He had abnormal heel shin test with positive pendular knee jerk and dysdiadokokinesia.

His MRI brain was showing a space occupying lesion of the right cerebellar hemisphere about 5x5 cm in size with the radiological features of astrocytoma (Isointense on T_1WI, hyper intense on T_2WI and enhancement after Contrast administration and gross peri-lesional edema).

Patient was operated again after full preparation and this time his biopsy again revealed a grade II

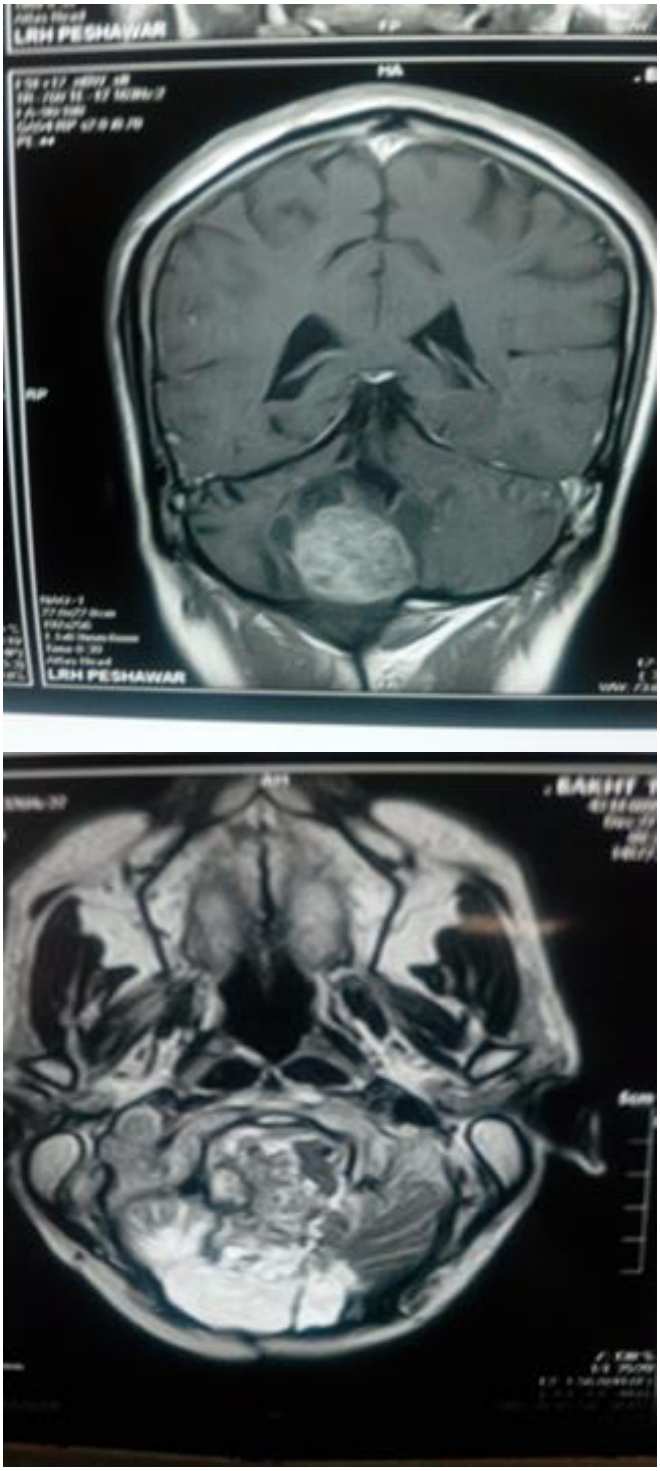

Fig. 1: *Pre-operative MRI Brain Sections.*

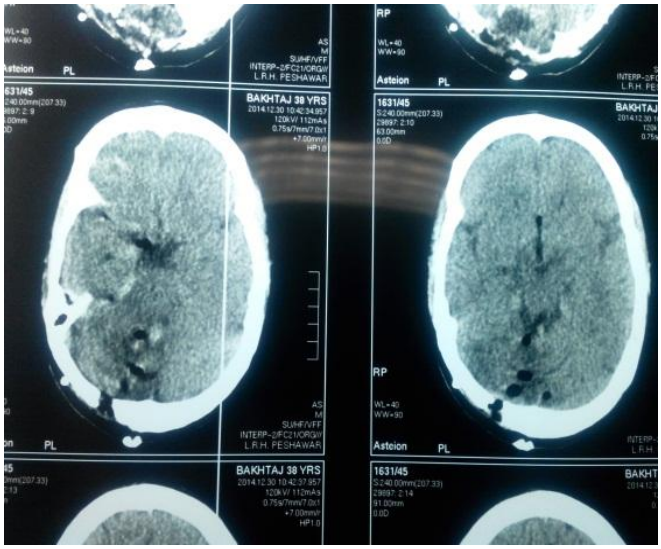

Fig. 2: *Post-operative CT Brain of the Patient.*

astrocytoma. He made an uneventful post-operative recovery; post-operative scan was showing complete removal of the tumor and was discharged home after five days with no added neurological.

DISCUSSION

There have been multiple studies and case reports on cerebellar gliomas and their recurrence. But so far all of them have shown some form of malignant transformation in these cases of gliomas. These cases have reported decades of intervals between the primary benign cerebellar lesion treated with surgery and radiotherapy and their recurrence in a malignant form. There are certain factors which affect the prognosis of gliomas.In 2008, Chang and colleagues devised a preoperative prognostic scoring system for gliomas, including patients' age, Karnofsky Performance Status (KPS), tumor size, and tumor location.

Low – Grade Glioma Scoring System

Age > 50 years - 1 (yes) / 0 (no).

KPS < 80 -1 (yes) / 0 (no).

Presumed eloquent location – 1 (yes) / 0 (no).

Diameter > 4 cm – 1 (yes) / 0 (no).

These points are summed for predicting the prognosis, the higher the score the poorer is the prognosis. (The eloquent location includes the sensorimotor strip, dominant peri sylvian language areas, basal ganglia, thalamus, internal capsule, or visual cortex). Patients with larger tumors and / or eloquent brain location are less likely to undergo gross total resection. Progression or recurrence of astrocytomas in the great majority of patients occurs within or contiguous with the primary tumor site. At the time of initial tumor recurrence or progression, 50% to 75% of initially low – grade astrocytomas have undergone "malignant transformation" to anaplastic astrocytoma or glioblastoma multiforme. There does not seem to be a time point beyond which patients with astrocytoma can be confidently declared to be "cured" of their tumor and this has been supported by many case reports of tumor recurrence decades after primary tumor treatment. Our presented case is a unique one as this case has recurred 2 decades after primary treatment with surgery and radiotherapy and the recurrence was in the same grade as it was in the initial presentation 20 years back i.e. grade II astrocytoma.

CONCLUSION

In conclusion, review of the literature and the current case supports the need for long-term follow-up in patients diagnosed with low – grade gliomas. In so far case reports of low grade gliomas who had received post-operative radiotherapy there was transformation from low to high grade gliomas, but our case is unique in the sense that in spite of having had received post-operative radiotherapy there has been no transformation into high grade gliomas which counteracts the concept of post radiotherapy malignant transformation, supporting the use of radiotherapy in the treatment of gliomas in addition to safe and complete tumor excision and helping delay any tumor recurrence.

Address for Correspondence:
Dr. Mumtaz Ali
Head, Department of Neurosurgery, Lady Reading Hospital (LRH), Peshawar – Pakistan
Email: ns_mumtazali@yahoo.com

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AUTHORS DATA

Name	Post	Institution	E-mail
Dr. Mumtaz Ali	Head of Department	Department of Neurosurgery Lady Reading Hospital (LRH), Peshawar – Pakistan	yhanwer@yahoo.com
Dr. Jehan Zeb	Neurosurgery Resident		
Dr. Naseer Hassan			